



210.8(A) GFCI Protection for Personnel

Dwelling unit GFCI protection has been expanded to all **125-volt through 250-volt receptacles** supplied by single-phase branch circuits rated 150 volts or less to ground installed in the specified areas of 210.8(A)

- *Previously was all **125-volt, single-phase, 15- and 20-ampere receptacles** installed in (10) specific locations (bathrooms, kitchens, laundry areas, etc.)*

- Addition of up to 250-volt receptacles and removing the amperage limitations of **15- and 20-amperes** will provide GFCI protection to most receptacles commonly used in the specified areas of 210.8(A) (*Dryer receptacle, etc.*)

- 250-volt rated receptacles present **similar shock hazards** and substantiation submitted for this change demonstrated the need for GFCI protection for greater the 125-volt rated receptacles

- Similar to 2017 *NEC* changes at 210.8(B)





210.8(F) GFCI for Outdoor Outlets

- GFCI protection is now required on **dwelling unit outdoor outlets** supplied by single-phase branch circuit rated 150 volts or less to ground, and 50 amperes or less
- This would include 240-volt HVAC unit “outlets”
- **Exemption** provided for branch circuit dedicated to **deicing and snow-melting equipment** and **outdoor lighting outlets** other than those covered in 210.8(C) (*crawl space lighting outlets*)
- Outdoor dwelling unit outlets typically serve loads that are comprised of 240-volt motor driven pumps or compressors that are in operation for many years without maintenance

210.8(F) GFCI PROTECTION FOR OUTDOOR OUTLETS





210.52(C)(2) Receptacles at Island and Peninsular Countertops

- For island and peninsular countertop and work surfaces, the horizontal measurement was replaced with a **square foot calculation** to determine the number of receptacles required
- Previously, a measurement was required across the countertop with at least one receptacle required to be installed at each island countertop space or peninsular countertop space with a long dimension of **600 mm (24 in.)** or greater and a short dimension of **300 mm (12 in.)** or greater
 - Historically, **only one receptacle outlet** has been required at an island and peninsular countertops regardless of the size of that island or peninsular
 - Changes to this section will required **more than one receptacle outlet** at larger kitchen islands and peninsulas



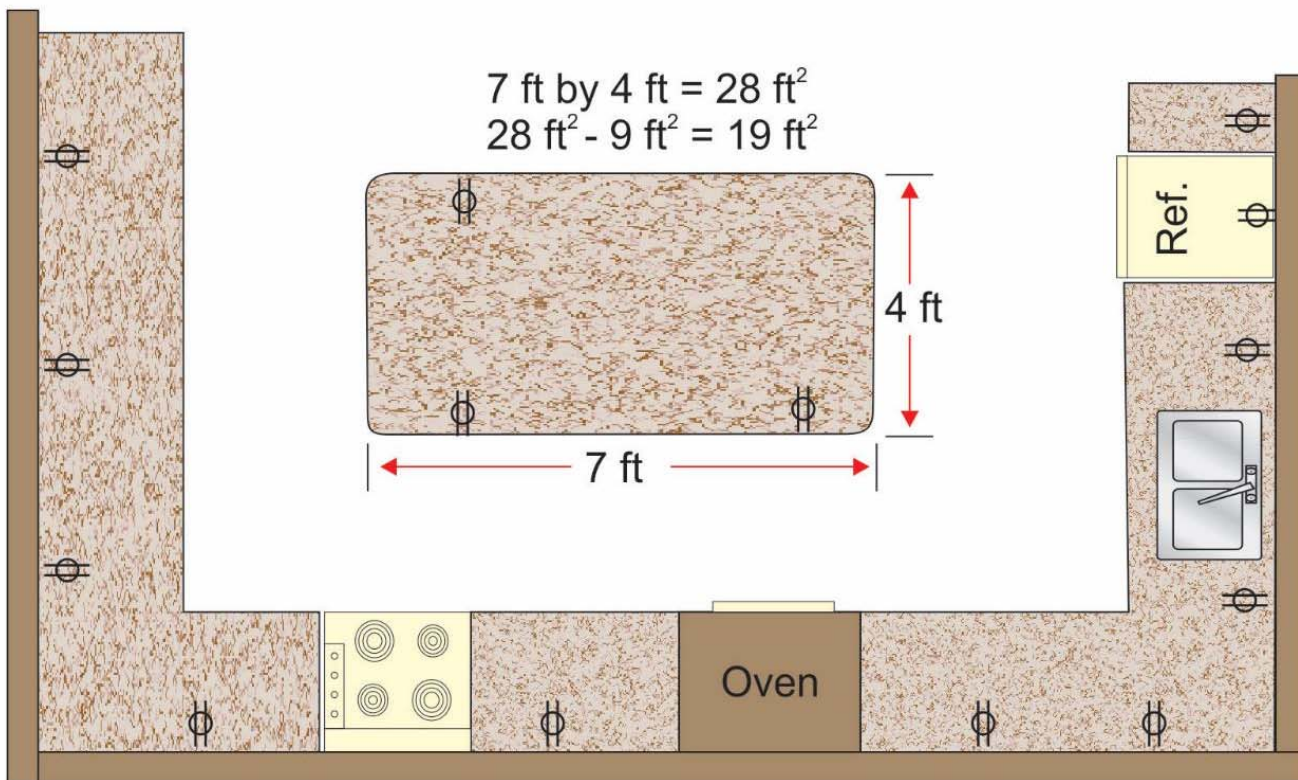
210.52(C)(2) Receptacles at Island and Peninsular Countertops (cont.)

