

**TABLE 1-E**  
**Effective April 1, 2021**

The 2021 Oregon Electrical Specialty Code (OESC) is based on the 2020 edition of the National Fire Protection Association (NFPA) 70, National Electrical Code (NEC), approved as an American National Standard on August 25, 2019.

Amendments include the addition of code language developed by Oregon or the deletion of NFPA 70, NEC code language. Language contained in the NFPA 70, NEC not listed in this table has not been amended by Oregon.

See **OAR 918-305-0030** for other codes or publications that may impact electrical installations.

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**90.4 Enforcement. ...**

By special permission, the authority having jurisdiction may waive specific requirements in this *Code* or permit alternative methods where it is assured that equivalent objectives can be achieved by establishing and maintaining effective safety.

Requests for special permission shall be made in writing to the authority having jurisdiction. Special permission must be granted in writing by the authority having jurisdiction and shall be obtained prior to the start of the electrical installation.

This *Code* may require new products, constructions, or materials that may not yet be available at the time the *Code* is adopted. In such event, the authority having jurisdiction may permit the use of the products, constructions, or materials that comply with the most recent previous edition of this *Code* adopted by the jurisdiction.

Where the NEC requires electrical products to be “listed” or “labeled”, the words “listed” or “labeled” shall have the same meaning as “certified electrical product” under ORS 479.530.

The occupancy classification and use designations shall be established in accordance with the *Oregon Structural Specialty Code* (OSSC), as stated on the construction documents by the registered design professional and approved by the building official.

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**100** **Dormitory.** A space in a building where group sleeping accommodations are provided in one room, or in a series of closely associated rooms, for persons not members of the same family group, under joint occupancy and single management, as in college dormitories, or fraternity houses. (Source OSSC)

**Fire Protection System.** Approved devices, equipment and systems or combinations of systems used to detect a fire, activate an alarm, extinguish or control a fire, control or manage smoke and products of a fire or any combination thereof. (Source OSSC)

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**Reconditioned.** Electromechanical systems, equipment, apparatus, or components that are restored to operating conditions. This process differs from the normal servicing of equipment that remains within a facility, or replacement of listed equipment on a one-to-one basis.

Informational Note No.1: The term *reconditioned* is frequently referred to as *rebuilt*, *refurbished*, or *remanufactured*.

Informational Note No. 2: Used equipment that has been inspected, tested, or repaired with listed or recognized components, is not considered to be *reconditioned*.

Informational Note No. 3: See ANSI EERS 2018.

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**110.10 Circuit Impedance; Short-Circuit Current Ratings, and Other Characteristics. ...**

**Exception No. 1:** A temporary service may be energized without demonstrating compliance with this section. This exception is applied at the discretion of the supervising electrician.

**Exception No. 2:** Fault-current values provided by the serving utility may be used to satisfy the labeling requirements.

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**110.14 (D) Terminal Connection Torque.** Tightening torque values for terminal connections shall be as indicated on equipment or in installation instructions provided by the manufacturer. An approved means shall be used to achieve the indicated torque value. The permit holder is not required to demonstrate compliance with this section.

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**110.21 (A)(2) Reconditioned Equipment. ...**

Informational Note No. 4: Used equipment that has been inspected, tested, or repaired with listed or recognized components, is not considered to be *reconditioned*.

Informational Note No. 5: See ANSI EERS 2018.

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**110.24 (A) Field Marking. ...**

*Exception No. 1: A temporary service may be energized without demonstrating compliance with this section. This exception is applied at the discretion of the supervising electrician.*

*Exception No. 2: Fault-current values provided by the serving utility may be used to satisfy the labeling requirements.*

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**(B) Modifications. ...** *Exception: Not adopted by the State of Oregon. The field marking requirements in 110.24(A) and 110.24(B) shall not be required in industrial installations where conditions of maintenance and supervision ensure that only qualified persons service the equipment.*

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**110.26 (C)(3) Personnel Doors.** Where equipment rated 800 amperes or more that contains overcurrent devices, switching devices, or control devices is installed in structures other than one- and two-family dwellings and individual multifamily units and there is a personnel door(s) intended for entrance to and egress from the working space less than 7.6 m (25 ft) from the nearest edge of the working space, the door(s) shall open in the direction of egress and be equipped with ~~listed~~ panic hardware or ~~listed~~ fire exit hardware.

Informational Note: Additional construction requirements are located in Section 1010.1.10 of the OSSC. This section governs panic hardware listing and installation requirements. The following OSSC sections are not part of this code but are provided here for the reader's convenience.

**OSSC Section 1010.10.10.1**

**Installation.** Where panic or fire exit hardware is installed, it shall comply with the following:

1. Panic hardware shall be listed in accordance with UL 305.
2. Fire exit hardware shall be listed in accordance with UL 10C and UL 305.
3. The actuating portion of the releasing device shall extend not less than one-half of the door leaf width.
4. The maximum unlatching force shall not exceed 15 pounds (67 N).

**OSSC Section 1010.1.10.2**

**Balanced doors.** If balanced doors are used and panic hardware is required, the panic hardware shall be the push-pad type and the pad shall not extend more than one-half the width of the door measured from the latch side.

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**(D) Illumination.** Illumination of 10-foot candles average, measured at the floor, shall be provided for all working spaces about service equipment, switchgear switchboards, switchgear, panelboards, or motor control centers installed indoors. Control by automatic means shall not be permitted to control all illumination within the working spaces. Additional lighting outlets shall not be required where the work space is illuminated by an adjacent light source or as permitted by 210.70(A)(1), Exception No. 1, for switched receptacles.

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**110.31 (A)(4) Locks.** Doors shall be equipped with locks, and doors shall be kept locked, with access allowed only to qualified persons. Personnel doors shall open in the direction of egress and be equipped with ~~listed~~ panic hardware or ~~listed~~ fire exit hardware.

Informational Note: See the OESC Section 110.26(C)(3) amendment.

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**110.33 (A)(3) Personnel Doors.** Where there is a personnel door(s) intended for entrance to and egress from the working space less than 7.6 m (25 ft) from the nearest edge of the working space, the door(s) shall open in the direction of egress and be equipped with ~~listed~~ panic hardware or ~~listed~~ fire exit hardware.

Informational Note: See the OESC Section 110.26(C)(3) amendment.

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**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.

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.

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210.8

(A) **Dwelling Units.** All 125-volt, ~~single-phase, through 250 volt~~ 15- and 20-ampere receptacles installed in the locations specified in 210.8(A)(1) through (A)(4) ~~and supplied by single-phase branch circuits rated 150 volts or less to ground~~ shall have ground-fault circuit-interrupter protection for personnel.

