

ARTICLE

110

REQUIREMENTS FOR ELECTRICAL INSTALLATIONS

110.26 Spaces About Electrical Equipment



1. Working Space:

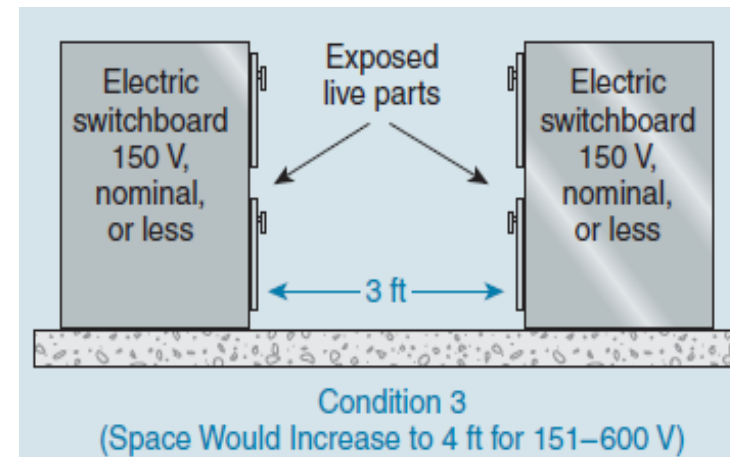
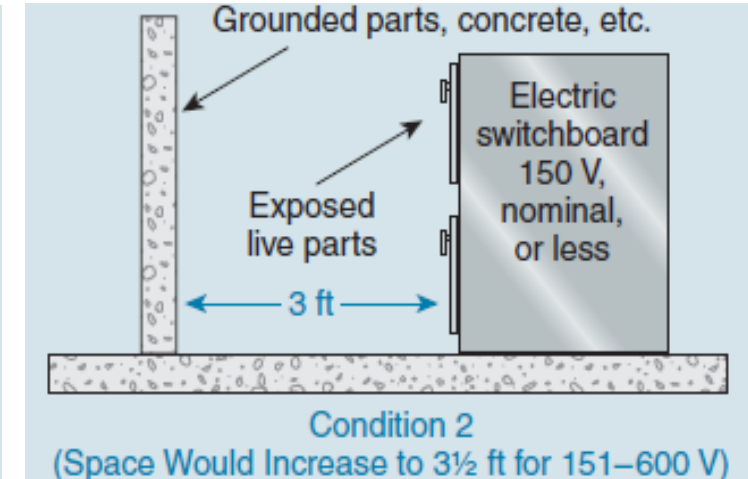
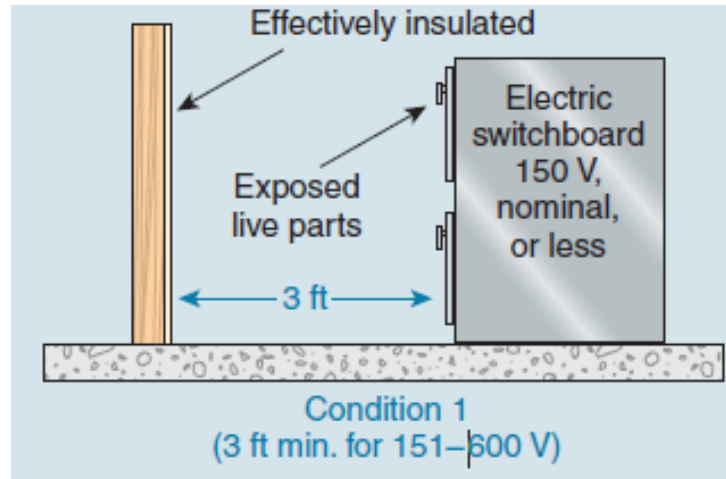
- Depth of working Space:

TABLE 110.26(A)(1) Working Spaces

Nominal Voltage to Ground	Minimum Clear Distance		
	Condition 1	Condition 2	Condition 3
0–150	900 mm (3 ft)	900 mm (3 ft)	900 mm (3 ft)
151–600	900 mm (3 ft)	1.0 m (3 ft 6 in.)	1.2 m (4 ft)
601–1000	900 mm (3 ft)	1.2 m (4 ft)	1.5 m (5 ft)

