



Electrical Provisions for Builders

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Course Information

Training Provider:
Florida Home Builders Association
2600 Centennial Place Tallahassee, FL 32308
Phone: (850)402-1849
FHBA.com
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Instructor: Shane Gerwig, southeastcode@gmail.com



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Today's Training is Made Possible Through



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FBC, Building: Scope and Administration

101.2 Scope: The provisions of this code shall apply to the construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or any appurtenances connected or attached to such buildings or structures.

Exception 1: Detached one- and two-family dwellings and multiple single-family dwellings (townhouses) not more than three stories above grade plane in height with a separate means of egress, and their accessory structure not more than three stories above grade plane in height, shall comply with the Florida Building Code, Residential.



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Scope and Administration

R101.2 Scope: The provisions of the Florida Building Code, Residential shall apply to the construction, alteration, movement, enlargement, replacement, repair, equipment, use and occupancy, location, removal and demolition of detached one- and two-family dwellings and townhouses not more than three stories above grade plane in height with a separate means of egress and their accessory structures not more than three stories above grade plane in height.



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Scope and Administration

E3401.1 Applicability: Electrical systems, equipment and components for buildings under the scope of this code shall comply with the applicable provisions of NFPA 70, National Electrical Code



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Scope and Administration

E3401.4 Additions and Alterations: Any addition or alteration to an existing electrical system shall be made in conformity to the provisions of the Florida Building Code, Existing Building and NFPA 70, National Electrical Code.



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Required Inspections

110.3 Required Inspections:

1. **Underground Inspection:** To be made after trenches or ditches are excavated, conduit or cable installed, and before any backfill is put in place.
2. **Rough-in Inspection:** To be made after the roof, framing, fire blocking and bracing is in place and prior to the installation of wall or ceiling membranes.
3. **Final Inspection:** To be made after the building is complete, all required electrical fixtures are in place and properly connected or protected, and the structure is ready for occupancy.



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Required Inspections

112.1 Connection of Service Utilities: A person shall not make connections from a utility, source of energy, fuel or power to any building or system that is regulated by this code for which a permit is required, until released by the building official.

112.2 Temporary Connection: The building official shall have the authority to authorize the temporary connection of the building or system to the utility, source of energy, fuel or power.



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Underground Inspection

300.5



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	Location of Wiring Method or Circuit	Direct Burial Cables or Conductors		Nonmetallic Raceways Listed for Direct Burial Without Concrete Encasement or Other Approved Raceways	
		mm	in.	mm	in.
	Most Locations Not Specified Below	600	24	450	18
	In trench below 50mm (2in.) thick concrete or equivalent	450	18	300	12
	Under a building	0	0 (in raceway or Type MC or Type M1 cable identified for direct burial)	0	0
	One and two-family dwelling driveways and outdoor parking areas	450	18	450	18

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Underground Inspection

352.24 Bends — How Made: Bends shall be so made that the conduit will not be damaged and the internal diameter of the conduit will not be effectively reduced. Field bends shall be made only with identified bending equipment. The radius of the curve to the centerline of such bends shall not be less than shown in Table 2, Chapter 9.



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Rough-in Inspection

300.4 Protection Against Physical Damage: Where subject to physical damage, conductors, raceways, and cables shall be protected.

- Nail plates are required when NM cable is within 1 1/4" of the edge of a framing member.



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Rough-in Inspection

334.30 Securing and Supporting: Nonmetallic-sheathed cable shall be supported and secured by staples; cable ties listed and identified for securement and support; or straps, hangers, or similar fittings designed and installed so as not to damage the cable, at intervals not exceeding 1.4 m (4 1/2 ft) and within 300 mm (12 in.) of every cable entry into enclosures such as outlet boxes, junction boxes, cabinets, or fittings.

Flat cables shall not be stapled on edge.



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Rough-in Inspection

300.21 Spread of Fire or Products of Combustion: Electrical installations in hollow spaces, vertical shafts, and ventilation or air-handling ducts shall be made so that the possible spread of fire or products of combustion will not be substantially increased. Openings around electrical penetrations into or through fire-resistant-rated walls, partitions, floors, or ceilings shall be fire stopped using approved methods to maintain the fire resistance rating.



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Rough-in Inspection

314.23 Supports: Enclosures within the scope of this article shall be supported in accordance with one or more of the provisions in 314.23 (A) through (H).



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Rough-in Inspection

314.23 Supports:

(E) Raceway-Supported Enclosure, Without Devices, Luminaires, or Lampholders: An enclosure that does not contain a device(s), other than splicing devices, or supports a luminaire(s), a lampholder, or other equipment and is supported by entering raceways shall not exceed 1650 cm³ (100 in.³) in size. It shall have threaded entries or identified hubs. It shall be supported by two or more conduits threaded wrench tight into the enclosure or hubs. Each conduit shall be secured within 900 mm (3 ft) of the enclosure, or within 450 mm (18 in.) of the enclosure if all conduit entries are on the same side.