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

~~*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 if the receptacle is labeled as "not GFCI protected."*~~

~~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).~~

~~*Exception to (2),(5),(6),(7),(10): GFCI protection shall not be required for a single receptacle serving an appliance or a duplex receptacle serving two appliances if all of the following conditions are met:*~~

- ~~*a. The appliance is located within a dedicated space.*~~
- ~~*b. In normal use the appliance is not easily moved or is fastened in place.*~~
- ~~*c. The receptacle is labeled as "not GFCI protected."*~~

~~*Receptacle(s) installed under the exception to 210.8(A)(2), (5), (6), (7), and (10) shall not be considered as meeting the requirements of 210.52(G).*~~

~~(A)(11) Not adopted by the State of Oregon. Indoor damp and wet locations.~~

**(B) Other than Dwelling Units.** All 125-volt, ~~single-phase, through 250 volt~~ 15- and 20-ampere receptacles ~~supplied by single-phase branch circuits rated 150 volts or less to ground, 50 amperes or less, and all receptacles supplied by three-phase branch circuits rated 150 volts or less to ground, 100 amperes or less,~~ installed in the locations specified in 210.8(B)(1) through (B)(12) shall have ground-fault circuit-interrupter protection for personnel.

~~(B)(6) Indoor damp and wet locations~~

~~(B)(8) Garages, accessory buildings, service bays, and similar areas other than vehicle exhibition halls and showrooms~~

~~(B)(11) Laundry areas.~~

~~*Exception to (11): GFCI protection shall not be required for a single receptacle serving an appliance or a duplex receptacle serving two appliances if all of the following conditions are met:*~~

- ~~*a. The appliance is located within a dedicated space.*~~
- ~~*b. In normal use the appliance is not easily moved or is fastened in place.*~~
- ~~*c. The receptacle is labeled as "not GFCI protected."*~~

**(C) Crawl Space Lighting Outlets.** GFCI protection shall be provided for lighting outlets not exceeding 120 volts installed in crawl spaces at or below grade level.

**(E) Equipment Requiring Servicing.** GFCI protection shall be provided for the receptacles required by 210.63.

~~*Exception: Receptacles installed indoors in dwelling units shall not be required to be ground-fault circuit-interrupter protected, unless otherwise required.*~~

**(F) Outdoor Receptacles-~~Outlets.~~** All outdoor ~~outlets~~ general-purpose receptacles for other than dwellings units, ~~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.

Informational Note: This requirement does not apply to specific-use receptacles that are regulated by other sections in this code such as 551.71.

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

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**210.12 (A) Dwelling Units.** All 120-volt, single phase, 15- and 20-ampere branch circuits supplying outlets or devices installed in dwelling unit kitchens, family rooms, dining rooms, living rooms, parlors, libraries, dens, bedrooms, sunrooms, recreation rooms, closets, hallways, alcoves, laundry areas, or similar rooms or areas shall be protected by any of the means described in 210.12(A)(1) through (6):

***Exception No. 1:*** *AFCI protection shall not be required for an individual branch circuit supplying a fire alarm system installed in accordance with 760.41(B) or 760.121(B). The branch circuit shall be installed in a metal raceway, metal auxiliary gutter, steel-armored cable, Type MC or Type AC, meeting the applicable requirements of 250.118, with metal boxes, conduit bodies, and enclosures.*

***Exception No. 2:*** *AFCI protection shall not be required on branch circuits supplying receptacles located in hallways, kitchens or laundry areas and GFCI protected receptacles installed in dining rooms.*

***Exception No. 3:*** *AFCI protection shall not be required for optional, dedicated outlets that supply equipment known to cause unwanted tripping of AFCI devices.*

***Exception No 4:*** *AFCI protection shall not be required for branch circuits that serve an appliance that is not easily moved or that is fastened in place.*

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**(B) Dormitory Units.** All 120-volt, single-phase, 15- and 20- ampere branch circuits supplying outlets and devices installed in dormitory unit bedrooms, living rooms, hallways, closets, ~~bathrooms~~, and similar rooms shall be protected by any of the means described in 210.12(A)(1) through (6).

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**(C) Guest Rooms, Guest Suites, and Patient Sleeping Rooms in Nursing Homes and Limited-Care Facilities.** ~~Not adopted by the State of Oregon. All 120-volt, single-phase, 15- and 20-ampere branch circuits supplying outlets and devices installed in guest rooms and guest suites of hotels and motels and patient sleeping rooms in nursing homes and limited-care facilities shall be protected by any of the means described in 210.12(A)(1) through (6).~~

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**(D) Branch Circuit Extensions or Modifications – Dwelling Units, and Dormitory Units, and Guest Rooms and Guest Suites.** Where branch circuit wiring for any of the areas specified in 210.12(A); ~~or (B) or (C is not adopted)~~, is modified, replaced, or extended, the branch circuit shall be protected by one of with 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 No. 1:*** *Extensions or modifications of existing circuits shall not require the installation of AFCI protection.*

***Exception No. 2:*** *Replacement or upgrading of a service or panelboard shall not require that existing circuits be protected by AFCI devices.*

***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) 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.*

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**210.52 (C)(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).

- (a) At least one receptacle outlet shall be provided for ~~the first 0.84 m<sup>2</sup> (9 ft<sup>2</sup>), or fraction thereof,~~ of the countertop or work surface. ~~A receptacle outlet shall be provided for every additional 1.7 m<sup>2</sup> (18 ft<sup>2</sup>), or fraction thereof, of the countertop or work surface.~~
- (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, building owner. The location of the receptacle outlets shall be in accordance with 210.52(C)(3).

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

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**(D) Bathrooms.** Unless prohibited in 406.9(C), 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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**(E)(3) Balconies, Decks, and Porches.** Balconies, decks, and porches that are within 102 mm (4 in.) horizontally of 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 (6½ ft) above the balcony, deck, or porch walking surface.

**Exception No. 1 to (3):** *Decks or porches located at grade level with an area of less than 20 sq. ft. are not required to have an additional receptacle installed.*

**Exception No. 2 to (3):** *Decks or porches located above grade level with a depth of 1 ft. or less are not required to have an additional receptacle installed.*

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**210.52** ~~**(F) Foyers.** Foyers that are not part of a hallway in accordance with 210.52(H) and that have an area that is greater than 5.6 m<sup>2</sup> (60 ft<sup>2</sup>) shall have a receptacle(s) located in each wall space 900 mm (3 ft) or more in width. Doorways, door-side windows that extend to the floor, and similar openings shall not be considered wall space.~~

**(I) Alcoves.** In dwelling units, alcoves shall have at least one receptacle installed. These outlets shall be in addition to the required hallway outlets.

As used in this subsection an Alcove is an area extending from, and returning to, the common wall of hallways, foyers, entries, and landings with a depth of not less than 2 ft. and a length of not less than 3 ft.