- At least one receptacle is required to be provided for the **first 0.84 m² (9 ft²), or fraction thereof**, of the countertop or work surface
- An additional receptacle outlet is required for every **additional 1.7 m² (18 ft²), or fraction thereof**, of the countertop or work surface
- At least one receptacle outlet must be located **within 600 mm (2 ft)** of the outer end of a peninsular countertop or work surface
- A peninsular countertop measurements are taken from the **connected perpendicular wall** (see *TIA Log No. 1442*)

210.52(C)(2) Island and Peninsulars

At least one receptacle outlet shall be provided for the **first 0.84 m² (9 ft²), or fraction thereof**, of the countertop or work surface

A receptacle outlet shall be provided for **every additional 1.7 m² (18 ft²), or fraction thereof**, of the countertop or work surface



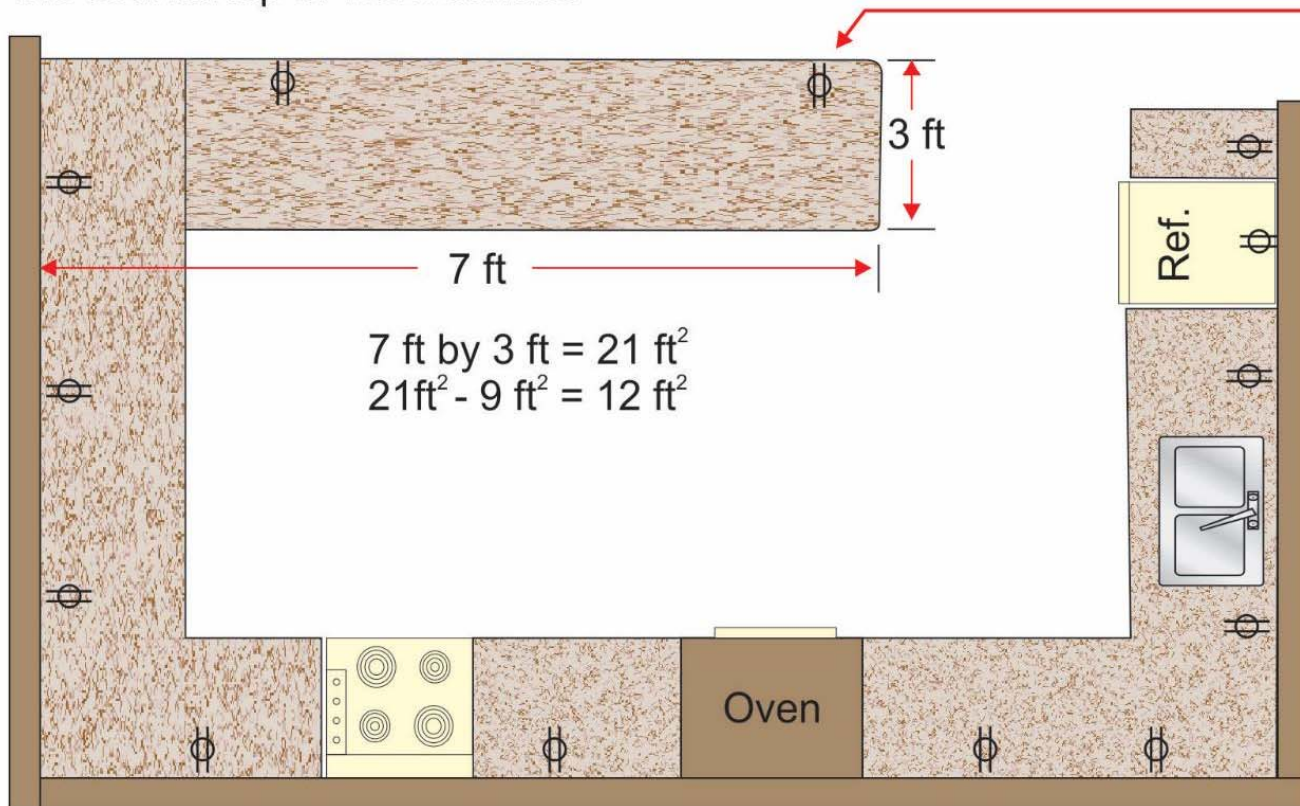
At least one receptacle outlet shall be located within **600 mm (2 ft)** of the outer end of a peninsular countertop or work surface



