


SUBMISSION FOR PERMANENT RULE

1. Rule-Making Agency: NC Building Code Council	
2. Rule citation & name (name not required for repeal): 2020 NC Electrical Code. (201208 Item B-7)	
3. Action: <input checked="" type="checkbox"/> ADOPTION <input type="checkbox"/> AMENDMENT <input type="checkbox"/> REPEAL <input type="checkbox"/> READOPTION <input type="checkbox"/> REPEAL through READOPTION	
4. Rule exempt from RRC review? <input type="checkbox"/> Yes. Cite authority: <input checked="" type="checkbox"/> No	5. Rule automatically subject to legislative review? <input type="checkbox"/> Yes. Cite authority: <input checked="" type="checkbox"/> No
6. Notice for Proposed Rule: <input checked="" type="checkbox"/> Notice Required Notice of Text published on: February 15, 2021 Link to Agency notice: https://www.ncosfm.gov/codes/building-code-council-bcc/bcc-hearing-notice Hearing on: March 9, 2021 Adoption by Agency on: June 8, 2021 <input type="checkbox"/> Notice not required under G.S.: Adoption by Agency on:	
7. Rule establishes or increases a fee? (See G.S. 12-3.1) <input type="checkbox"/> Yes Agency submitted request for consultation on: Consultation not required. Cite authority: <input checked="" type="checkbox"/> No	8. Fiscal impact. Check all that apply. <input type="checkbox"/> This Rule was part of a combined analysis. <input type="checkbox"/> State funds affected <input type="checkbox"/> Local funds affected <input checked="" type="checkbox"/> Substantial economic impact (≥\$1,000,000) <input checked="" type="checkbox"/> Approved by OSBM <input type="checkbox"/> No fiscal note required
9. REASON FOR ACTION	
9A. What prompted this action? Check all that apply: <input checked="" type="checkbox"/> Agency <input type="checkbox"/> Court order / cite: <input type="checkbox"/> Federal statute / cite: <input type="checkbox"/> Federal regulation / cite: <input type="checkbox"/> Legislation enacted by the General Assembly Cite Session Law: <input checked="" type="checkbox"/> Petition for rule-making <input type="checkbox"/> Other:	
9B. Explain: The purpose of this rule is to adopt the newest edition of the National Electrical Code with NC amendments. The delayed effective date of this Rule is October 1, 2021. The Statutory authority for Rule-making is G. S. 143-136; 143-138.	
10. Rulemaking Coordinator: Carl Martin Carl Martin Phone: 1(919)647-0009 E-Mail: carl.martin@ncdoi.gov Additional agency contact, if any: Phone: E-Mail:	11. Signature of Agency Head* or Rule-making Coordinator: <div style="text-align: center; margin-top: 10px;">  <hr style="width: 80%; margin: 0 auto;"/> </div> *If this function has been delegated (reassigned) pursuant to G.S. 143B-10(a), submit a copy of the delegation with this form. Typed Name: Carl Martin Title: Chief Code Consultant
RRC AND OAH USE ONLY	
Action taken: <input type="checkbox"/> RRC extended period of review: <input type="checkbox"/> RRC determined substantial changes: <input type="checkbox"/> Withdrawn by agency <input type="checkbox"/> Subject to Legislative Review <input type="checkbox"/> Other:	

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2020 NC Electrical Code
(201208 Item B-7)

Article 10 - ADMINISTRATIVE SECTION

10.1 TITLE

These Administrative Regulations along with the requirements included in the 2020 Edition of the National Electrical Code (NFPA-70 - 2020) as adopted by the North Carolina Building Code Council on June 8, 2021, to be effective October 1, 2021, with the following amendments:

<u>(1) 110.26(E)(2)</u>	<u>(17) 250.140</u>
<u>(2) 210.8</u>	<u>(18) 250.142(B)</u>
<u>(3) 210.8(A)</u>	<u>(19) 300.3(B)</u>
<u>(4) 210.8(A)(2)</u>	<u>(20) Table 300.5</u>
<u>(5) 210.8(A)(3)</u>	<u>(21) 300.9</u>
<u>(6) 210.8(A)(5)</u>	<u>(22) 320.23(A)</u>
<u>(7) 210.8(B)(4)</u>	<u>(23) 334.15(C)</u>
<u>(8) 210.8(F)</u>	<u>(24) 406.4(D)(4)</u>
<u>(9) 210.12(D)</u>	<u>(25) 410.2</u>
<u>(10) 210.52(B)(2)</u>	<u>(26) 410.16(C)</u>
<u>(11) 210.52(C)(2)</u>	<u>(27) 555.10(3)</u>
<u>(12) 230.67</u>	<u>(28) 555.35(A)(3)</u>
<u>(13) 230.71(B)</u>	<u>(29) 680.4</u>
<u>(14) 230.85</u>	<u>(30) 680.21(D)</u>
<u>(15) 250.50</u>	<u>(31) 695.2</u>
<u>(16) 250.53(A)(2)</u>	<u>(32) 695.3</u>

shall be known as the North Carolina Electrical Code, and may be cited as such or as the State Electrical Code; and will be referred to herein as “the code” or “this code”.

10.2 SCOPE

Article 80 Administration and Enforcement of the code is hereby not adopted and does not apply for this code. For Scope and Exceptions to Applicability of Technical Codes, refer to the North Carolina Administrative Code and Policies.