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**210.63** **(A) Heating, Air Conditioning, and Refrigeration Equipment Outlet.**

**Exception No. 1:** *A receptacle outlet shall not be required at one- and two-family dwellings for the service of evaporative coolers.*

**Exception No. 2:** *An additional receptacle outlet shall not be required to be installed when replacing existing HVAC equipment if a receptacle outlet is located on the same level and within 75 feet.*

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**210.65** **Meeting Rooms.** Entire section: Not adopted by the State of Oregon

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**225.36** **Type of Disconnecting Means.** The disconnecting means specified in 225.31 shall be comprised of a circuit breaker, molded case switch, general use switch, snap switch, or other approved means. Where applied in accordance with 250.32(B), Exception No. 1, the disconnecting means shall be suitable for use as service equipment.

**Exception:** *In single light pole installations that have the connections to the light pole circuit made in a location accessible only to qualified persons, recognized or certified in-line fuse holders shall be allowed, subject to special permission.*

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**230.40** **Number of Service-Entrance Conductor Sets. ...**

**Exception No. 3:** *A one-family dwelling unit and its accessory structures shall be permitted to have one set of service-entrance conductors run to each from a single service drop, set of overhead service conductors, set of under-ground service conductors, or service lateral. When there are continuous metallic paths bonded to the grounding system in the buildings involved, a disconnect, a grounded conductor and an equipment grounding conductor shall be installed to meet the provisions of Article 225, 230, and 250.*

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**230.43** **Wiring Methods for 1000 Volts, Nominal, or Less. ...**

**Exception:** *Items (13) and (15) are limited to traffic control devices and highway lighting poles.*

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**230.67** **Surge Protection.** Entire section: Not adopted by the State of Oregon

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**230.70** **(A)(1) Readily Accessible Location.**

**Exception:** *In existing installations where the service panel or meter base is being replaced, the panel and service disconnecting means may remain at the existing location if the following conditions exist:*

- (1) The existing service conductors are of sufficient ampacity to supply the load or the existing conduit is large enough to accommodate new conductors that are of sufficient size to supply the load.*
  - (2) All requirements of 110.26 and 240.24 are met. If the installation was made prior to July 1, 1996, the provisions of 240.24 (F) do not apply.*
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**230.71** **Maximum Number of Disconnects.** Each service shall have only one disconnecting means unless the requirements of 230.71(B) are met:

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**(A) General.** The service disconnecting means for each service permitted by 230.2, or for each set of service-entrance conductors permitted by 230.40, Exception No. 1, 3, 4, or 5, shall consist of not more than six switches or sets of circuit breakers, or a combination of not more than six switches and sets of circuit breakers, mounted in a single enclosure, in a group of separate enclosures, or in or on a switchboard or in switchgear. There shall be not more than six sets of disconnects per service grouped in any one location.

For the purpose of this section, disconnecting means installed as part of listed equipment and used solely for the following shall not be considered a service disconnecting means ...

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**230.71 (B) Two to Six Service Disconnecting Means.** Entire section: Not adopted by the State of Oregon.

**(B) Single-Pole Units.** Two or three single-pole switches or breakers, capable of individual operation, shall be permitted on multiwire circuits, one pole for each ungrounded conductor, as one multipole disconnect, provided they are equipped with identified handle ties or a master handle to disconnect all conductors of the service with no more than six operations of the hand.

Informational Note: See 408.36, Exception No. 1 and Exception No. 2, for service equipment in certain panelboards, and see 430.95 for service equipment in motor control centers.

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**230.85 Emergency Disconnects.** Entire section: Not adopted by the State of Oregon.

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**230.95 (C) Performance Testing.** The ground-fault protection system shall be performance tested when first installed on site. This testing shall be conducted by a qualified person(s) having proper training and experience required to perform and evaluate the results of such performance testing, using a test process of primary current injection, in accordance with instructions that shall be provided with the equipment. A written record of this testing shall be made, signed by the person(s) performing this test, and shall be available to the authority having jurisdiction.

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**240.67 (C) Performance Testing.** The arc energy reduction protection system shall be performance tested ~~primary current injection testing or another approved method~~ when first installed on site. The testing shall be conducted by a qualified person(s) having proper training and experience required to perform and evaluate the results of such performance testing, in accordance with instructions that shall be provided with the equipment.

A written record of this testing shall be made, signed by the person(s) performing this test, and shall be available to the authority having jurisdiction.

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**240.87 (C) Performance Testing.** The arc energy reduction protection system shall be performance tested ~~primary current injection testing or another approved method~~ when first installed on site. The testing shall be conducted by a qualified person(s) having proper training and experience required to perform and evaluate the results of such performance testing, in accordance with instructions that shall be provided with the equipment.

A written record of this testing shall be made, signed by the person(s) performing this test, and shall be available to the authority having jurisdiction.

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**250.24 (A)(1) General.**

**Informational Note:** See definitions of *Service Conductors, Overhead; Service Conductors, Underground; Service Drop;* and *Service Lateral* in Article 100.

**Exception:** When the electric utility has installed a ground fault protection system ahead of the customer's service equipment, no bonding or electrical connection from the grounding electrode system shall be made to the grounded service conductor on the load side of the utility ground fault sensing device. The neutral or grounded service conductor, however, shall be grounded on the line side of the first ground fault sensor in a manner otherwise required at the customer's service equipment. The grounding electrode conductor shall be run to an equipment grounding bus or terminal at the service equipment as long as the equipment grounding conductor and the grounded neutral conductor are not connected to each other at this point. The on-site ground fault test required by 230.95 shall not be performed prior to the above installation requirements. Warning signs shall be installed.

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**250.24 (B) Main Bonding Jumper.**

**Exception No. 3:** When the electric utility has installed a ground fault protection system ahead of the customer's service equipment and if the operation of the ground fault system relies on the absence of the main bonding jumper at the service equipment but includes an otherwise satisfactory main bonding jumper as a part of its sensing device, the main bonding jumper shall not be installed at the service equipment which would otherwise bond the grounded service conductor to the equipment ground. The on-site ground fault test required by 230.95 shall not be performed prior to the above installation requirements. Warning signs shall be installed.

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**250.52 (A)(3) Concrete-Encased Electrode.** A concrete-encased electrode shall consist of at least 6.0 m (20 ft) of either (1) or (2):...

Metallic components shall be encased by at least 50 mm (2 in.) of concrete and shall be located horizontally within that portion of a concrete foundation or footing that is in direct contact with the earth or within vertical foundations or structural components or members that are in direct contact with the earth. If multiple concrete-encased electrodes are present at a building or structure, it shall be permissible to bond only one into the grounding electrode system. Where an addition to a building or structure is remote from the service and the integrity of the grounding electrode system has been verified, connection of the remote concrete encased electrode is not required.