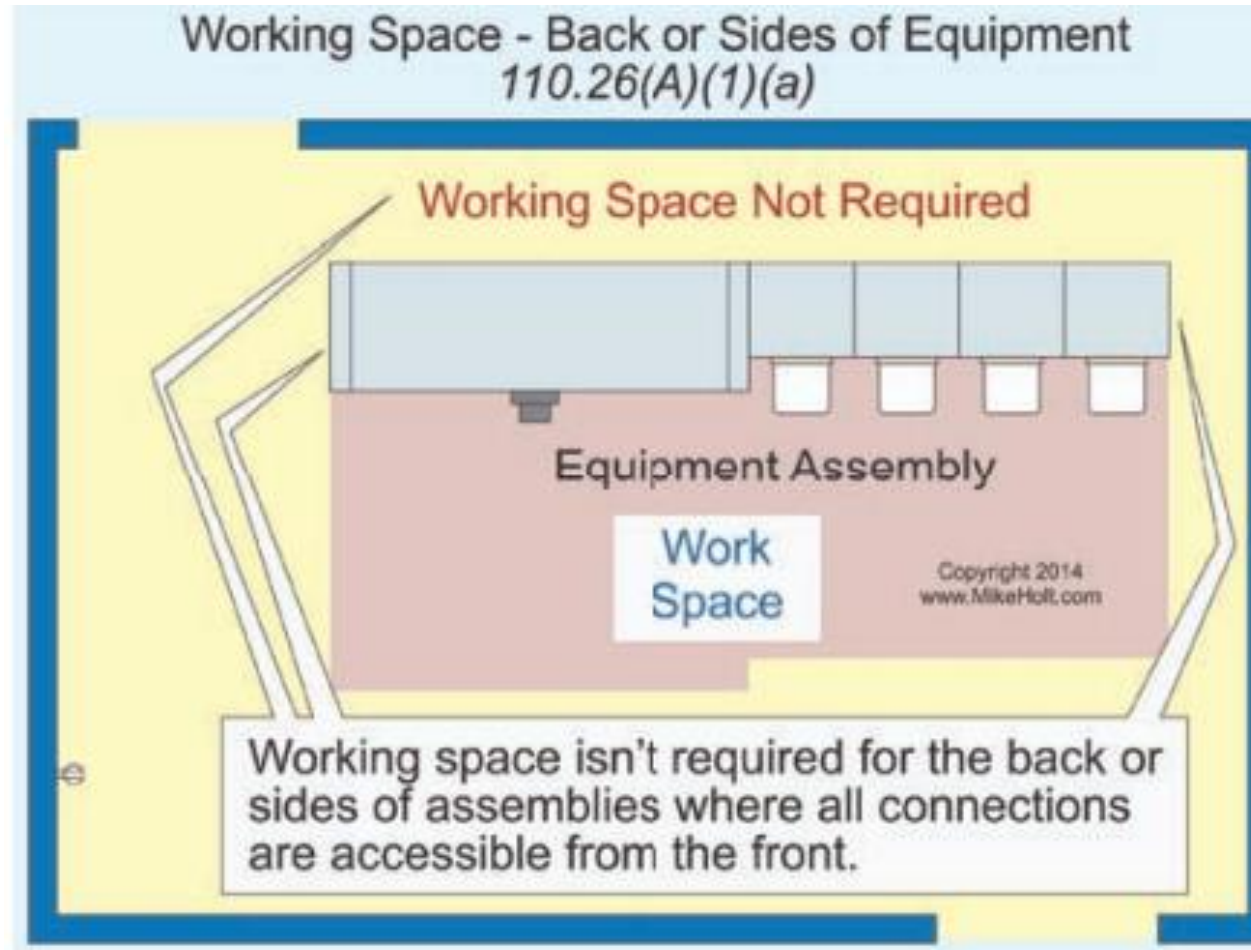
TABLE 110.34(A) Minimum Depth of Clear Working Space at Electrical Equipment

Nominal Voltage to Ground	Minimum Clear Distance		
	Condition 1	Condition 2	Condition 3
1001–2500 V	900 mm (3 ft)	1.2 m (4 ft)	1.5 m (5 ft)
2501–9000 V	1.2 m (4 ft)	1.5 m (5 ft)	1.8 m (6 ft)
9001–25,000 V	1.5 m (5 ft)	1.8 m (6 ft)	2.8 m (9 ft)
25,001 V–75 kV	1.8 m (6 ft)	2.5 m (8 ft)	3.0 m (10 ft)
Above 75 kV	2.5 m (8 ft)	3.0 m (10 ft)	3.7 m (12 ft)



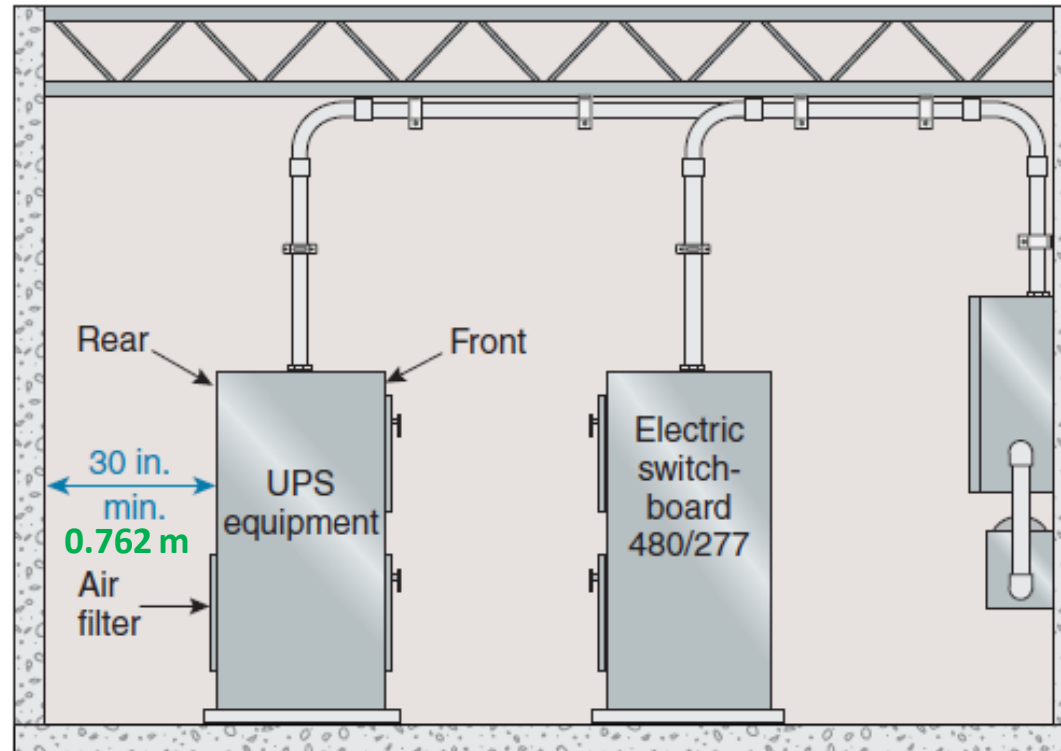
1. Working Space:

- Depth of working Space:



1. Working Space:

- Depth of working Space (Rear Access):



Note: if the Rear of equipment requires working space larger than 30 in. , we must provide the proper larger Depth of working space.