210.52(C)(2) Island and Peninsulars

At least one receptacle outlet shall be provided for the **first 0.84 m² (9 ft²), or fraction thereof**, of the countertop or work surface

A receptacle outlet shall be provided for **every additional 1.7 m² (18 ft²), or fraction thereof**, of the countertop or work surface



At least one receptacle outlet shall be located within **600 mm (2 ft)** of the outer end of a peninsular countertop or work surface

A peninsular countertop is to be measured from the connected perpendicular wall



210.52(C)(2) Island and Peninsulars

Examples of Minimum Number of Receptacle Outlets Required

Total Square Footage of Countertop	Minimum No. of Receptacle Outlets
8 sq. ft.	1
9 sq. ft.	1
More than 9 sq. ft. up to 27 sq. ft. [9 sq. ft. + 18 sq. ft. = 27 sq. ft.]	2
28 sq. ft. [first 9 sq. ft. (one), additional 18 sq. ft. (one) and addition fraction thereof (1 sq. ft.) (one)]	3
48 sq. ft. [48 sq. ft. - 9 sq. ft. = 39 sq. ft.] [39 sq. ft. ÷ 18 sq. ft. = 2.17 sq. ft.]	4

210.52(C)(2)(a) Island and Peninsular Countertops and Work Surfaces

At least one receptacle shall be provided for the **first 0.84 m² (9 ft²), or fraction thereof**, of the countertop or work surface.