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**(B) Not Permitted for Use as Grounding Electrodes.** The following systems and materials shall not be used as grounding electrodes:

- (1) Metal underground gas piping systems
- (2) Aluminum
- (3) The structures and structural reinforcing steel described in 680.26(B)(1) and (B)(2)
- (4) In existing electrical installations, when a service change or upgrade occurs, an existing metal underground water pipe shall not be used unless the metal underground water pipe has been verified as suitable for continued use as a grounding electrode. An existing metal underground water pipe shall be bonded to the new grounding electrode system as required by 250.104(A).

Informational Note: See Chapter 6 of the Oregon Plumbing Specialty Code.

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**250.53 (A)(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
- (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:** A supplemental electrode shall not be required for a single-phase, 200 amps or less temporary service.*

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**250.94 (A) The Intersystem Bonding Termination Devices.** An intersystem bonding termination (IBT) or an exposed and supported length of #6 bare copper conductor for connecting intersystem bonding conductors shall be provided external to enclosures at the service equipment or metering equipment enclosure and at the disconnecting means for any additional buildings or structures. If an IBT is used it shall comply with the following:...

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**250.118 Types of Equipment Grounding Conductors. ...**

(14) Surface metal raceways listed for grounding.

Where metallic conduit is installed on roof tops, an equipment grounding conductor shall be provided within the raceway and sized per 250.122.

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**300.5 (G) Raceway Seals.** Conduits or raceways through which moisture may contact live parts shall be sealed or plugged at either or both ends. Spare or unused raceways shall also be sealed. ~~Sealants shall be identified for use with the cable insulation, conductor insulation, bare conductor, shield, or other components.~~

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**300.9 Raceways in Wet Locations Above grade.** Where raceways are installed in wet locations above grade, 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 raceways up to 8 ft in length installed solely to provide physical protection shall not be considered a wet location.*

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**311.40 Support.** Type MV cable terminated in equipment or installed in pull boxes or vaults shall be secured and supported by metallic or nonmetallic supports suitable to withstand the weight by cable ties ~~listed and identified for securement and support~~, or other approved means, at intervals not exceeding 1.5 m (5 ft) from terminations or a maximum of 1.8 m (6 ft) between supports.

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**314.27 (C) Boxes at Ceiling-Suspended (Paddle) Fan Outlets. ...**

~~Outlet boxes mounted in the ceilings of habitable rooms of dwelling occupancies~~ Where spare, separately switched, ungrounded conductors are provided to a ceiling-mounted outlet box, in a location acceptable for the installation of a ceiling-suspended (paddle) fan in one-family, two-family, or multifamily dwellings, the outlet box or outlet box system shall be complied with one of the following:(1) listed for the sole support of ceiling-suspended (paddle) fans.

(2) ~~An outlet box complying with the applicable requirements of 314.27 and providing access to structural framing capable of supporting of a ceiling suspended (paddle) fan bracket or equivalent~~

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**320.30 (A) General.** Type AC cable shall be supported and secured by staples; cable ties ~~listed and identified for securement and support~~; straps, hangers, or similar fittings; or other approved means designed and installed so as not to damage the cable.

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**330.30 (A) General.** Type MC cable shall be supported and secured by staples; cable ties ~~listed and identified for securement and support~~; straps, hangers, or similar fittings; or other approved means designed and installed so as not to damage the cable.

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**334.12 (A) Types NM and NMC.** Types NM and NMC cables shall not be permitted as follows:

(2) Exposed within a dropped or suspended ceiling cavity in other than one- and two-family and multifamily dwellings.

*Exception to (2): Types NM and NMC cables may be installed within a dropped or suspended ceiling cavity in structures other than one- and two-family and multifamily dwellings when installed in accordance with 334.15.*

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**334.15 (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, type 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, type RTRC marked with the suffix -XW, or other approved means extending at least 150 mm (6 in.) above the floor.

Type NMC cable installed in the 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.

Exposed nonmetallic sheathed cable shall be protected where it is installed horizontally less than 8 feet above the floor. Exposed nonmetallic sheathed cable less than 8 feet above the floor that enters the top or bottom of a panel board shall be protected from physical damage by conduit, raceway, ½-inch plywood, ½-inch drywall, or other approved means.

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~~(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 edge 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.

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**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 ½ 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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**336.10 Uses Permitted.** Type TC cable shall be permitted to be used as follows:

(9) ~~In one and two family dwelling units, Type TC-ER-JP cable containing both power and control conductors shall be permitted for branch circuits and feeders. Type TC-ER-JP cable used as interior wiring shall be installed per the requirements of Part II of Article 334 and where installed as exterior wiring shall be installed per the requirements of Part II of Article 340. ...~~

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**337.30 Securing and Supporting.** Type P cable shall be supported and secured by cable ties, ~~listed and identified for securement and support~~; straps, hangers, or similar fittings; or other approved means designed and installed so as not to damage the cable.

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**348.30 (A) Securely Fastened.** FMC shall be securely fastened in place by an approved means within 300 mm (12 in.) of each box, cabinet, conduit body, or other conduit termination and shall be supported and secured at intervals not to exceed 1.4 m (4½ ft). ~~Where used, cable ties shall be listed and be identified for securement and support.~~

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**350.30 (A) Securely Fastened.** LFMC shall be securely fastened in place by an approved means within 300 mm (12 in.) of each box, cabinet, conduit body, or other conduit termination and shall be supported and secured at intervals not to exceed 1.4 m (4½ ft). ~~Where used, cable ties shall be listed and be identified for securement and support.~~

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**356.30 356.30 Securing and Supporting. ...**

(1) Where installed in lengths exceeding 1.8 m (6 ft), the conduit shall be securely fastened at intervals not exceeding 900 mm (3 ft) and within 300 mm (12 in.) on each side of every outlet box, junction box, cabinet, or fitting. ~~Where used, cable ties shall be listed as suitable for the application and for securing and supporting.~~

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**362.30 (A) Securely Fastened.** ENT shall be securely fastened at intervals not exceeding 900 mm (3 ft). In addition, ENT shall be securely fastened in place within 900 mm (3 ft) of each outlet box, device box, junction box, cabinet, or fitting where it terminates. ~~Where used, cable ties shall be listed as suitable for the application and for securing and supporting.~~

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**392.30 (B) Cables and Conductors.** Cables and conductors shall be secured to and supported by the cable tray system in accordance with (1), (2), and (3), ~~and (4)~~ as applicable: ...

~~(4) Cable ties shall be listed and identified for the application and for securement and support.~~

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**393.14 (A) General Requirements.** Support wiring shall be installed in a neat and workmanlike manner. Cables and conductors installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable is not damaged by normal building use. Such cables shall be supported by straps, staples, hangers, cable ties ~~listed and identified for securement and support~~, or similar fittings designed and installed so as not to damage the cable.