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Rough-in Inspection

314.23 Supports:

(F) Raceway-Supported Enclosures, with Devices, Luminaires, or Lampholders: An enclosure that contains a device(s), other than splicing devices, or supports a luminaire(s), a lampholder, or other equipment and is supported by entering raceways shall not exceed 1650 cm³ (100 in.³) in size. It shall have threaded entries or identified hubs. It shall be supported by two or more conduits threaded wrench tight into the enclosure or hubs. Each conduit shall be secured within 450 mm (18 in.) of the enclosure.



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Rough-in Inspection

314.20 Flush-Mounted Installations: Installations within or behind a surface of concrete, tile, gypsum, plaster, or other noncombustible material, including boxes employing a flush type cover or faceplate, shall be made so that the front edge of the box, plaster ring, extension ring, or listed extender will not be set back of the finished surface more than 6 mm (1/4 in.). Installations within a surface of wood or other combustible surface material, boxes, plaster rings, extension rings, or listed extenders shall extend to the finished surface or project therefrom.



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Rough-in Inspection

314.16 Number of Conductors in Outlet, Device, and Junction Boxes, and Conduit Bodies: Boxes and conduit bodies shall be of an approved size to provide free space for all enclosed conductors. In no case shall the volume of the box, as calculated in 314.16(A), be less than the fill calculation as calculated in 314.16(B). The minimum volume for conduit bodies shall be as calculated in 314.16(C).



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Rough-in Inspection

210.11 Branch Circuits Required: Small-Appliance Branch Circuits: In addition to the number of branch circuits required by other parts of this section, **two or more** 20-ampere small-appliance branch circuits shall be provided for all receptacle outlets specified by 210.52(B).



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Rough-in Inspection

210.11 Branch Circuits Required: Laundry Branch Circuits: In addition to the number of branch circuits required by other parts of this section, at least **one** additional 20-ampere branch circuit shall be provided to supply the laundry receptacle outlet(s) required by 210.52(F). This circuit shall have no other outlets.



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Rough-in Inspection

210.11 Branch Circuits Required: Bathroom 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 provided to supply the bathroom(s) receptacle outlet(s). Such circuits shall have no other outlets.



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Rough-in Inspection

210.11 Branch Circuits Required: 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 in attached garages and in detached garages with electric power. This circuit shall have no other outlets.



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Rough-in Inspection

210.52 Dwelling Unit Receptacle Outlets: (A) General Provisions: In every kitchen, family room, dining room, living room, parlor, library, den, sunroom, bedroom, recreation room, or similar room or area of dwelling units, receptacle outlets shall be installed in accordance with the general provisions specified in 210.52(A)(1) through (A)(4).



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Rough-in Inspection

210.52 Dwelling Unit Receptacle Outlets: (2) Wall Space: As used in this section, a wall space shall include the following:

- Any space 600 mm (2 ft) or more in width (including space measured around corners) and unbroken along the floor line
- The space occupied by fixed panels in walls, excluding sliding panels
- The space afforded by fixed room dividers
- Receptacle outlets in floors shall not be counted as part of the required number of receptacle outlets unless located within 450mm (18 in.) of the wall.



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Rough-in Inspection

210.52 Dwelling Unit Receptacle Outlets: (4) Countertop and Similar Work Surface Receptacle Outlets: Receptacles installed for countertop and similar work surfaces as specified in 210.52(C) shall not be considered as the receptacle outlets required by 210.52(A).



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Rough-in Inspection

210.52 Dwelling Unit Receptacle Outlets: (2) 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.

(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 is measured from the connected perpendicular wall.



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Rough-in Inspection

210.52 Dwelling Unit Receptacle Outlets: (D) Bathrooms: At least one receptacle outlet shall be installed in bathrooms within 900 mm (3 ft) of the outside edge of each basin.



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Rough-in Inspection

210.52 Dwelling Unit Receptacle Outlets: (E) Outdoor Outlets

(1) One-Family and Two-Family Dwellings: For a one-family dwelling and each unit of a two-family dwelling that is at grade level, at least one receptacle outlet readily accessible from grade and not more than 2.0 m (6 1/2 ft) above grade level shall be installed at the front and back of the dwelling.



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Rough-in Inspection

210.52 Dwelling Unit Receptacle Outlets:

(3) **Balconies, Decks, and Porches:** Balconies, decks, and porches that are attached to the dwelling unit and are accessible from inside the dwelling unit shall have at least one receptacle outlet accessible from the balcony, deck, or porch. The receptacle outlet shall not be located more than 2.0 m (6 1/2 ft) above the balcony, deck, or porch walking surface.



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Rough-in Inspection

210.52 Dwelling Unit Receptacle Outlets:

(F) **Laundry Areas:** In dwelling units, at least one receptacle outlet shall be installed in areas designated for the installation of laundry equipment.

(1) **Garages:** In each attached garage and in each detached garage with electric power, at least one receptacle outlet shall be installed in each vehicle bay and not more than 1.7 m (5 1/2 ft) above the floor.



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Rough-in Inspection

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

1) **Habitable Rooms:** At least one wall switch-controlled lighting outlet shall be installed in every habitable room, kitchen, and bathroom.