10.3 PURPOSE

The purpose of the code is to provide minimum standards, provisions and requirements of safe and stable design, methods of construction and uses of materials in buildings or structures hereafter erected, constructed, enlarged, altered, repaired, moved, converted to other uses or demolished and to regulate the electrical systems, equipment, maintenance, use and occupancy of all buildings or structures. All regulations contained in this code have a reasonable and substantial connection with the public health, safety, morals, or general welfare, and their provisions shall be construed reasonably to those ends.

10.4 ADMINISTRATION

For administrative regulations pertaining to inspection (rough-ins and finals), permits and Certificates of Electrical Compliance, see local ordinances and the North Carolina Administrative Code and Policies. When the provisions of other codes are determined to be contrary to the requirements of this code, this code shall prevail.

10.5 DEFINITION

Unless the context indicates otherwise, whenever the word “building” is used in this chapter, it shall be deemed to include the word “structure” and all installations such as plumbing systems, heating systems, cooling systems,

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electrical systems, elevators and other installations which are parts of, or permanently affixed to, the building or structure.

10.6 APPLICATION OF CODE TO EXISTING BUILDINGS

For requirements of existing structures, refer to the North Carolina Administrative Code and Policies.

10.7 SERVICE UTILITIES

10.7.1 Connection of Service Utilities – No person shall make connections from a utility, source of energy, fuel or power to any building or system **that** is regulated by the technical codes until approved by the Inspection Department and a Certificate of Compliance is issued (General Statute 143-143.2)

10.7.2 Authority to disconnect Service Utilities – The Inspection Department shall have the authority to require disconnecting a utility service to the building, structure or system regulated by the technical codes, in case of emergency or where necessary to eliminate an imminent hazard to life or property. The Inspection Department shall have the authority to disconnect a utility service when a building has been occupied prior to Certificate of Compliance or entry into the building for purposes of making inspections cannot be readily granted. The Inspection Department shall notify the serving utility, and whenever possible the owner or occupant of the building, structure or service system of the decision to disconnect prior to taking such action. If not notified prior to disconnecting, the owner or occupant shall be notified in writing within eight (8) working hours (General Statutes 143-143.2, 153A-365, 153A-366, 160A-425 and 160A-426).

10.8 TEMPORARY POWER

10.8.1 Scope. The provisions of this section apply to the utilization of portions of the wiring system within a building to facilitate construction.

10.8.2 Provisions for Temporary Power. The Code enforcement official shall give permission and issue a permit to energize the electrical service when the provisions of 10.8 and the following requirements have been met:

- 1) The service wiring and equipment, including the meter socket enclosure, **are** installed, the service wiring terminated, and the service equipment covers installed.
- 2) The portions of the electrical system that are to be energized **are** complete and physically protected.
- 3) The grounding electrode system **is** complete.
- 4) The grounding and the grounded conductors **are** terminated in the service equipment.
- 5) At least one receptacle outlet with ground fault circuit interrupter protection for personnel **is** installed with the circuit wiring terminated.
- 6) The applicable requirements of the North Carolina Electrical Code apply.

10.8.3 Uses Prohibited. In no case shall any portion of the permanent wiring be energized until the portions have been inspected and approved by an electrical Code Enforcement Official. Failure to comply with this section may result in disconnection of power or revocation of permit.

10.8.4 Application for Temporary Power. Application for temporary power shall be made by and in the name of the applicant. The application shall explicitly state the portions of the energized electrical system, mechanical system, or plumbing system for which application is made, its intended use and duration.

10.8.5 Security and Notification. The applicant shall maintain the energized electrical system or that portion of the building containing the energized electrical system in a secured and locked manner or under constant supervision to exclude unauthorized personnel. The applicant shall alert personnel working in the vicinity of the energized electrical system to its presence.

10.9 REQUIREMENTS OF OTHER STATE AGENCIES, OCCUPATIONAL LICENSING BOARDS, OR COMMISSIONS

The North Carolina State Building Codes do not include all additional requirements for buildings and structures that may be imposed by other State agencies, occupational licensing boards, and commissions. It shall be the responsibility of a permit holder, design professional, contractor, or occupational license holder to determine whether any additional requirements exist.

10.10 INSPECTIONS OF CABLE TIES FOR SECURING AND SUPPORTING OF WIRING METHODS.

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The electrical inspector shall not require evidence that cable ties are listed and identified where used for securement and support of wiring methods allowed in Chapter 3 of this code. Nothing in this section prohibits an electrical inspector from requiring evidence that cable ties are listed for use in a plenum where applicable.

110.26(E)

(2) Outdoor. Outdoor installations shall comply with 110.26(E)(2)(a) through (E)(2)(c).

(a) *Installation Requirements.* Outdoor electrical equipment shall be the following:

- (1) Installed in identified enclosures
- (2) Protected from accidental contact by unauthorized personnel or by vehicular traffic
- (3) Protected from accidental spillage or leakage from piping systems

(b) *Work Space.* The working clearance space shall include the zone described in 110.26(A). No architectural appurtenance or other equipment shall be located in this zone.

Exception: Structural overhangs or roof extensions shall be permitted in this zone.

(c) ~~(Deleted) *Dedicated Equipment Space.* The space equal to the width and depth of the equipment, and extending from grade to a height of 1.8 m (6 ft) above the equipment, shall be dedicated to the electrical installation. No piping or other equipment foreign to the electrical installation shall be located in this zone.~~

Exception: Structural overhangs or roof extensions shall be permitted in this zone.

210.8 Ground-Fault Circuit-Interrupter Protection for Personnel. Ground-fault circuit-interrupter protection for personnel shall be provided as required in 210.8(A) through (F). The ground-fault circuit interrupter shall be installed in a readily accessible location.