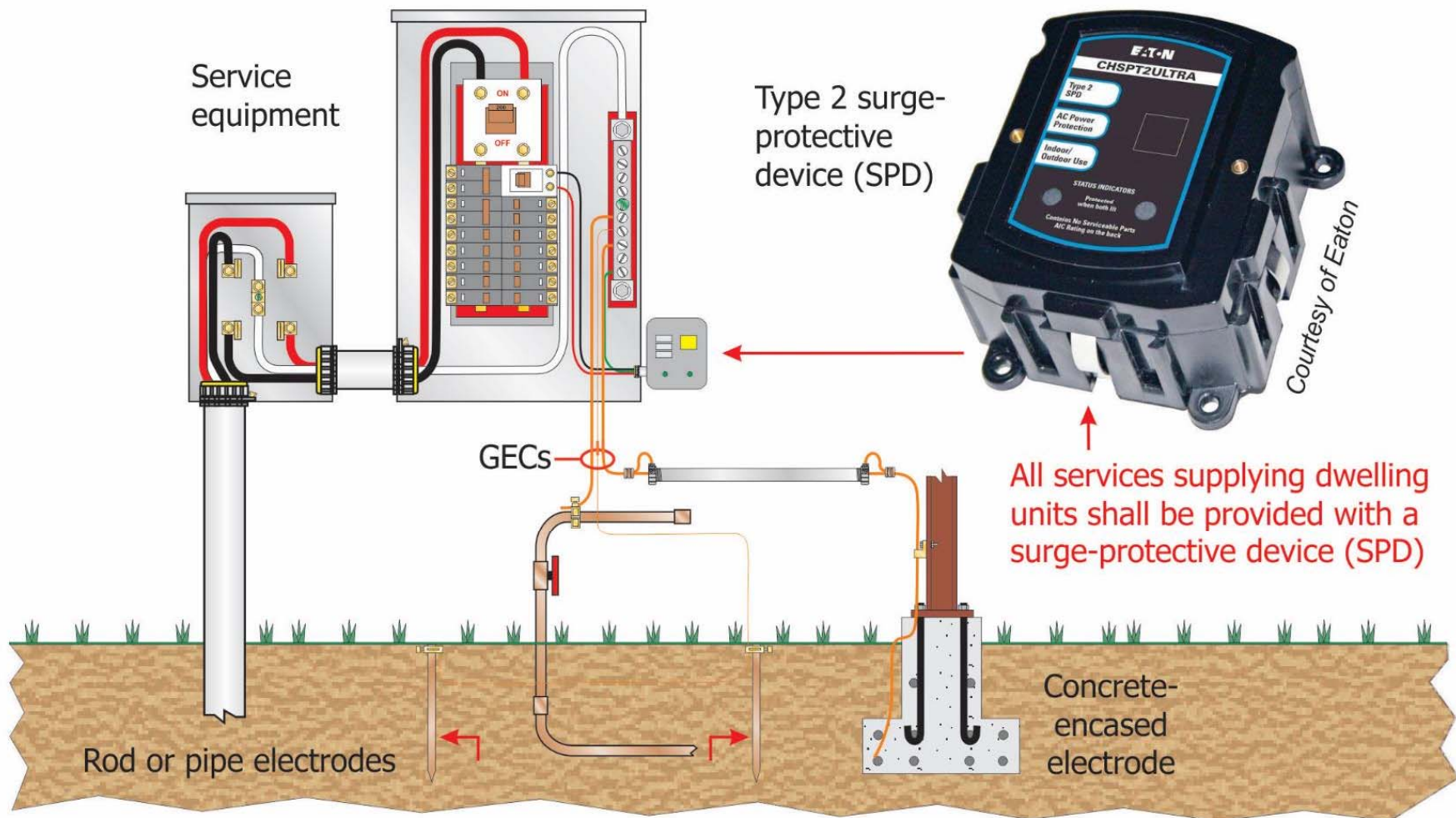
A receptacle outlet shall be provided for **every additional 1.7 m² (18 ft²), or fraction thereof**, of the countertop or work surface.



230.67 Surge Protection

- New requirement added for **surge protection** on all **services at dwelling units**
- The surge protection device (SPD) must be an **integral part of the service equipment** or **located immediately adjacent to the service equipment**
- Exception permits alternate location provided an SPD is located at **each next level distribution equipment** downstream toward the load
- This SPD required to be either a **Type 1** or **Type 2** SPD
- Applies to **replacement** of residential service equipment as well