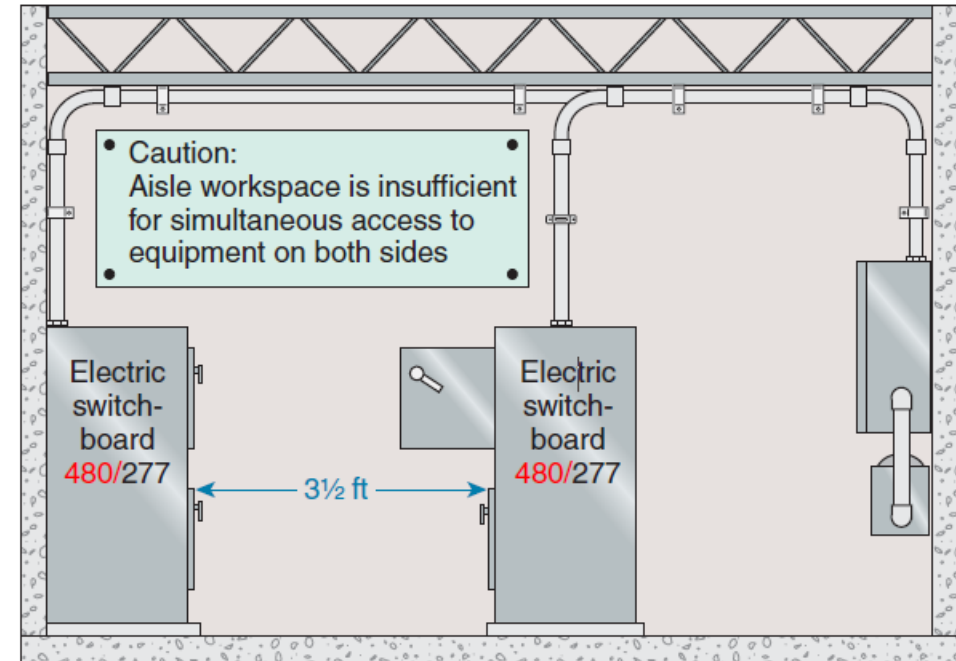
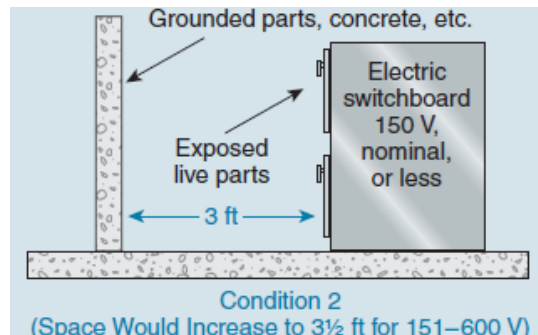
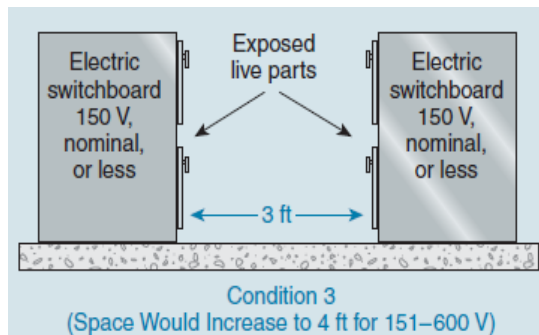
1. Working Space:

- Depth of working Space (Existing Building):

If electrical equipment is being replaced, Condition 2 working space is permitted between dead-front switchboards, panelboards, or motor control centers located across the aisle from each other where conditions of maintenance and supervision ensure that written procedures have been adopted to prohibit equipment on both sides of the aisle from being open at the same time, and only authorized, qualified persons will service the installation.