Informational Note No. 1: See 215.9 for ground-fault circuit-interrupter protection for personnel on feeders.

Informational Note No. 2: See 422.5(A) for GFCI requirements for appliances.

Informational Note No. 3: See 555.9 for GFCI requirements for boat hoists.

Informational Note No. 4: Additional GFCI requirements for specific circuits and equipment are contained in Chapters 4, 5, and 6.

For the purposes of this section, when determining the distance from receptacles the distance shall be measured as the shortest path the supply cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier, or the shortest path without passing through a window, door or doorway, excluding cabinet doors.

(A) Dwelling Units. All 125-volt through 250-volt receptacles installed in the locations specified in 210.8(A)(1) through (A)(11) and supplied by single-phase branch circuits rated 150 volts or less to ground shall have ground-fault circuit-interrupter protection for personnel.

Exception: A 250-volt receptacle installed specifically for supplying a clothes dryer, range, oven, counter-mounted cooking unit, or similar household cooking appliance fastened in place shall not be required to have ground-fault circuit-interrupter protection.

(2) Garages, and also accessory buildings that have a floor located at or below grade level not intended as habitable rooms and limited to storage areas, work areas, and areas of similar use.

Exception to (2): Single or duplex receptacles that are located more than 2.44 m (8 ft) above the floor and specifically for connection to permanently installed cord-and-plug garage door openers. A duplex receptacle shall only be permitted under this exception where two cord-and-plug garage door openers utilize both contact devices of the duplex receptacle.

(3) Outdoors

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Exception No. 1 to (3): Receptacles that are not readily accessible and are supplied by a branch circuit dedicated to electric snow-melting, deicing, or pipeline and vessel heating equipment shall be permitted to be installed in accordance with 426.28 or 427.22, as applicable.

*Exception No. 2 to (3): A single outlet receptacle supplied by a dedicated branch circuit **that** is located and identified for specific use by a sewage lift pump.*

(5) ~~Basements~~ Unfinished portions or areas of the basement not intended as habitable rooms

Exception to (5): A receptacle supplying only a permanently installed fire alarm or burglar alarm system shall not be required to have ground-fault circuit-interrupter protection.

Informational Note: See 760.41(B) and 760.121(B) for power supply requirements for fire alarm systems.

Receptacles installed under the exception to 210.8(A)(5) shall not be considered as meeting the requirements of 210.52(G).

(B) Other Than Dwelling Units.

(4) Outdoors

Exception No. 1 to (3) and (4): Receptacles that are not readily accessible and are supplied by a branch circuit dedicated to electric snow-melting, deicing, or pipeline and vessel heating equipment shall be permitted to be installed in accordance with 426.28 or 427.22, as applicable.

Exception No. 2 to (4): In industrial establishments only, where the conditions of maintenance and supervision ensure that only qualified personnel are involved, an assured equipment grounding conductor program as specified in 590.6(B)(2) shall be permitted for only those receptacle outlets used to supply equipment that would create a greater hazard if power is interrupted or having a design that is not compatible with GFCI protection.

*Exception No. 3 to (4): A single outlet receptacle supplied by a dedicated branch circuit **that** is located and identified for specific use by a sewage lift pump.*

~~(F) Outdoor Outlets. (Deleted) All outdoor outlets for dwellings, other than those covered in 210.8(A)(3), Exception to (3), that are supplied by single phase branch circuits rated 150 volts to ground or less, 50 amperes or less, shall have ground fault circuit interrupter protection for personnel.~~

~~Exception: Ground fault circuit interrupter protection shall not be required on lighting outlets other than those covered in 210.8(C).~~

210.12 Arc-Fault Circuit-Interrupter Protection.

(D) Branch Circuit Extensions or Modifications — Dwelling Units, Dormitory Units, and Guest Rooms and Guest Suites. Where branch circuit wiring for any of the areas specified in 210.12(A), (B), or (C) is modified, replaced, or extended, the branch circuit shall be protected by one of the following:

- (1) By any of the means described in 210.12(A)(1) through (A)(6)
- (2) A listed outlet branch-circuit-type AFCI located at the first receptacle outlet of the existing branch circuit

Exception: AFCI protection shall not be required where the extension of the existing branch circuit conductors is not more than ~~1.8 m (6 ft)~~ 15.24 m (50 ft) and does not include any additional outlets or devices, other than splicing devices. This measurement shall not include the conductors inside an enclosure, cabinet, or junction box.

210.52 Dwelling Unit Receptacle Outlets.

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(B) Small Appliances.

(2) No Other Outlets. The two or more small-appliance branch circuits specified in 210.52(B)(1) shall have no other outlets.

Exception No. 1: A receptacle installed solely for the electrical supply to and support of an electric clock in any of the rooms specified in 210.52(B)(1).

Exception No. 2: Receptacles installed to provide power for supplemental equipment and lighting on gas-fired ranges, ovens, or counter mounted cooking units.

Exception No. 3: Receptacles installed inside a dwelling and within 1.8 m (6 ft) of any kitchen sink measured by the shortest path the cord of an appliance connected to the receptacle would follow without piercing a floor, wall, ceiling, or fixed barrier.

(C) Countertops and Work Surfaces.

~~**(2) Island and Peninsular Countertops and Work Surfaces.** Receptacle outlets shall be installed in accordance with 210.52(C)(2)(a) and (C)(2)(b).~~

2) Island and Peninsular Countertops and Work Surfaces. Receptacle outlets shall be installed in accordance with 210.52(C)(2)(a) and 210.52(C)(2)(b), 210.52(C)(2)(c), and 210.52(C)(2)(d).