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**394.12 Uses Not Permitted.** Concealed knob-and-tube wiring shall not be used in the following:

(5) Hollow spaces of walls, ceilings, and attics where such spaces are insulated by loose, rolled, or foamed-in-place insulating material that envelops the conductors

**Exception:** *The provisions of 394.12 shall not be construed to prohibit the installation of loose or rolled thermal insulating materials in spaces containing existing knob-and-tube wiring, provided all the following conditions are met:*

*(1) The visible wiring shall be inspected by a certified electrical inspector or a general supervising electrician employed by a licensed electrical contractor.*

*(2) All defects found during the inspection shall be repaired prior to the installation of insulation.*

*(3) Repairs, alterations or extensions of or to the electrical systems shall be inspected by a certified electrical inspector.*

*(4) The insulation shall have a flame spread rating not to exceed 25 and a smoke density not to exceed 450 when tested in accordance with ASTM E84-91A 2017 Edition. Foamed in place insulation shall not be used with knob-and-tube wiring.*

*(5) Exposed splices or connections shall be protected from insulation by installing flame resistant, non-conducting, open top enclosures which provide three inches, but not more than four inches side clearances, and a vertical clearance of at least four inches above the final level of the insulation.*

*(6) All knob-and-tube circuits shall have overcurrent protection in compliance with the 60-degree C column of Table 310.15(B)16 of NFPA 70-2017. Overcurrent protection shall be either circuit breakers or type S fuses. The type S fuse adapters shall not accept a fuse of an ampacity greater than permitted in 240.53.*

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**400.10 (A) Uses.** Flexible cords and flexible cables shall be used only for the following: ...

**(12)** Listed assemblies of fixtures and controllers, approved by the Federal Aviation Administration.

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**400.12 Uses not permitted.**

(5) Where concealed by walls, floors, or ceilings or located above suspended or dropped ceilings

*Exception No. 1 to (5): Flexible cord and flexible cable shall be permitted if contained within an enclosure for use in other Spaces Used for Environmental Air as permitted by 300.22(C)(3).*

*Exception No. 2 to (5): In other than Spaces Used for Environmental Air, cord sets and power-supply cords shall be permitted above accessible suspended or dropped ceilings if part of a listed assembly, other than a luminaire, and the cord length does not exceed 1.8 m (6 ft).*

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**406.4 (D)(4) Arc-Fault Circuit Interrupter Protection.** Not adopted by the State of Oregon.

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**406.9 (C) Bathtub and Shower Space.** Receptacles shall not be installed within or directly above a bathtub or shower stall, 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. The identified zone is all encompassing and shall include the space directly over the tub or shower stall.

*Exception: In bathrooms with less than the required zone the receptacle(s) shall be permitted to be installed opposite the bathtub rim or shower stall threshold on the farthest wall within the room.*

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**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 (4) and (7) shall be listed tamper-resistant receptacles. (406.12(5), (6) and (8) are not adopted by the State of Oregon)

- (1) Dwelling units, including attached and detached garages and accessory buildings to dwelling units, and common areas of multifamily dwellings in all areas specified in 210.52 and 550.13
  - (2) Guest rooms and guest suites of hotels, motels, and their common areas
  - (3) Child care facilities
  - (4) Preschools and elementary education facilities
  - (5) ~~Business offices, corridors, waiting rooms and the like in clinics, medical and dental offices and outpatient facilities~~
  - (6) ~~Subset of assembly occupancies described in 518.2 to include places of waiting transportation, gymnasiums, skating rinks, and auditoriums~~
  - (7) Dormitories
  - (8) ~~Assisted living facilities~~
- 

**408.8 Reconditioning of Equipment.** Reconditioning of equipment within the scope of this article shall be limited as described in 408.8(A) and (B). The reconditioning process shall use design qualified parts verified under applicable standards and be performed in accordance with any instructions provided by the manufacturer. If equipment has been damaged by fire, products of combustion, or water, it shall be specifically evaluated by its manufacturer, ~~or~~ a qualified testing laboratory, or the signing supervisor prior to being returned to service.

**(A) Panelboards.** Panelboards shall not be reconditioned. This shall not prevent the replacement of a panelboard within an enclosure. ~~In the event the replacement has not been listed for specific enclosure and the available fault current is greater than 10,000 amperes, the completed work shall be field labeled, and any previously applied listing marks on the cabinet that pertain to the panelboard shall be removed.~~

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**408.36 408.36 Overcurrent Protection.** In addition to the requirement of 408.30, a panelboard shall be protected by an overcurrent protective device having a rating not greater than that of the panelboard. This overcurrent protective device shall be located within or at any point on the supply side of the panelboard.

*Exception No. 1: Individual protection shall not be required for a panelboard used as service equipment with multiple disconnecting means in accordance with 230.71. In panelboards protected by three or more main circuit breakers or sets of fuses, the circuit breakers or sets of fuses shall not supply a second bus structure within the same panelboard assembly.*

*Exception No. 2: Individual protection shall not be required for a panelboard protected on its supply side by two main circuit breakers or two sets of fuses in other than service equipment, having a combined rating not greater than that of the panelboard. A panelboard constructed or wired under this exception shall not contain more than 42 overcurrent devices. For the purposes of determining the maximum of 42 overcurrent devices, a 2-pole or a 3-pole circuit breaker shall be considered as two or three overcurrent devices, respectively.*

*Exception No. 3: For existing panelboards, individual protection shall not be required for a panelboard used as service equipment for an individual residential occupancy.*

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**410.7 Reconditioned Equipment.** Not adopted by the State of Oregon.

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**410.69 Identification of Control Conductor Insulation.** Not adopted by the State of Oregon.

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**410.170 General.** Luminaires complying with Parts I, II, III, IV, V, VI, VII, IX, X, XI, and XII of this article shall be permitted to be used for horticultural lighting. Part XVI shall additionally apply to lighting equipment specifically identified for horticultural use and evaluated in accordance with the UL Product Spec category IFAU.

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**422.5 (A) General.** Appliances identified in 422.5(A)(1) through (A)(7) rated 150 volts or less to ground and 60 amperes or less, single- or 3-phase, shall be provided with Class A GFCI protection for personnel. Multiple Class A GFCI protective devices shall be permitted but shall not be required.

(6) Sump pumps and sewage pumps

Exception to (6): Receptacle ground-fault protection shall not be required for a single receptacle if the receptacle is labeled as "not GFCI protected."

~~(7) Dishwashers~~

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**422.34 Unit Switch(es) as Disconnecting Means.** A unit switch(es) with a marked-off position that is a part of an appliance and disconnects all ungrounded conductors shall be permitted as the disconnecting means required by this article where other means for disconnection are provided in occupancies specified in 422.34 (A) through (D). Unit switches on ranges, ovens and dishwashers shall not be considered the disconnect required by this section.