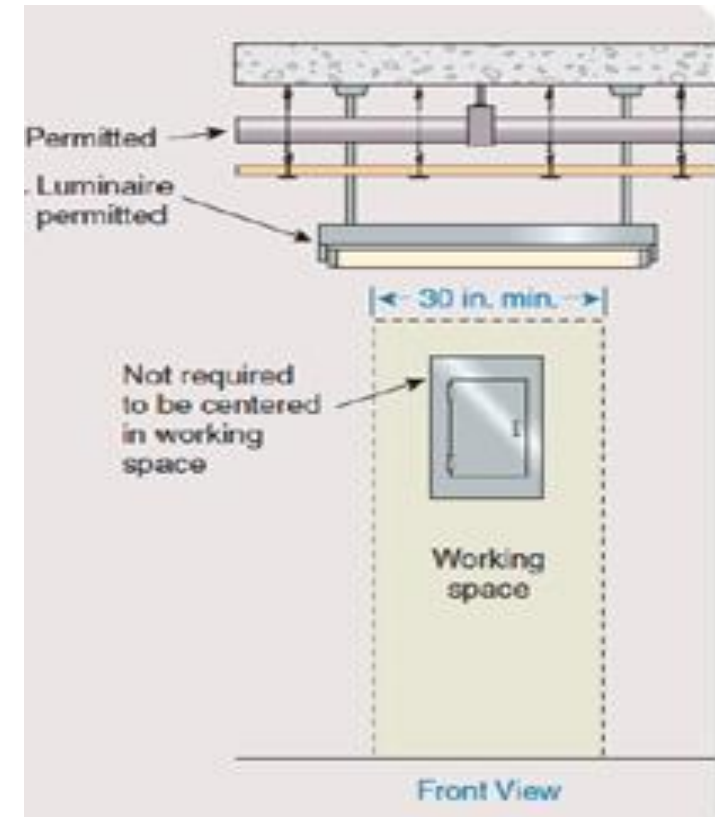
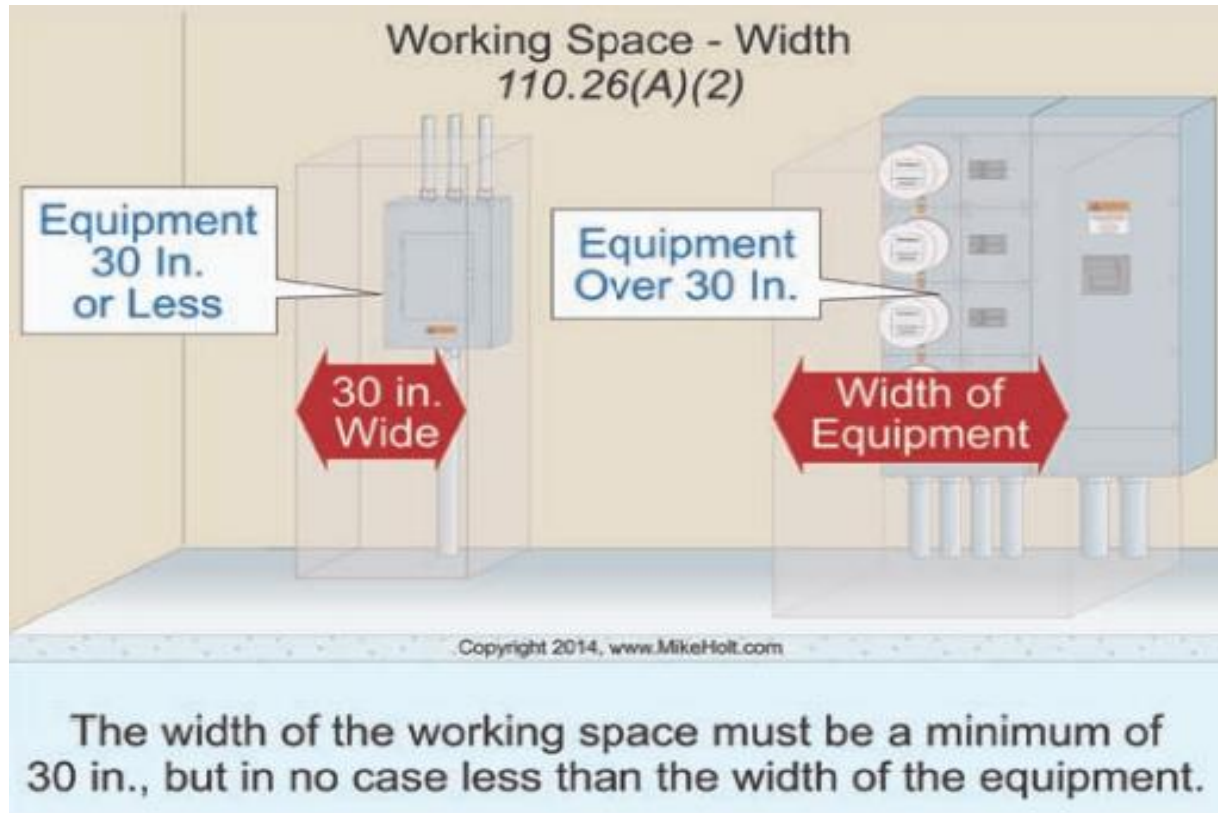
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