(a) At least one receptacle outlet shall be provided for the first 0.84 m² (9 ft²), or fraction thereof, of the countertop or work surface. A receptacle outlet shall be provided for every additional 1.7 m² (18 ft²), or fraction thereof, of the countertop or work surface. **Island Countertop Spaces.** At least one receptacle shall be installed at each island countertop space with a long dimension of 600 mm (24 in.) or greater and a short dimension of 300 mm (12 in.) or greater.

(b) At least one receptacle outlet shall be located within 600 mm (2 ft) of the outer end of a peninsular countertop or work surface. Additional required receptacle outlets shall be permitted to be located as determined by the installer, designer, or building owner. The location of the receptacle outlets shall be in accordance with 210.52(C)(3).

Peninsular Countertop Spaces. At least one receptacle outlet shall be installed at each peninsular countertop long dimension space with a long dimension of 600 mm (24 in.) or greater and a short dimension of 300 mm (12 in.) or greater. A peninsular countertop shall be measured from the connecting perpendicular wall. At least one receptacle outlet shall be located within 600 mm (2 ft) of the outer end of the peninsular countertop.

~~A peninsular countertop shall be measured from the connecting perpendicular wall.~~

(c) **Required and Additional Receptacles.** Receptacle outlets required by 210.52(C)(2) shall be in accordance with 210.52(C)(3). Additional receptacle outlets shall be permitted to be located outside the provisions of 210.52(C)(3).

(d) **Separate Spaces.** Countertop spaces separated by range-tops, refrigerators, or sinks shall be considered as separate countertop spaces in applying the requirements of 210.52(C)(2). If a range, counter-mounted cooking unit, or sink is installed in an island or peninsular countertop and the depth of the countertop behind the range, counter-mounted cooking unit, or sink is less than 300 mm (12 in.), the range, counter-mounted cooking unit, or sink shall be considered to divide the countertop space into two separate countertop spaces. Each separate countertop space shall comply with the applicable requirements in 210.52(C).

230.67 Surge Protection. (Deleted)

~~**(A) Surge Protective Device.** All services supplying dwelling units shall be provided with a surge protective device (SPD).~~

~~**(B) Location.** The SPD shall be an integral part of the service equipment or shall be located immediately adjacent thereto.~~

~~**(C) Type.** The SPD shall be a Type 1 or Type 2 SPD.~~

~~**Replacement.** Where service equipment is replaced, all of the requirements of this section shall apply~~

230.71 Maximum Number of Disconnects.

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(B) Two to Six Service Disconnecting Means. Two to six service disconnects shall be permitted for each service by 230.2 or for each set of service-entrance conductors permitted by 230.40, Exception No. 1, 3, 4, or 5. The two to six service disconnecting means shall be permitted to consist of a combination of any of the following:

- (1) Separate enclosures with a main service disconnecting means in each enclosure
- (2) Panelboards with a main service disconnecting means in each panelboard enclosure
- (3) Switchboard(s) where there is only one service disconnect in each separate vertical section where there are barriers separating each vertical section
- (4) Service disconnects in switchgear or metering centers where each disconnect is located in a separate compartment
- (5) Panelboards for temporary electrical service installations (saw service pole) at a construction site provided all the following:
 - a. ungrounded circuits do not exceed 150 volts to ground
 - b. the summation of the ratings of the overcurrent devices that serve together as the disconnecting means does not exceed 100 amperes
 - c. the number of circuit breaker handles, identified handle ties, or combination thereof that operate as the service disconnecting means does not exceed six operations of the hand

230.85 Emergency Disconnects. For one- and two-family dwelling units, all service conductors shall terminate in disconnecting means having a short-circuit current rating equal to or greater than the available fault current, installed in a readily accessible outdoor location. If more than one disconnect is provided, they shall be grouped. Each disconnect shall be one of the following:

- (1) Service disconnects marked as follows:
EMERGENCY DISCONNECT,
SERIVCE DISCONNECT
- (2) Meter disconnects installed per 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 suitable for use as service equipment and marked as follows:
EMERGENCY DISCONNECT,
NOT SERVICE EQUIPMENT

Markings shall comply with 110.21(B). Transfer switches and panelboards, including meter-panel combination enclosures, that include a main breaker or other listed means to disconnect all service conductors shall be considered emergency disconnects and shall comply with subsection (1) of this section when installed as a service disconnect.

250.50 Grounding Electrode System. All grounding electrodes as described in 250.52(A)(1) through (A)(7) that are ~~present~~ available at each building or structure served shall be bonded together to form the grounding electrode system. Where none of these grounding electrodes exist, one or more of the grounding electrodes specified in 250.52(A)(4) through (A)(8) shall be installed and used.

Exception: Concrete-encased electrodes of existing buildings or structures shall not be required to be part of the grounding electrode system where the steel reinforcing bars or rods are not accessible for use without disturbing the concrete.

250.53 Grounding Electrode Required.

(A) Rod, Pipe, and Plate Electrodes.

(2) Supplemental Electrode Required. A single rod, pipe, or plate electrode shall be supplemented by an additional electrode of a type specified in 250.52(A)(2) through (A)(8). The supplemental electrode shall be permitted to be bonded to one of the following:

- (1) Rod, pipe, or plate electrode

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- (2) Grounding electrode conductor
- (3) Grounded service-entrance conductor
- (4) Nonflexible grounded service raceway
- (5) Any grounded service enclosure

Exception No. 1: If a single rod, pipe, or plate grounding electrode has a resistance to earth of 25 ohms or less, the supplemental electrode shall not be required.