230.67 Surge Protection for Dwelling Units





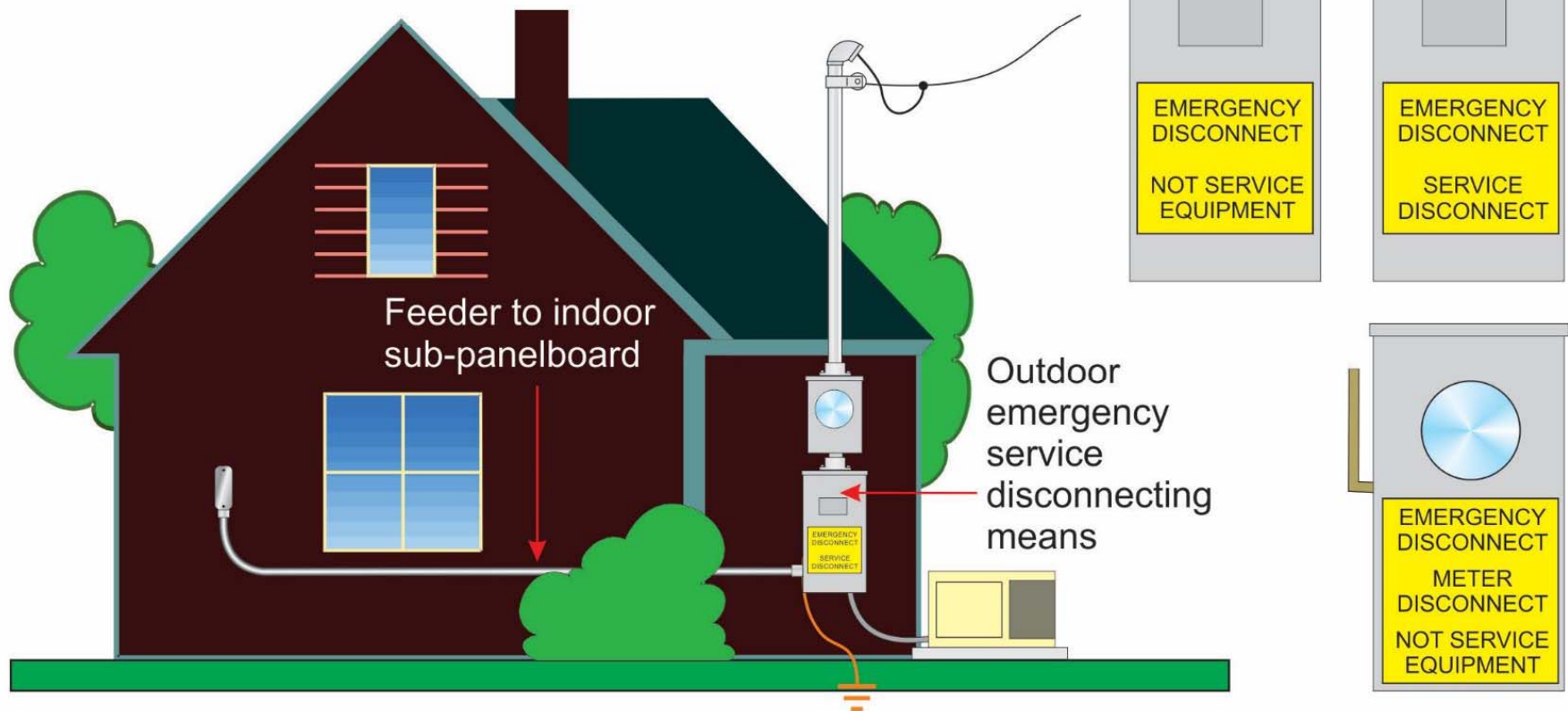
230.85 Emergency Disconnects

- New requirement added requiring an **emergency disconnect** at a **readily accessible outdoor location** for dwelling units
- New outdoor emergency disconnecting requirement primarily based upon providing **first responders** an outdoor accessible emergency or service disconnecting means during an **emergency situation** such as a fire, gas leak, structural damage, flooding, etc.
- Access service disconnecting means for first responders is very challenging when the service disconnect is installed in an indoor location of a dwelling unit area such as a basement
- Requiring first responders to enter a potentially hazardous environment (*such as a burning building*) to find and then activate the service disconnect(s) is not a safe practice

230.85 Exterior Emergency Disconnect(s) for Dwelling Units

All one- and two-family dwelling unit service conductors shall terminate in disconnecting means having a short-circuit current rating equal to or greater than the available fault current, installed in a **readily accessible outdoor location**

If more than one disconnect, required to be grouped





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

- Revision will now generally require **all outlet boxes** mounted in a location acceptable for the installation of a ceiling-suspended (paddle) fan in the ceilings of habitable rooms of dwelling units to be **listed for the sole support of ceiling-suspended (paddle) fan**
- Previously, outlet boxes or outlet box systems were required to be listed for sole support of a ceiling-suspended (paddle) fan where a **“spare,” separately switched, ungrounded conductor** was provided to a ceiling-mounted outlet box, in a location acceptable for a ceiling-suspended (paddle) fan in dwellings
- 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 is permissible as well