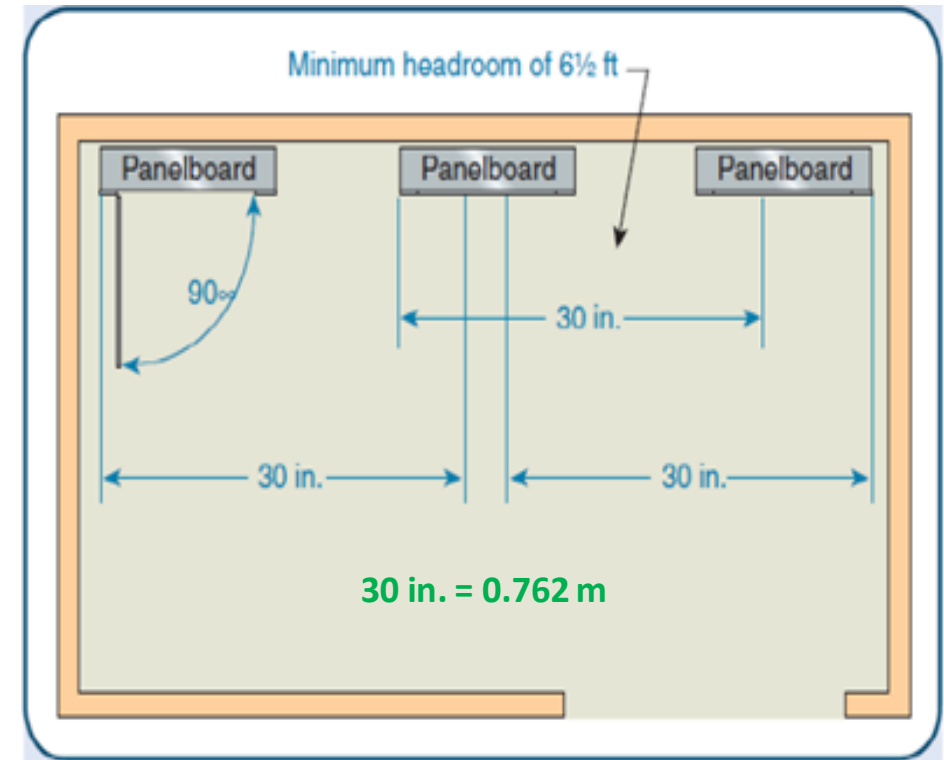
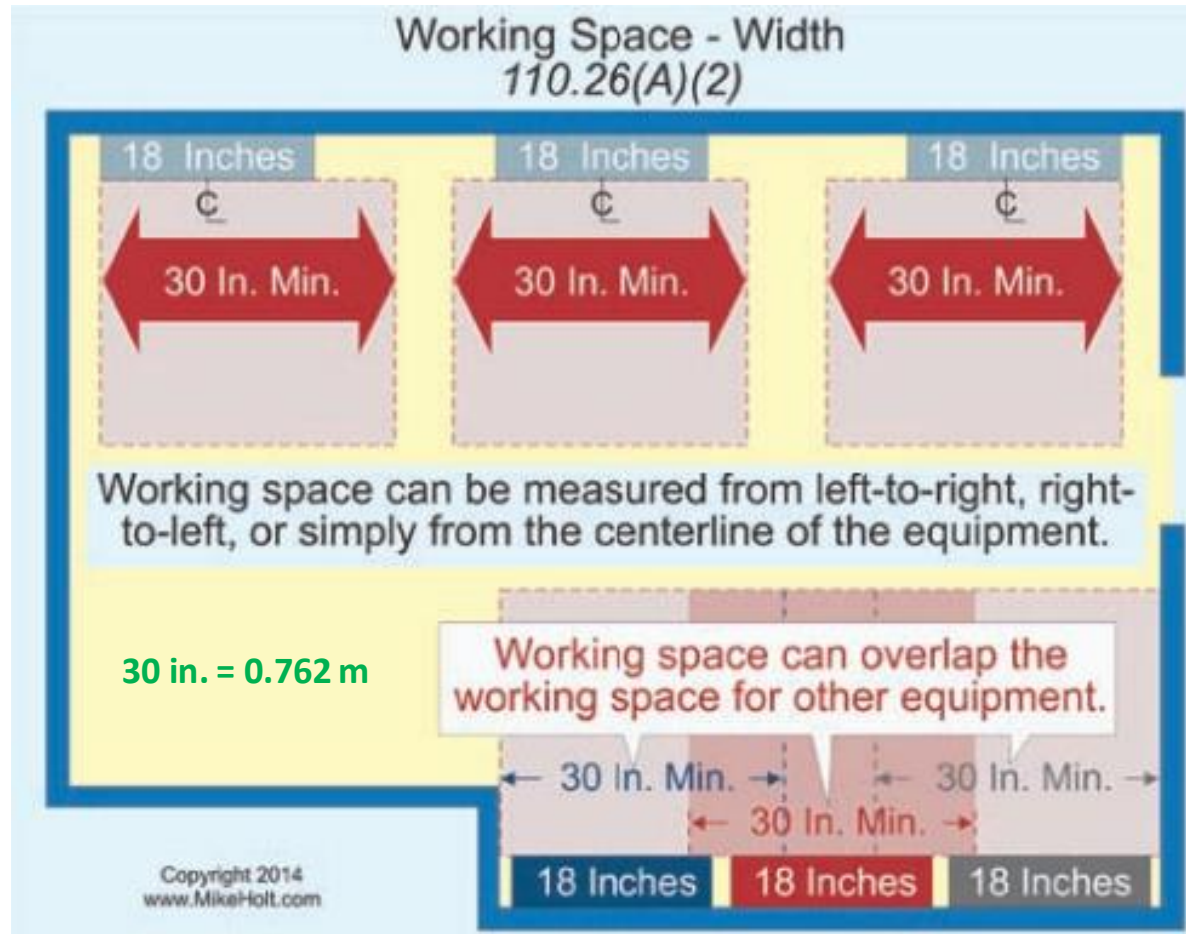
1. Working Space:

- Width of working Space



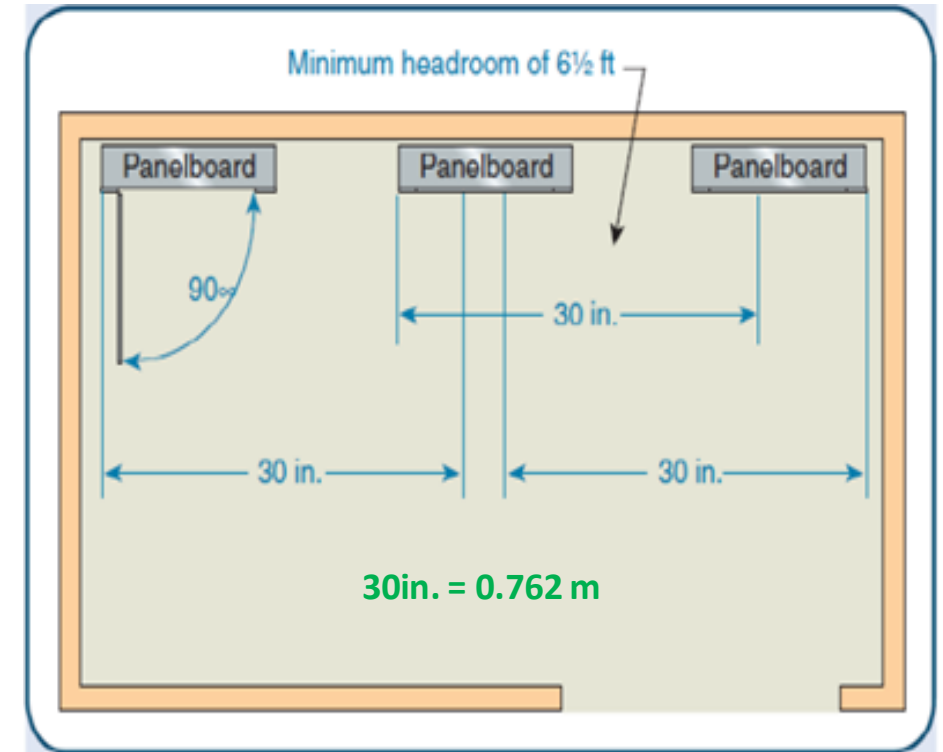
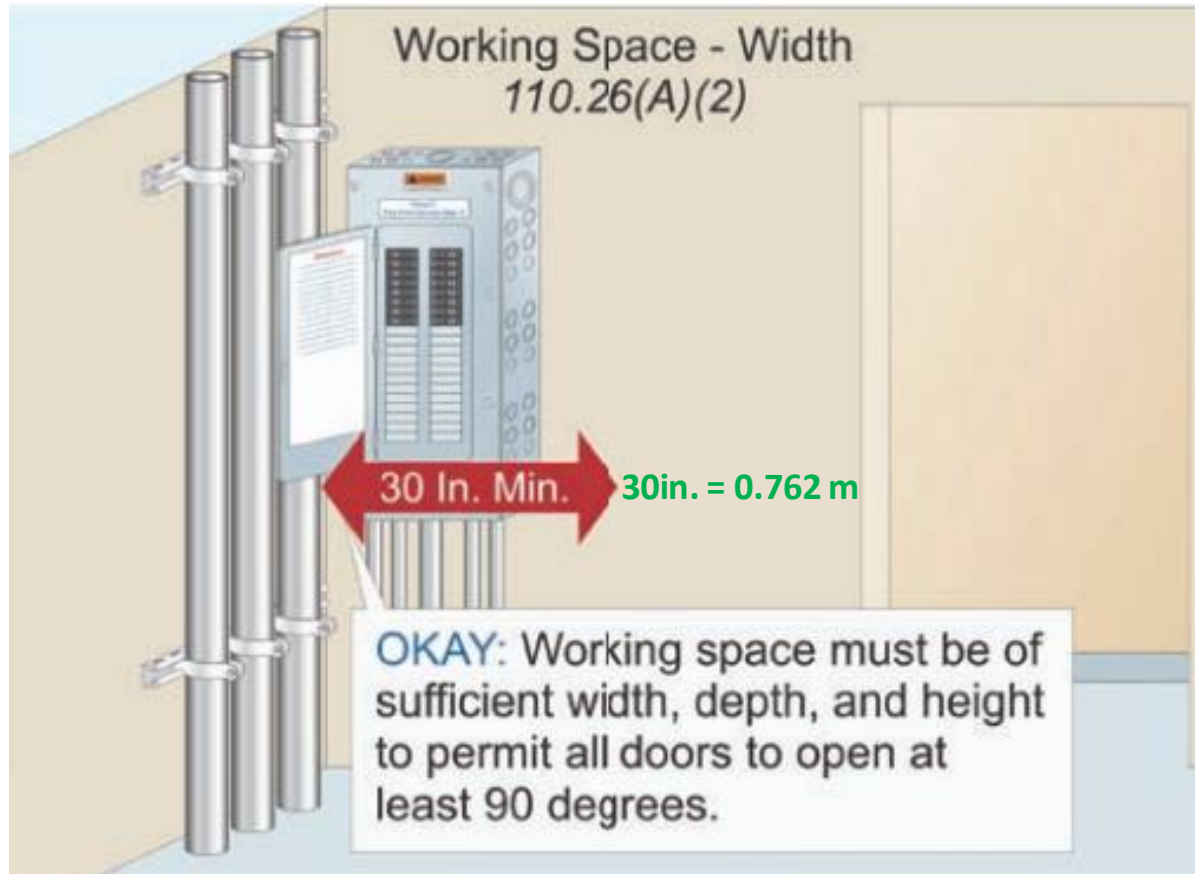
1. Working Space:

- Width of working Space (width measurement methodology & Overlapping)



1. Working Space:

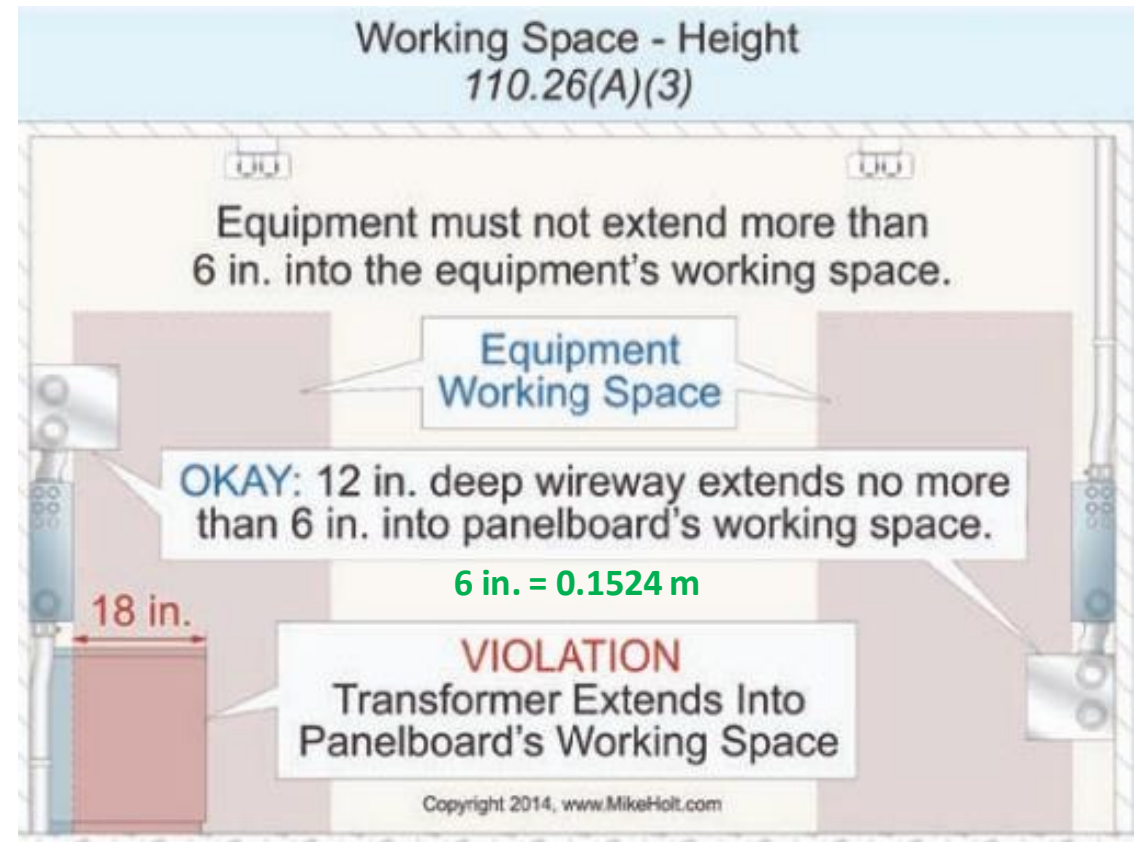
- Width of working Space (Equipment door opening)