Exception No. 2: The supplemental ground electrode shall not be required at temporary electrical service installation (saw service pole) at a construction site provided all ungrounded circuits do not exceed 150 volts to ground, and the rating of the single disconnecting means or the summation of the ratings of multiple overcurrent devices that serve together as the disconnecting means, does not exceed 100 amperes.

250.140 Frames of Ranges and Clothes Dryers. Frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers, and outlet or junction boxes that are part of the circuit for these appliances shall be connected to the equipment grounding conductor in the manner specified by 250.134 or 250.138.

Exception No. 1: For existing branch-circuit installations only where an equipment grounding conductor is not present in the outlet or junction box, the frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers, and outlet or junction boxes that are part of the circuit for these appliances shall be permitted to be connected to the grounded circuit conductor if all the following conditions are met.

(1) The supply circuit is 120/240-volt, single-phase, 3-wire; or 208Y/120-volt derived from a 3-phase, 4-wire, wye-connected system.

(2) The grounded conductor is not smaller than 10 AWG copper or 8 AWG aluminum.

~~*(3) The grounded conductor is insulated, or the grounded conductor is uninsulated and part of a Type SE service-entrance cable and the branch circuit originates at the service equipment. Any of the following:*~~

a. The grounded conductor is insulated;

b. The grounded conductor is uninsulated and part of a Type SE service-entrance cable and the branch circuit originates at the service;

c. The grounded conductor is uninsulated and part of a cable assembly and all current-carrying conductors are protected by a ground fault circuit interrupter at the origination of the branch circuit; or

d. A new 3-wire cable assembly not smaller than the existing conductors shall be permitted to be extended from the service to an enclosure where the existing conductors shall be spliced together and provisions are made so that the grounded conductors are insulated by tape, heat-shrink or other approved means inside the enclosure.

(4) Grounding contacts of receptacles furnished as part of the equipment are bonded to the equipment.

Exception No. 2: For existing branch-circuit installations only where an equipment grounding conductor is not present in the outlet or junction box, an equipment grounding conductor sized in accordance with 250.122 shall be permitted to be run separately from the circuit conductors.

250.142 Use of Grounded Circuit Conductor for Grounding Equipment.

(B) Load-Side Equipment. Except as permitted in 250.30(A)(1), 250.32(B)(1), Exception No.1, and Part X of Article 250, a grounded circuit conductor shall not be connected to non-current-carrying metal parts of equipment on the load side of the service disconnecting means or on the load side of a separately derived system disconnecting means or the overcurrent devices for a separately derived system not having a main disconnecting means.

Exception No. 1: The frames of ranges, wall-mounted ovens, counter-mounted cooking units, and clothes dryers under the conditions permitted for existing installations by 250.140 shall be permitted to be connected to the grounded circuit conductor.

Exception No. 2: It shall be permissible to connect meter enclosures to the grounded circuit conductor on the load side of the service disconnect if all of the following conditions apply:

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- (1) *Ground-fault protection of equipment is not installed.*
- (2) *All meter enclosures are located immediately adjacent to the service disconnecting means.*
- (3) *The size of the grounded circuit conductor is not smaller than the size specified in Table 250.122 for equipment grounding conductors.*

Exception No. 3: Electrode-type boilers operating at over 1000 volts shall be grounded as required in 490.72(E)(1) and 490.74.

Exception No. 4: It shall be permissible to ground an existing panelboard enclosure by connection to the grounded circuit conductor for a one- and two-family dwelling where all the following conditions apply:

- (1) When relocating or installing an additional main disconnecting means;*
- (2) Enacting 250.142(B) Exception No. 5: (1) redefines the existing service entrance conductors as a feeder in Article 100;*
- (3) An equipment grounding conductor in the existing panelboard is not present;*
- (4) Replacement of the existing service entrance conductors requires either the removal of the building finish or deemed impractical by the AHJ.*
- (5) All grounding electrode conductors are removed completely from the existing panelboard; and*
- (6) The grounded conductors are insulated by tape, heat-shrink, or other approved means except where covered by the sheathing of a cable assembly or as needed for joints, splices, and termination purposes.*

300.3 Conductor.

(B) Conductors of the Same Circuit. All conductors of the same circuit and, where used, the grounded conductor and all equipment grounding conductors and bonding conductors shall be contained within the same raceway, auxiliary gutter, cable tray, cablebus assembly, trench, cable, or cord, unless otherwise permitted in accordance with 300.3(B)(1) through (B)(4).

(1) Paralleled Installations. Conductors shall be permitted to be run in parallel in accordance with the provisions of 310.10(G). The requirement to run all circuit conductors within the same raceway, auxiliary gutter, cable tray, trench, cable, or cord shall apply separately to each portion of the paralleled installation, and the equipment grounding conductors shall comply with 250.122. Connections, taps, or extensions made from paralleled conductors shall connect to all conductors of the paralleled set, grounded and ungrounded, as applicable. Parallel runs in cable trays shall comply with the provisions of 392.20(C).

Exception: Conductors installed in nonmetallic raceways run underground shall be permitted to be arranged as isolated phase, neutral, and grounded conductor installations. The raceways shall be installed in close proximity, and the isolated phase, neutral, and grounded conductors shall comply with the provisions of 300.20(B).