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

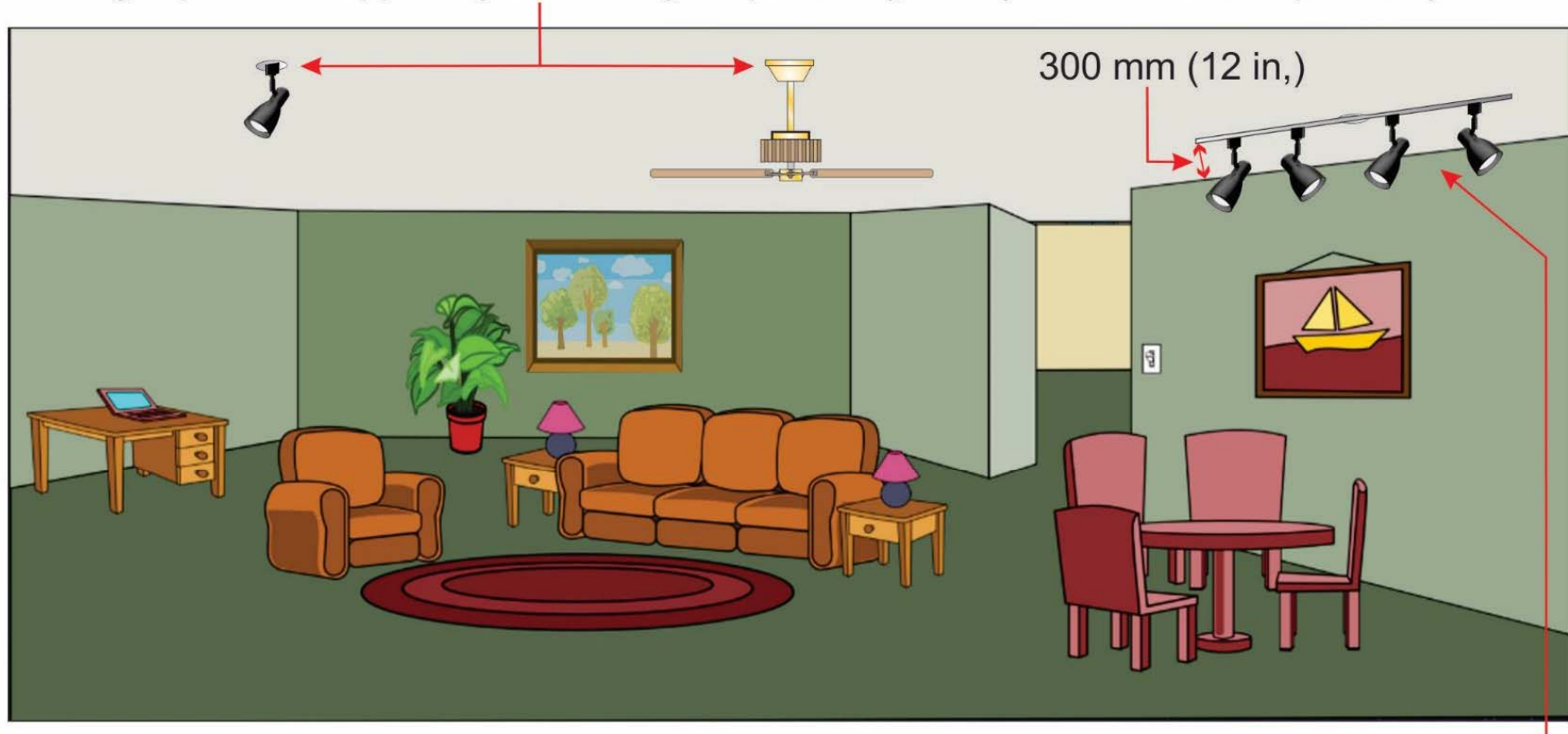
Revision will now generally require **all outlet boxes** mounted in a location acceptable for the installation of a ceiling-suspended (paddle) fan in the ceilings of habitable rooms of dwelling units to be **listed for the sole support of ceiling-suspended (paddle) fan** (*cont.*)

- This new requirement will predicate the installation of an outlet box listed for the sole support of a ceiling-suspended (paddle) fan at most dwelling unit ceiling-mounted luminaire locations regardless of the existence of a “spare” separately switched ungrounded conductor or not
- Many ceiling-suspended (paddle) fans are now **remote-controlled** requiring only a two-wire installation

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



All outlet boxes mounted in ceilings of habitable rooms of dwelling units required to be **listed for the sole support of a ceiling-suspended (paddle) fan** (or outlet box providing access to structural framing capable of supporting of a ceiling-suspended (paddle) fan bracket or equivalent)



Applicable only in locations acceptable for the installation of a ceiling-suspended (paddle) fan