1. Working Space:

- Height of working Space

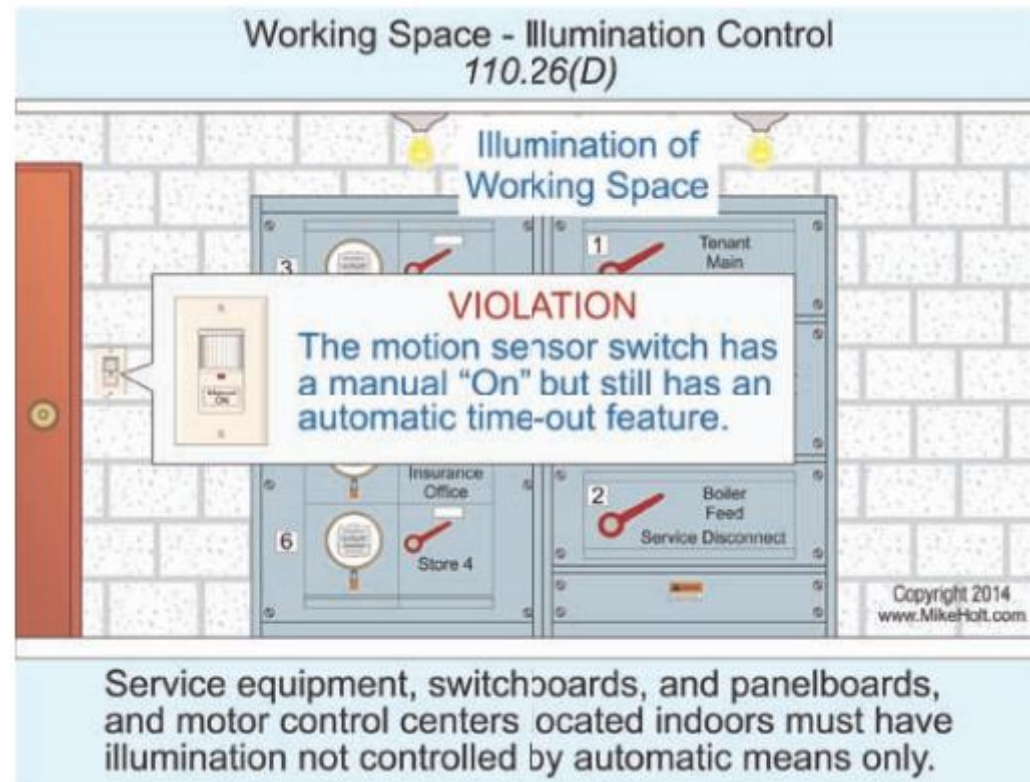
Equipment such as raceways, cables, wireways, cabinets, panels, and so on, can be located above or below electrical equipment, but must not extend more than 6 in. into the equipment's working space.