(2) Grounding and Bonding Conductors. Equipment grounding conductors shall be permitted to be installed outside a raceway or cable assembly where in accordance with the provisions of 250.130(C) for certain existing installations or in accordance with 250.134, Exception No. 2, for dc circuits. Equipment bonding conductors shall be permitted to be installed on the outside of raceways in accordance with 250.102(E).

(3) Nonferrous Wiring Methods. Conductors in wiring methods with a nonmetallic or other nonmagnetic sheath, where run in different raceways, auxiliary gutters, cable trays, trenches, cables, or cords, shall comply with 300.20(B). Conductors in single-conductor Type MI cable with a nonmagnetic sheath shall comply with the provisions of 332.31. Conductors of single-conductor Type MC cable with a nonmagnetic sheath shall comply with 330.31, 330.116, and 300.20(B).

(4) Column-Width Panelboard Enclosures. Where an auxiliary gutter runs between a column-width panelboard and a pull box, and the pull box includes neutral terminations, the neutral conductors of circuits supplied from the panelboard shall be permitted to originate in the pull box.

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(5) Existing Dwelling Panelboards. An equipment grounding conductor for the supply feeder of an existing panelboard in one- and two-family dwellings shall be permitted to be installed separately and outside of the raceway or cable assembly where all the following conditions apply:

(a) When relocating or installing an additional service disconnecting means:

(b) Enacting 300.3(B)(5)(a) redefines the existing service entrance conductors as a feeder in Article 100; and

(c) Replacement of the existing service entrance conductors requires the removal of the building finish or deemed impractical by the AHJ.

Table 300.5 Minimum Cover Requirements, 0 to 1000 Volts, Nominal, Burial in Millimeters (Inches)

Location of Wiring Method or Circuit	Type of Wiring Method or Circuit									
	Column 1 Direct Burial Cables or Conductors		Column 2 Rigid Metal Conduit or Intermediate Metal Conduit		Column 3 Nonmetallic Raceways Listed for Direct Burial Without Concrete Encasement or Other Approved Raceways		Column 4 Residential Branch Circuits Rated 120 250 Volts or Less with GFCI Protection and Maximum Overcurrent Protection of 20 50 Amperes		Column 5 Circuits for Control of Irrigation and Landscape Lighting Limited to Not More Than 30 Volts and Installed with Type UF or in Other Identified Cable or Raceway	
	mm	in.	mm	in.	mm	in.	mm	in.	mm	in.
All locations not specified below	600	24	150	6	450	18	300	12	150 ^{a,b}	6 ^{a,b}
In trench below 5 mm (2 in.) thick concrete or equivalent	450	18	150	6	300	12	150	6	150	6
Under a building	0	0	0	0	0	0	0	0	0	0
	(in raceway or Type MC or Type MI cable identified for direct burial)						(in raceway or Type MC or Type MI cable identified for direct burial)		(in raceway or Type MC or Type MI cable identified for direct burial)	
Under minimum of 102 mm (4 in.) thick concrete exterior slab with no vehicular traffic and the slab extending not less than 152 mm (6 in.) beyond the underground installation	450	18	100	4	100	4	150	6	150	6
							(direct burial)		(direct burial)	
							100	4	100	4
							(in raceway)		(in raceway)	
Under streets, highways, roads, alleys, driveways, and parking lots	600	24	600	24	600	24	600	24	600	24
One- and two-family dwelling driveways and outdoor parking areas, and used only for dwelling-related purposes	450	18	450	18	450	18	300	12	450	18
In or under airport runways, including adjacent areas where trespassing prohibited	400	18	450	18	450	18	450	18	450	18

^aA lesser depth shall be permitted where specified in the installation instructions of a listed low-voltage lighting system.

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^bA depth of 150 mm (6 in.) shall be permitted for pool, spa, and fountain lighting, installed in a nonmetallic raceway, limited to not more than 30 volts where part of a listed low-voltage lighting system.

Notes:

1. Cover is defined as the shortest distance in mm (in.) measured between a point on the top surface of any direct-buried conductor, cable, conduit, or other raceway and the top surface of finished grade, concrete, or similar cover.
2. Raceways approved for burial only where concrete encased shall require concrete envelope not less than 50 mm (2 in.) thick.
3. Lesser depths shall be permitted where cables and conductors rise for terminations or splices or where access is otherwise required.
4. Where one of the wiring method types listed in Columns 1 through 3 is used for one of the circuit types in Columns 4 and 5, the shallowest depth of burial shall be permitted.
5. Where solid rock prevents compliance with the cover depths specified in this table, the wiring shall be installed in a metal raceway, or a nonmetallic raceway permitted for direct burial. The raceways shall be covered by a minimum of 50 mm (2 in.) of concrete extending down to rock.

300.9 Raceways in Wet Locations Abovegrade. Where raceways are installed in wet locations abovegrade, the interior of these raceways shall be considered to be a wet location. Insulated conductors and cables installed in raceways in wet locations above grade shall comply with 310.10(C).

Exception: The interior of these raceways shall not be considered a wet location if:

(1) The section of raceway routed in a wet location above grade does not exceed 1.8 m (6 ft) in length;

(2) Any fittings or conduit bodies are watertight and listed for use in wet locations; and

(3) All termination points of the raceway are only open in any of the following:

a. A dry location;

b. Equipment suitable for outdoor use; or

c. Equipment listed for use in a wet location.

320.23 In Accessible Attics. Type AC cables in accessible attics or roof spaces shall be installed as specified in 320.23(A) and (B).