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

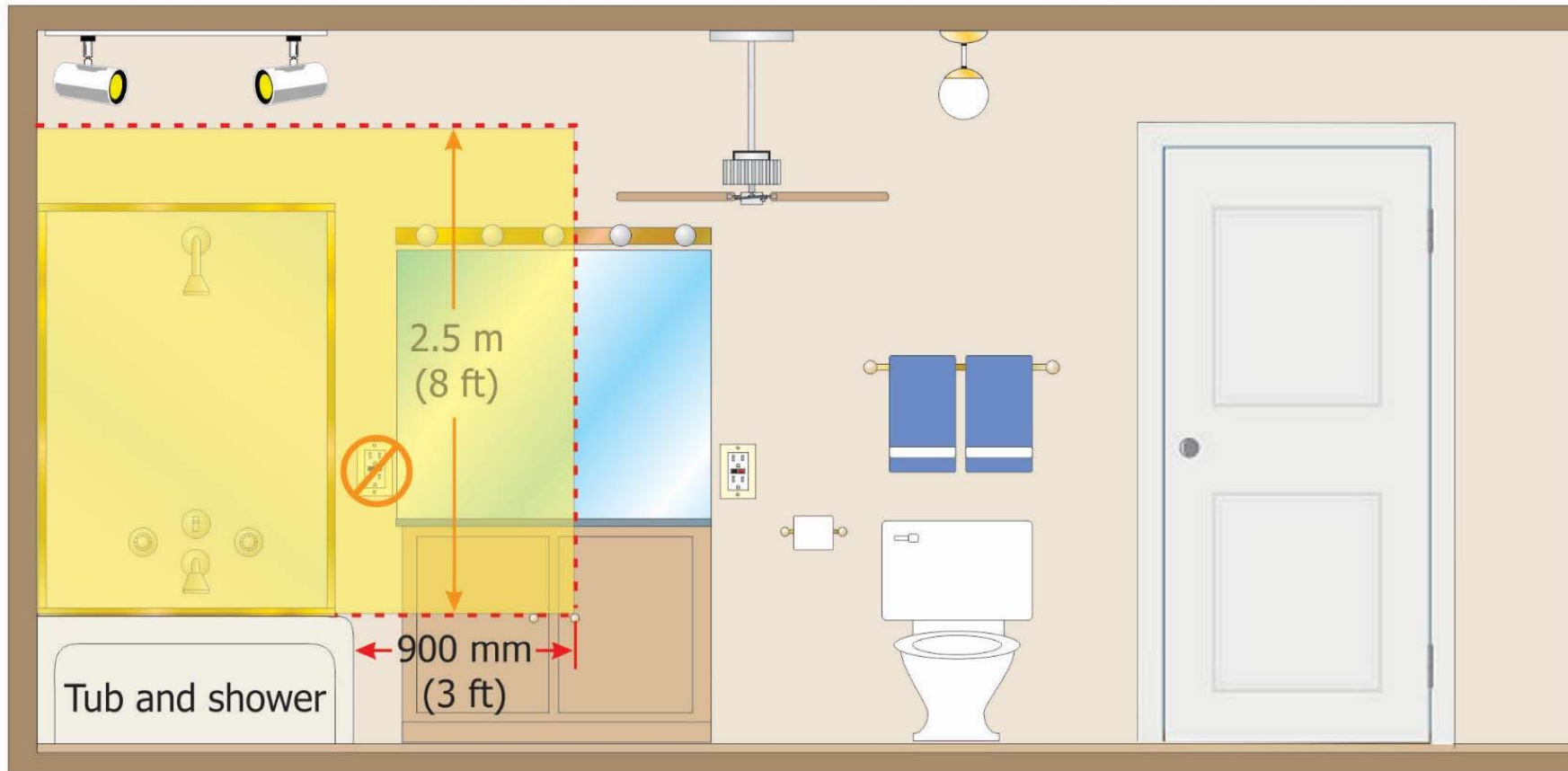




406.9(C) Bathtub or Shower Stall Restricted “Zone” (Receptacles)

- Receptacle outlet(s) located in the area around a **bathtub or shower stall** have been revised to include a **restricted “zone”** similar to luminaires in said areas with an exception added for smaller space bathrooms
- Receptacles are now prohibited from being installed within a zone measured **900 mm (3 ft) horizontally** and **2.5 m (8 ft) vertically** from the top of the bathtub rim or shower stall
- In bathrooms with dimensions less than the required zone, receptacle(s) are permitted to be installed opposite the bathtub rim or shower stall threshold on the **farthest wall within the room**
- Previous language at 406.9(C) stated that receptacles were not be installed “within or directly over a bathtub or shower stall”
- This language was **vague** leading to **confusion** and **inconsistent interpretation** as to what defined the bathtub or shower stall “area”