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**445.6 Listing (Generators).** Entire section: Not adopted by the State of Oregon.

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**445.18 (D) Emergency Shutdown in One- and Two-Family Dwelling units.** Not adopted by the State of Oregon.

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**450.43 (C) Locks.** Doors shall be equipped with locks, and doors shall be kept locked, with access being allowed only to qualified persons. Personnel doors shall open in the direction of egress and be equipped with ~~listed~~ fire exit hardware.

Informational Note: See the OESC Section 110.26(C)(3) amendment.

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**480.10 (E) Egress.** Personnel doors intended for entrance to, and egress from, rooms designated as battery rooms shall open in the direction of egress and shall be equipped with ~~listed~~ panic or ~~listed~~ fire exit hardware.

Informational Note: See the OESC Section 110.26(C)(3) amendment.

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**490.49 Reconditioned Switchgear.** Switchgear, or sections of switchgear, within the scope of this article shall be permitted to be reconditioned. The reconditioning process shall use design qualified parts verified under applicable standards and be performed in accordance with any instructions provided by the manufacturer. Reconditioned switchgear shall be listed or field labeled as *reconditioned*, and previously applied listing marks, if any, within the portions reconditioned shall be removed. If equipment has been damaged by fire, products of combustion, or water, it shall be specifically evaluated by its manufacturer, ~~or~~ a qualified testing laboratory, or the signing supervisor prior to being returned to service.

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**500.8 Equipment.**

**(A) Suitability.** "Suitability of identified equipment" shall be determined by one of the following: as used in 500.8 (A) means that equipment meets the requirements of ORS 479.760.

~~(1) Equipment listing or labeling~~

~~(2) Evidence of equipment evaluation from a qualified testing laboratory or inspection agency concerned with product evaluation~~

~~(3) Evidence acceptable to the authority having jurisdiction such as a manufacturer's self-evaluation or an owner's engineering judgment.~~

~~Informational Note: Additional documentation for equipment may include certificates demonstrating compliance with applicable equipment standards, indicating special conditions of use, and other pertinent information. Guidelines for certificates may be found in ANSI/ISA 12.00.02, Certificate Standard for AEx Equipment for Hazardous (Classified) Locations.~~

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**517.10 (B) Not Covered.** Part II shall not apply to the following:

- (1) Business offices, corridors, waiting rooms, and the like in clinics, medical and dental offices, and outpatient facilities.
- (2) Areas of nursing homes and limited care facilities wired in accordance with Chapters 1 through 4 of this *Code* where these areas are used exclusively as patient sleeping rooms.
- (3) Areas used exclusively for any of the following purposes:
  - a. Intramuscular injections (immunizations)
  - b. Psychiatry and psychotherapy
  - c. Alternative medicine (i.e. Acupuncture, Chiropractic therapy, etc.)
  - d. Optometry
  - e. Massage therapy
  - f. Physical therapy
  - g. Audiology

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**517.13 (A) Wiring Methods. ...**

Exception: Type PVC conduit may be installed underground or embedded in concrete in Dental Clinics located in type B occupancies, provided that a wire type equipment grounding conductor is installed to meet the requirements of 250.118 and a separate insulated equipment grounding conductor is installed to meet the requirements of 517.13(B).

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**517.17 (D) Testing.** When equipment ground-fault protection is first installed, each level shall be performance tested to ensure compliance with 517.17(C). This testing shall be conducted by a ~~qualified~~ person(s) having proper training and experience required to perform and evaluate the results of such performance testing, using a test process in accordance with the instruction provided with the equipment. A written record of this testing shall be made, signed by the person(s) performing this test, and shall be available to the authority having jurisdiction.

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**518.6 Illumination.** ~~Not adopted by the State of Oregon. Illumination shall be provided for all working spaces about fixed service equipment, switchboards, switchgear, Panelboards, or motor control centers installed outdoors that serve assembly occupancies. Control by automatic means only shall not be permitted. Additional lighting outlets shall not be required where the workspace is illuminated by an adjacent light source.~~

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**547.5 (G) Receptacles.** All 125-volt, single phase, 15- and 20-ampere general-purpose receptacles installed in the locations listed in (1) through (4) shall have ground-fault circuit-interrupter protection:

GFCI protection shall not be required for a single receptacle supplying a dedicated load and marked “not GFCI protected”. A GFCI protected receptacle shall be located within 900 mm (3 ft) of the non-GFCI protected receptacle.

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**547.10 (A) Where Required.** Equipotential planes shall be installed where required in (A)(1) and (A)(2).

- (1) **Indoors.** Equipotential planes shall be installed in areas designated by the owner. Where installed where required equipotential planes shall comply with in-547.10(A)(1) and (A)(2).
- (2) **Outdoors.** Equipotential planes shall be installed in concrete slabs where metallic equipment is located that may become energized and is accessible to livestock.

The equipotential plane shall encompass the area where the livestock stands while accessing metallic equipment that may become energized.

Exception to (A)(1) and (A)(2): Where the electrical system is designed by a professional engineer, as defined in ORS 672.002(2), and the electrical equipment is isolated and not accessible to livestock, and non-electrical metallic equipment is not likely to become energized.

Informational Note: See the definition of equipment in Article 100.

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**555.35 (A)(3) Feeder and Branch-Circuit Conductors with GFPE. ...**

Exception No. 1 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.

Exception No. 2 to (3): Modifications to existing systems shall not require GFPE.

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**590.8 Overcurrent Protective Devices.**

(A) **Where reused.** Where overcurrent protective devices that have been previously used are installed in a temporary installation, these overcurrent protective devices shall be ~~examined to ensure these devices have been~~ properly installed, ~~properly~~ and maintained, ~~and there is with~~ no evidence of impending failure.

(B) **Service Overcurrent Protective Devices.** ~~Not adopted by the State of Oregon. Overcurrent protective devices for solidly grounded wye electrical services of more than 150 volts to ground but not exceeding 1000 volts phase to phase shall be current limiting.~~

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**600.33 (B)(1)** Wiring shall be installed and supported in a neat and workmanlike manner. Cables and conductors installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable is not damaged by normal building use. The cable shall be supported and secured at intervals not exceeding 1.8 m (6 ft). Such cables shall be supported by straps, staples, hangers, cable ties, or similar fittings designed and installed so as not to damage the cable. The installation shall also comply with 300.4(D).

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**620.1 Scope. ...**

Informational Note No. 1: For further information, see ~~ASME A17.1 2010/CSA B44-10, Safety code for Elevators and Escalators.~~ the Oregon Elevator Specialty Code as adopted in OAR chapter 918, division 400.

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**620.2** Separate Branch Circuit. A circuit dedicated solely for the purpose intended without other devices, systems or equipment connected to the circuit.