(A) Cabled Run Across the Top of Floor Joists. ~~Where run across the top of floor joists, or within 2.1 m (7 ft) of the floor or floor joists across the face of ceiling rafters or studding, the cable shall be protected by guard strips that are at least as high as the cable, unless the cables are physically considered outside any floored area. Where this space is not accessible by permanent stairs or ladders, protection shall only be required within 1.8 m (6 ft) of the nearest edge of the scuttle hole or attic entrance where cables are run across the top of floor (ceiling) joists. The cable shall be protected by guard strips that are at least as high as the cable where one of the following applies:~~

(1) Where this space is accessible by permanent stairs or ladders, protection shall be required in the area directly over a permanent floor not exceeding 2.1 m (7 ft) vertically from the floor, or where run across the top of floor joists.

(2) Where this space is not accessible by permanent stairs or ladders, protection shall be required within 1.8 m (6 ft) horizontally of the nearest edge of the scuttle hole or attic entrance where run across the top of any flooring, or flooring or ceiling joists. Protection is not required where run across the face of overhead roofing trusts or rafters.

Exception: For the purpose of this section, pull-down type stairs and portable ladders are not to be considered as permanent stairs or ladders.

334.15 Exposed Work.

(C) In Unfinished Basements and Crawl Spaces. Where cable is run at angles with joists in unfinished basements ~~and crawl spaces~~, it shall be permissible to secure cables not smaller than two 6 AWG or three 8 AWG conductors directly to the lower edges of the joists. Smaller cables shall be run either through bored holes in joists or on running boards. Nonmetallic-sheathed cable installed on the wall of an unfinished basement shall be permitted to be installed in a listed conduit or tubing or shall be protected in accordance with 300.4. Conduit or tubing shall be provided with a suitable insulating bushing or adapter at the point the cable enters the raceway. The sheath of the

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nonmetallic-sheathed cable shall extend through the conduit or tubing and into the outlet or device box not less than 6 mm (1/4 in.). The cable shall be secured within 300 mm (12 in.) of the point where the cable enters the conduit or tubing. Metal conduit, tubing, and metal outlet boxes shall be connected to an equipment grounding conductor complying with the provisions of 250.86 and 250.148.

406.4(D)(4) Arc-Fault Circuit-Interrupter Protection. ~~(Deleted) If a receptacle outlet located in any areas specified in 210.12(A), (B), or (C) is replaced, a replacement receptacle at this outlet shall be one of the following:~~

- ~~(1) A listed outlet branch circuit type arc fault circuit interrupter receptacle~~
- ~~(2) A receptacle protected by a listed outlet branch circuit type arc fault circuit interrupter type receptacle~~
- ~~(3) A receptacle protected by a listed combination type arc fault circuit interrupter type circuit breaker~~

Exception: Section 210.12(D), Exception, shall not apply to replacement of receptacles.

410.2 Definition. The definition in this section shall apply only within this article.

Clothes Closet Storage Space. The volume bounded by the sides and back closet walls and planes extending from the closet floor vertically to a height of 1.8 m (6 ft) or to the highest clothes-hanging rod and parallel to the walls at a horizontal distance of 600 mm (24 in.) from the sides and back of the closet walls, respectively, and continuing vertically to the closet ceiling parallel to the walls at a horizontal distance of 300 mm (12 in.) or the width of the shelf, whichever is greater; for a closet that permits access to both sides of a hanging rod, this space includes the volume below the highest rod extending 300 mm (12 in.) on either side of the rod on a plane horizontal to the floor extending the entire length of the rod. See Figure 410.2.

*Exception: Where a shelf is not present in the area of wall above the closet's entrance opening or doorway extending from the top of such opening or doorway vertically to the ceiling, including the area of ceiling extending perpendicular from the area of wall directly above the closet's entrance opening or doorway to a horizontal distance of 300 mm (12 in.), **this** shall not be defined as closet storage space. See Figure 410.2 Exception.*

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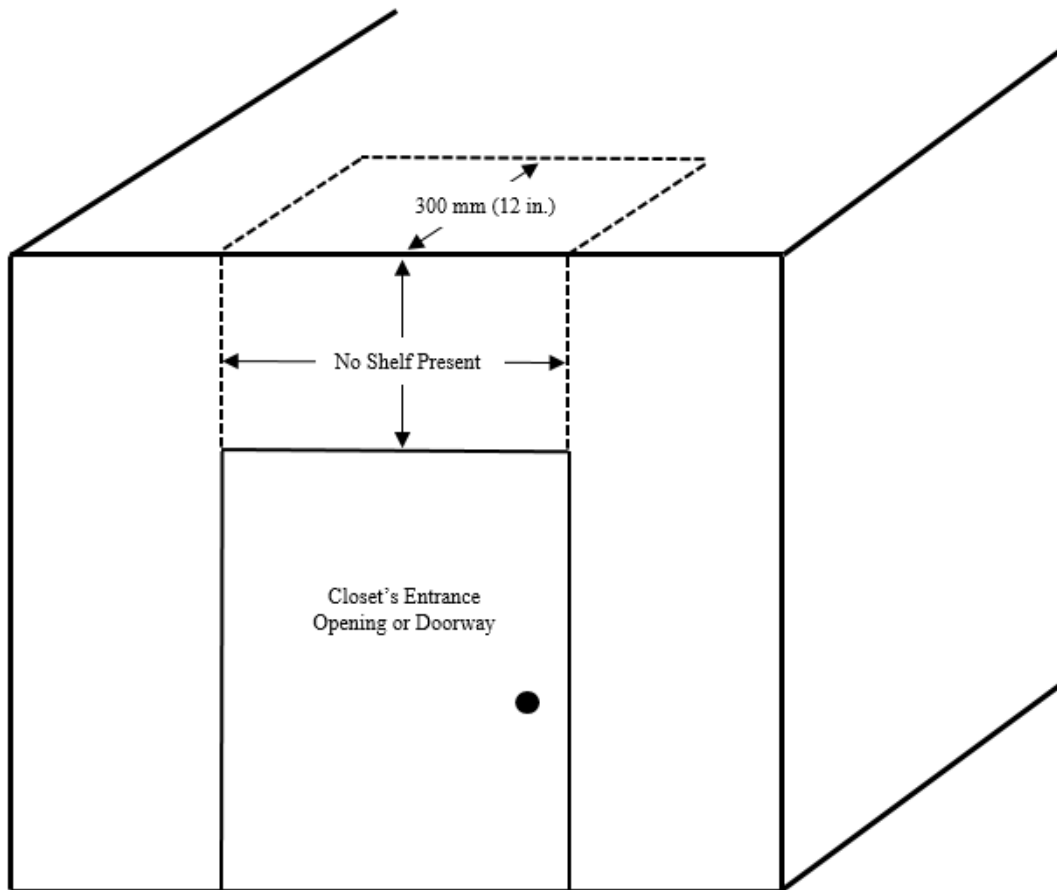