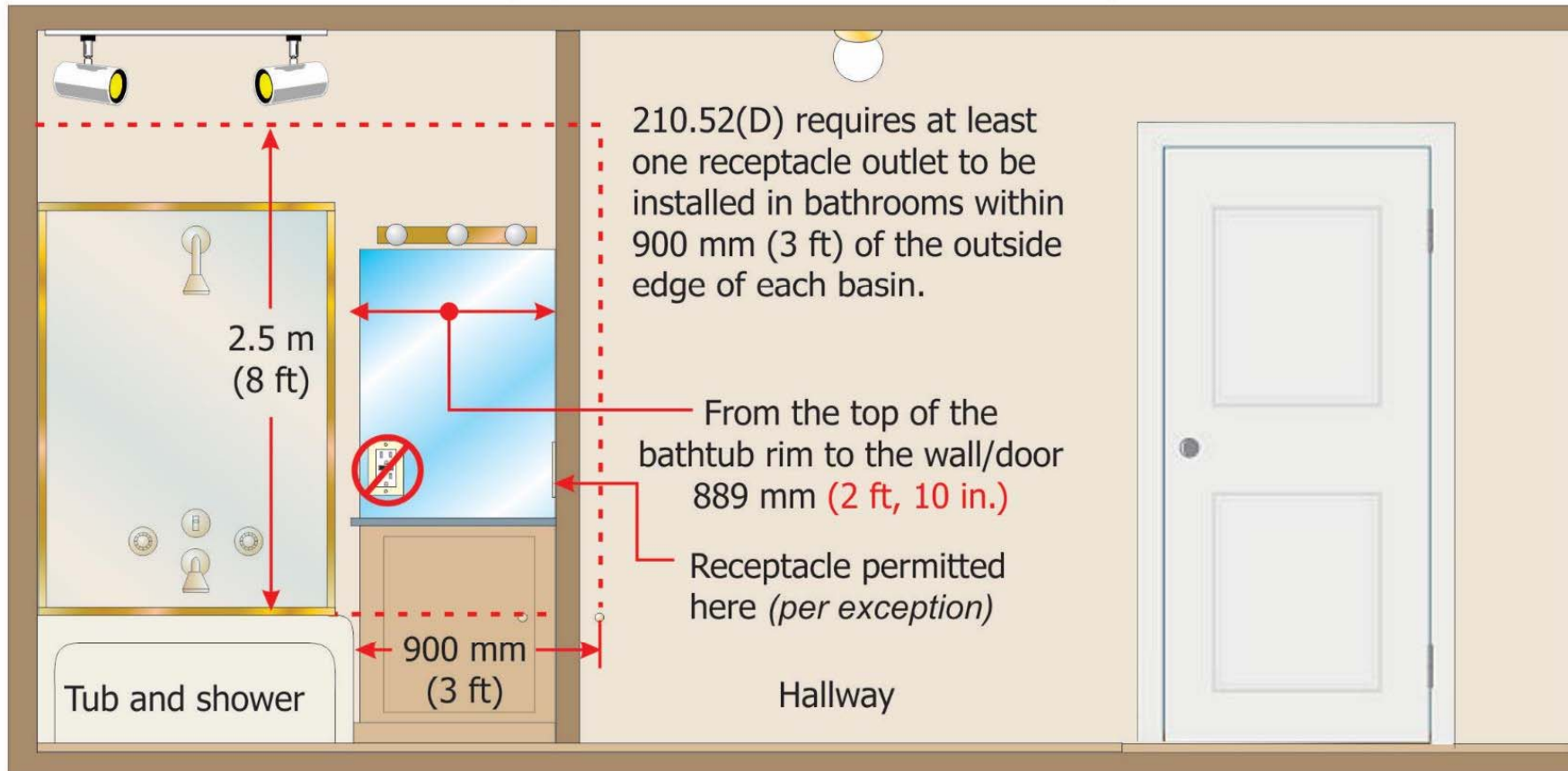
406.9(C) Bathtub and Shower Space



Receptacles shall not be installed within a **zone measured 900 mm (3 ft) horizontally and 2.5 m (8 ft) vertically** from the top of the bathtub rim or shower stall threshold.

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

406.9(C) Bathtub and Shower Space



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