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**620.5 Working Clearances. ...**

Where conditions of maintenance and supervision ensure that only qualified persons examine, adjust, service, and maintain the equipment, the clearance requirements of 110.26(A) shall not be required where any of the conditions in 620.5(A) through (D) are met. Where machine room doors swing inward, the arc of the door shall not encroach on those clearances required by 110.26(A).

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**620.6 Ground-Fault Circuit-Interrupter Protection for Personnel. ...**

~~A permanently installed sump pump shall be permanently wired or shall be supplied by a single receptacle that is ground-fault circuit interrupter protected.~~

A single receptacle supplying a permanently installed sump pump shall not require ground-fault circuit-interrupter protection.

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**620.11 Insulation of Conductors.** The insulation of conductors shall comply with 620.11(A) through (D).

(A) **Hoistway Door Interlock Wiring.** The conductors to the hoistway door interlocks from the hoistway riser shall be shall be one of the following:

- (1) Flame retardant and suitable for temperature of not less than 200°C (392°F). Conductors shall be Type SF or equivalent.
- (2) Physically protected using an approved method, such that the conductor assembly is flame retardant and suitable for a temperature of not less than 200°C (392°F).

**Exception:** *Where not required by the Oregon Elevator Specialty Code (ASME A17.1).*

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**620.37 (A) Uses Permitted. ...**

Conduits and raceways necessary for the connection of such devices shall only enter hoistways and machine rooms to the extent necessary to connect the device(s) attached thereto.

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**620.51 (B) Operation.** No provision shall be made to open or close this disconnecting means from any other part of the premises. If sprinklers are installed in hoistways, machine rooms, control rooms, machinery spaces, or control spaces, the disconnecting means shall be permitted to automatically open the power supply to the affected elevator(s) prior to the application of water. No provision shall be made to automatically close this disconnecting means. Power shall only be restored by manual means.

Where provided, this disconnecting means shall be located in the elevator control room or control space. The installation shall comply with the requirements of NFPA 72 as adopted in OAR 918-306-0005.

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**(C) Location.** The disconnecting means shall be located where it is readily accessible to qualified persons. Where machine rooms are provided, the disconnecting means required by 620.51 shall be located within 610 mm (24 inches) of the open side of the machine room access door. Where more than one disconnect is required for a multi-car group, the disconnects shall be adjacent to each other with the first disconnect located within 610 mm (24 inches) of the open side of the machine room access door. Measurement shall be taken from the edge of the disconnect nearest the machine room door.

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**(C)(4) On Platform Lifts and Stairway Chairlifts.** On platform lifts and stairway chairlifts, the disconnecting means shall be located within sight of the motor controller or lift and within 1.83 m (six feet) of the motor controller. The disconnecting means shall not be located in the runway enclosure.

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**(C)(5) Residential installations.** A disconnecting means shall be required to be placed within sight of the controller or lift. Where such devices are supplied with flexible cord and plug type connectors, the supply receptacle shall be switched by the disconnecting means. The disconnecting means does not require overcurrent protection, provided such protection is supplied by the branch circuit overcurrent device. In all other respects the disconnecting means shall comply with the requirements of this section.

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**620.86 Flexible Metal Conduit.** Where flexible metal conduit is utilized between the disconnecting means specified in 620.51 and the elevator controller, an equipment grounding conductor shall be provided within the raceway and sized per 250.122 and Table 250.122.

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**625.42 Rating, ...**

Informational Note: See Statewide Alternate Method 09-01 for the use of a demand factor table for calculating electrical vehicle charging equipment services and feeders.

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**645.2 Critical Operations Data System.** An information technology equipment system that has been designated by the building owner as requires requiring continuous operation. ~~for reasons of public safety, emergency management, national security, or business continuity.~~

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**645.10 Disconnecting Means.** An approved means shall be provided to disconnect power to all electronic equipment in the information technology equipment room or in designated zones within the room. There shall also be a similar approved means to disconnect the power to all dedicated HVAC systems serving the room or designated zones and shall cause all required fire/smoke dampers to close. The disconnecting means shall be grouped and identified and shall be readily accessible at the principal exit doors, or shall comply with either 645.10(A) or (B).

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**670.6 Surge Protection.** Entire section: Not adopted by the State of Oregon. Industrial machinery with safety interlock control devices not effectively protected from voltage surges on the incoming supply circuit shall have surge protection installed.

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**680.4 Inspections After Installation.** Not adopted by the State of Oregon. The authority having jurisdiction shall be permitted to require periodic inspection and testing.

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**680.21 (D) Pool Pump Motor Replacement.** Not adopted by the State of Oregon. 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.

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**680.42 (B) Bonding.** [equipotential bonding not required where (1) through (4) are met:]

- (4) The top rim of the spa or hot tub shall be at least 710 mm (28 in.) above all perimeter surfaces that are within 760 mm (30 in.), measured horizontally from the spa or hot tub. The height of nonconductive external steps or deck for exit and entry to or exit from the self-contained spa shall not be used to reduce or increase this rim height measurement.

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**682.15 Ground-Fault Protection.** The GFCI requirements in this article, unless otherwise noted, shall be in addition to the requirements in 210.8. Ground-fault protection shall be provided in accordance with 682.15(A) ~~and (B)~~. The protection device shall be located not less than 300 mm (12 in.) above the established electrical datum plane.

~~(A) Outlets. Not adopted by the State of Oregon. Outlets supplied by branch circuits not exceeding 150 volts to ground and 60 amperes, single phase, shall be provided with ground fault circuit interrupter protection for personnel.~~

**(B) Feeder and Branch Circuits on Piers.** Feeder and branch-circuit conductors that are installed on piers shall be provided with ground-fault protection not exceeding 100–30 mA. Coordination with downstream ground-fault protection shall be permitted at the feeder overcurrent protective device.

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**690.12 Rapid Shutdown of PV Systems on Buildings.**

PV system circuits installed on or in buildings shall include a rapid shutdown function to reduce shock hazard for firefighters in accordance with 690.12(A) through (D). Where an addition to an existing system(s) on or in a building is installed, a rapid shutdown function shall be provided for the existing system(s) on or in the building. The provisions of 690.12(B)(2) shall not apply to the existing system(s).

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**690.47 Grounding Electrodes and Grounding Electrode Conductors.** Additional grounding electrodes shall be permitted to be installed in accordance with 250.52 and 250.54. Grounding shall be permitted to be connected directly to the PV module frame(s) or support structure. A grounding electrode conductor shall be sized according to 250.66, and shall not be smaller than 6 AWG copper or 4 AWG aluminum. ...

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**700 Emergency Systems.**

Building Officials and inspectors administering and enforcing the state building code under ORS 455.148 and 455.150, shall ensure compliance with Sections 700.32, 701.27, or 708.54 by verifying receipt of a certificate signed by the Engineer of Record or the Signing Supervisor stating that the proposed installation complies with the selective coordination requirements of this code.