Figure 410.2 Exception Clothes Closet Storage Space Exception

410.16(C) Location. The minimum clearance between luminaires installed in clothes closets and the nearest point of a clothes closet storage space shall be as follows:

- (1) 300 mm (12 in.) for surface-mounted incandescent or LED luminaires with a completely enclosed light source installed on the wall above the door or on the ceiling.
- (2) 150 mm (6 in.) for surface-mounted fluorescent luminaires installed on the wall above the door or on the ceiling.
- (3) 150 mm (6 in.) for recessed incandescent or LED luminaires with a completely enclosed light source installed in the wall or the ceiling.
- (4) 150 mm (6 in.) for recessed fluorescent luminaires installed in the wall or the ceiling.
- (5) Surface-mounted fluorescent or LED luminaires shall be permitted to be installed within the clothes closet storage space where identified for this use.
- (6) LED luminaires with a completely enclosed light source or fluorescent luminaires shall be permitted to be installed within the area defined in 410.2 Exception.

555.10(3) The signs shall state “WARNING — POTENTIAL SHOCK HAZARD — ELECTRICAL CURRENTS MAY BE PRESENT IN THE WATER — NO SWIMMING.”

555.35(A)(3) Feeder and Branch Circuit Conductors with GFPE. Feeder and branch-circuit conductors that are installed on docking facilities shall be provided with GFPE set to open at currents not exceeding 100 milliamperes for feeders and 30 milliamperes for branch circuits. Coordination with downstream GFPE shall be permitted at the feeder overcurrent device.

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Exception to (3): Transformer secondary conductors of a separately derived system that do not exceed 3 m (10 ft) and are installed in a raceway shall be permitted to be installed without ground-fault protection. This exception shall also apply to the supply terminals of the equipment supplied by the transformer secondary conductors.

680.4 Inspections After Installation. ~~(Deleted) The authority having jurisdiction shall be permitted to require periodic inspection and testing.~~

680.21(D) Pool Pump Motor Replacement. ~~Where a pool pump motor in 680.21(C) is replaced for maintenance or repair, the replacement pump motor shall be provided with ground fault circuit interrupter protection. Existing Pool Pump Motors, Branch-Circuits, and Overcurrent Protection.~~

(1) Pool Pump Motor Replacement. Where a pool pump motor in 680.21(C) is replaced for maintenance or repair, the replacement pump motor shall be provided with ground-fault circuit-interrupter protection.

(2) Existing Pool Pump Motor Branch Circuit and Overcurrent Protection. All branch circuits and overcurrent devices that supply power to a pool pump motor by direct connection or outlet shall comply with the provisions of 680.21(C) when the branch circuits or overcurrent devices are altered, installed, modified, relocated, repaired, or replaced.

695.2 Definitions. The definitions in this section shall only apply within this article.

Fault-Tolerant External Control Circuits. Those control circuits either entering or leaving the fire pump controller enclosure, which if broken, disconnected, or shorted will not prevent the controller from starting the fire pump from all other internal or external means and may cause the controller from starting the fire pump from all other internal or external means and may cause the controller to start the pump under these conditions.

On-Site Power Production Facility. The normal supply electric power for the site that is expected to be constantly producing power.

On-Site Standby Generator. A facility producing electric power on site as the alternate supply of electric power. It differs from an on-site power production facility in that it is not constantly producing power.

Reliable Source of Power. A source of power that possesses all of the following characteristics:

(1) The electric utility supplying the power has not conducted any intentional shutdowns longer than 10 continuous hours in the year prior to the plan submittal and is verified in writing by that electric utility.

(2) The source of power is not supplied by overhead conductors within 60 feet of the building(s) equipped with fire pump(s).

(3) Only the disconnect switches and overcurrent protection devices permitted in Article 695 and NFPA 20-2013 section 9.3.2 are installed in the normal source of power to the fire pump controller.

695.3 Power Source(s) for Electric Motor-Driven Fire Pumps.

Electric motor-driven fire pumps shall have a reliable source of power.

Informational Note: ~~See Sections 9.3.2 and A.9.3.2 from NFPA 20-2019, Standard for the Installation of Stationary Pumps for Fire Protection, for guidance on the determination of power source reliability.~~