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Rough-in Inspection

(2) **Additional Locations:** Additional lighting outlets shall be installed in accordance with the following:

- Hallways
- Stairways
- Garages
- Outdoor entrances and exits except vehicle door
- Attics, crawlspaces, and storage



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Pre-power Inspection

408.4 Field Identification Required: (A) Circuit Directory or Circuit Identification: Every circuit and circuit modification shall be legibly identified as to its clear, evident, and specific purpose or use. The identification shall include an approved degree of detail that allows each circuit to be distinguished from all others. Spare positions that contain unused overcurrent devices or switches shall be described accordingly. The identification shall be included in a circuit directory that is located on the face or inside of the panel door in the case of a panelboard and at each switch or circuit breaker in a switchboard or switchgear. No circuit shall be described in a manner that depends on transient conditions of occupancy.



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Pre-power Inspection

408.7 Unused Openings: Unused openings for circuit breakers and switches shall be closed using identified closures, or other approved means that provide protection substantially equivalent to the wall of the enclosure.



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Final Inspection

210.60

- Where one or more lighting outlet(s) are installed for interior stairways, there shall be a wall switch at each floor level, and landing level that includes an entryway, to control the lighting outlet(s) where the stairway between floor levels has six risers or more.
- Lighting outlets controlled in accordance with 210.70(A)(2)(3) shall not be controlled by use of dimmer switches unless they provide the full range of dimming control at each location.



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Final Inspection

210.8 GFCI Protection Required for Receptacle Outlets

- Bathrooms
- Garages
- Outdoors
- Crawlspace (Lighting also) / Unfinished areas of Basements
- Kitchen Counter
- Within Six Feet of Sinks
- Boathouses
- Laundry Areas
- Kitchen Dishwasher



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Final Inspection

210.12 AFCI Protection

- Kitchen and dining room
- Family and living rooms
- Parlors, dens, and libraries
- Bedrooms and closets
- Sunrooms and recreation rooms
- Hallways
- Laundry areas
- Not required in garages and outdoors



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Final Inspection

404.4 Damp or Wet Locations:

(A) **Surface-Mounted Switch or Circuit Breaker:** A surface mounted switch or circuit breaker shall be enclosed in a weatherproof enclosure or cabinet that complies with 312.2.

(B) **Flush-Mounted Switch or Circuit Breaker:** A flush mounted switch or circuit breaker shall be equipped with a weatherproof cover.

(C) **Switches in Tub or Shower Spaces:** Switches shall not be installed within tubs or shower spaces unless installed as part of a listed tub or shower assembly.



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Final Inspection

404.9 Provisions for General-Use Snap Switches:

(A) **Faceplates:** Faceplates provided for snap switches mounted in boxes and other enclosures shall be installed so as to completely cover the opening and, where the switch is flush mounted, seat against the finished surface.



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Final Inspection

406.12 Tamper-Resistant Receptacles: All 15- and 20-ampere, 125- and 250-volt nonlocking-type receptacles in the areas specified in 406.12(1) through (7) shall be listed tamper resistant receptacles.

(1) Dwelling units in all areas specified in 210.52 and 550.13



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Final Inspection

406.5 Receptacle Mounting: Receptacles shall be mounted in identified boxes or assemblies. The boxes or assemblies shall be securely fastened in place unless otherwise permitted elsewhere in this Code. Screws used for the purpose of attaching receptacles to a box shall be of the type provided with a listed receptacle, or shall be machine screws having 32 threads per inch or part of listed assemblies or systems, in accordance with the manufacturer's instructions.



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Final Inspection

406.5 Receptacle Mounting:

(A) Boxes That Are Set Back: Receptacles mounted in boxes that are set back from the finished surface as permitted in 314.20 shall be installed such that the mounting yoke or strap of the receptacle is held rigidly at the finished surface.

(B) Boxes That Are Flush: Receptacles mounted in boxes that are flush with the finished surface or project therefrom shall be installed such that the mounting yoke or strap of the receptacle is held rigidly against the box or box cover.



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Final Inspection

406.5 Receptacle Mounting:

(D) Position of Receptacle Faces: After installation, receptacle faces shall be flush with or project from faceplates of insulating material and shall project a minimum of 0.4 mm (0.015 in.) from metal faceplates.



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Final Inspection

406.5 Receptacle Mounting:

(E) **Receptacles in Countertops:** Receptacle assemblies for installation in countertop surfaces shall be listed for countertop applications.

(G) **Receptacle Orientation:** Receptacles shall not be installed in a face-up position in or on countertop surfaces or worksurfaces unless listed for countertop or work surface applications.



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Final Inspection

406.5 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 15- and 20-ampere, 125- and 250-volt nonlocking receptacles shall be a listed weather-resistant type.



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Final Inspection

406.5 Receptacles in Damp or Wet Locations:

(B) Wet Locations:

(1) **Receptacles of 15 and 20 Amperes in a Wet Location:** Receptacles of 15 and 20 amperes, 125 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 marked "extra duty."



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Final Inspection

406.5 Receptacles in Damp or Wet Locations:

(B) Wet Locations:

(C) Bathtub and Shower Space: Receptacles shall not be installed within or directly over a bathtub or shower stall.



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