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**700.3 (F) Temporary Source of Power for Maintenance or Repair of the Alternate Source of Power.** If the building owner deems it necessary and the emergency system relies on a single alternate source of power, which will be disabled for maintenance or repair, the emergency system shall include permanent switching means to connect a portable or temporary alternate source of power, which shall be available for the duration ...

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**700.32 Selective Coordination.** Emergency system(s) overcurrent devices shall be selectively coordinated with all supply side overcurrent protective devices.

For the purposes of this section, supply side overcurrent protection means those protective devices on the emergency system supply side and not on the normal power supply side. The protection shall be selectively coordinated using the higher of the normal power supply fault current levels or emergency system fault current levels. Overcurrent devices shall be selectively coordinated for .01 seconds and greater.

*Exception No. 1: Selective coordination shall not be required between two overcurrent devices located in series if no loads are connected in parallel with the downstream device.*

*Exception No. 2: The requirements for selective coordination shall meet the coordination requirements in effect at the time of the original installation when the installation is being altered, maintained or repaired. The ground fault sensing function of overcurrent protective devices will only be required to selectively coordinate with the ground fault sensing functions of other protective devices.*

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701.32	<p><b>Selective Coordination.</b> Legally required standby system(s) overcurrent devices shall be selectively coordinated with all supply side overcurrent protective devices.</p> <p><u>For the purposes of this section, supply side overcurrent protection means those protective devices on the emergency system supply side and not on the normal power supply side. The protection shall be selectively coordinated using the higher of the normal power supply fault current levels or emergency system fault current levels. Overcurrent devices shall be selectively coordinated for .01 seconds and greater.</u></p> <p><i>Exception No. 1:</i> <u>Selective coordination shall not be required between two overcurrent devices located in series if no loads are connected in parallel with the downstream device.</u></p> <p><i>Exception No. 2:</i> <u>The requirements for selective coordination shall meet the coordination requirements in effect at the time of the original installation when the installation is being maintained, altered or repaired. The ground fault sensing function of overcurrent protective devices will only be required to selectively coordinate with the ground fault sensing functions of other protective devices.</u></p>
702.4	<p><b>(B)(2) Automatic Transfer Equipment. ...</b></p> <p><i>Exception:</i> <u>In one- and two-family dwellings manual management of the connected load shall be permitted.</u></p>
702.7	<p><b>(A) Standby.</b> A sign shall be placed at the service-entrance equipment <del>for commercial and industrial installations that indicates the type and location of each on-site optional standby power source. A sign shall not be required for individual unit equipment for standby illumination.</del> <u>For one and two family dwelling units, a sign shall be placed at the disconnecting means required in 230.85 that indicates the location of each permanently installed on-site optional stand-by power source disconnect or means to shut down the prime mover as required in 445.18(D).</u></p>
708.1	<p><b>Scope. ...</b> <del>Critical operations areas and critical operations power systems are those systems so classed by municipal, state, federal, or other codes by any governmental agency having jurisdiction or by facility engineering documentation establishing the necessity for such a</del> <u>designated by the owner of the facility. A building official has no authority to designate or require designation of an area as requiring a critical operations power system. These Critical operations power systems can include but are not limited to power systems, HVAC, fire alarm, security, communications, and signaling for designated critical operations areas.</u></p>
708.54	<p><b>Selective Coordination.</b> Critical operations power system(s) overcurrent devices shall be selectively coordinated with all supply side overcurrent protective devices.</p> <p><u>For the purposes of this section, supply side overcurrent protection means those protective devices on the emergency system supply side and not on the normal power supply side. The protection shall be selectively coordinated using the higher of the normal power supply fault current levels or emergency system fault current levels. Overcurrent devices shall be selectively coordinated for .01 seconds and greater.</u></p> <p><i>Exception No. 1:</i> <u>Selective coordination shall not be required between two overcurrent devices located in series if no loads are connected in parallel with the downstream device.</u></p> <p><i>Exception No. 2:</i> <u>The requirements for selective coordination shall meet the coordination requirements in effect at the time of the original installation when the installation is being maintained, altered or repaired. The ground fault sensing function of overcurrent protective devices will only be required to selectively coordinate with the ground fault sensing functions of other protective devices.</u></p>
725.24	<p><b>Mechanical Execution of Work.</b> Class 1, Class 2, and Class 3 circuits shall be installed in a neat and workmanlike manner. Cables and conductors installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be supported by straps, staples, hangers, cable ties, or similar fittings designed and installed so as not to damage the cable. This installation shall also comply with 300.4 <u>and 300.11.</u></p>
760.24	<p><b>(A) [Mechanical Execution of Work] General.</b> Fire alarm circuits shall be installed in a neat workmanlike manner. Cables and conductors installed exposed on the surface of ceilings and sidewalls shall be supported by the building structure in such a manner that the cable will not be damaged by normal building use. Such cables shall be supported by straps, staples, cable ties, hangers, or similar fittings designed and installed so as not to damage the cable. The installation shall also comply with 300.4 <u>and 300.11.</u></p>



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**760.41 (B) Branch Circuit.** The branch circuit supplying the fire alarm equipment(s) shall supply no other loads. The location of the branch-circuit overcurrent protective device shall be permanently identified at the fire alarm control unit. The circuit disconnecting means shall have red identification, ~~shall be accessible only to qualified personnel,~~ and shall be identified as “FIRE ALARM CIRCUIT.” The red identification shall not damage the overcurrent protective devices or obscure the manufacturer’s markings. This branch circuit shall not be supplied through ground-fault circuit interrupters or arc-fault circuit-interrupters.

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**760.121 (B) Branch Circuit.** The branch circuit supplying the fire alarm equipment(s) shall supply no other loads. The location of the branch-circuit overcurrent protective device shall be permanently identified at the fire alarm control unit. The circuit disconnecting means shall have red identification, ~~shall be accessible only to qualified personnel,~~ and shall be identified as “FIRE ALARM CIRCUIT.” The red identification shall not damage the overcurrent protective devices or obscure the manufacturer’s markings. This branch circuit shall not be supplied through ground-fault circuit interrupters or arc-fault circuit-interrupters.

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**770.48 (B) Nonconductive Cables in Raceway.** Unlisted nonconductive outside plant optical fiber cables shall be permitted to enter the building from the outside and shall be permitted to be installed in any of the following raceways:

- (1) Intermediate metal conduit (IMC)
  - (2) Rigid metal conduit (RMC)
  - (3) Rigid polyvinyl chloride conduit (PVC)
  - (4) Electrical metallic tubing (EMT)
  - (5) Electrical Nonmetallic Conduit (ENT)
-