1. Working Space:

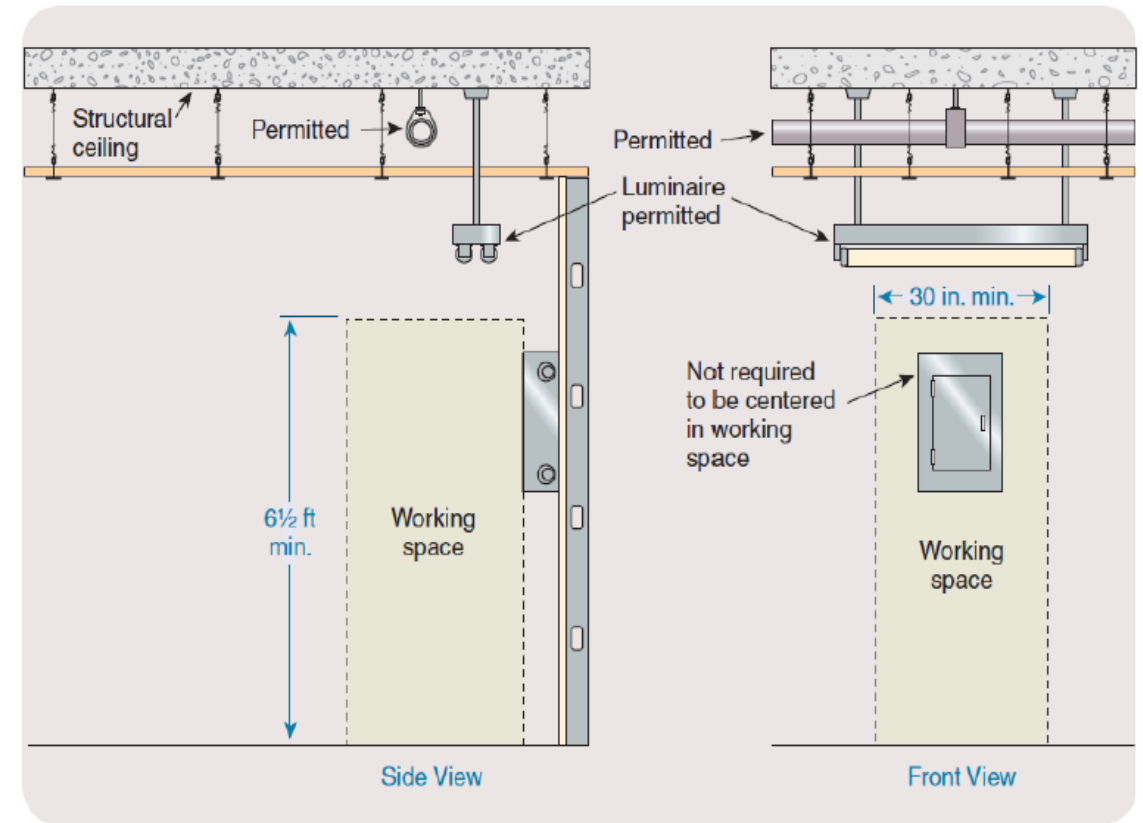
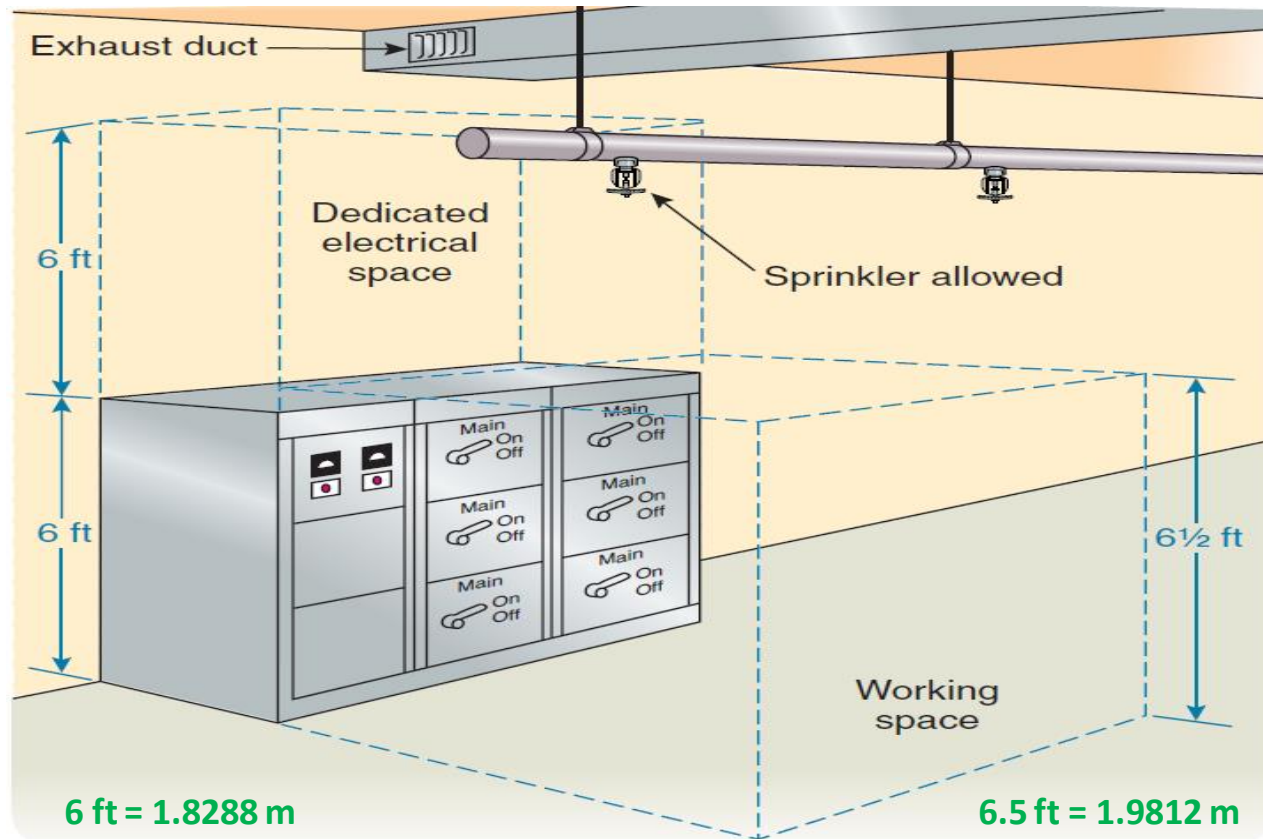
- Illumination of working space

Service equipment, switchboards, and panelboards, as well as motor control centers located indoors must have illumination located indoors and must not be controlled by automatic means



2. Dedicated Electrical Space:

The dedicated electrical space extends the footprint of the equipment from the floor to a height of 6 feet above the height of the equipment or to the “structural ceiling” (whichever is lower) must be dedicated for the electrical installation. No piping, ducts, or other equipment foreign to the electrical installation can be installed in this dedicated footprint space.



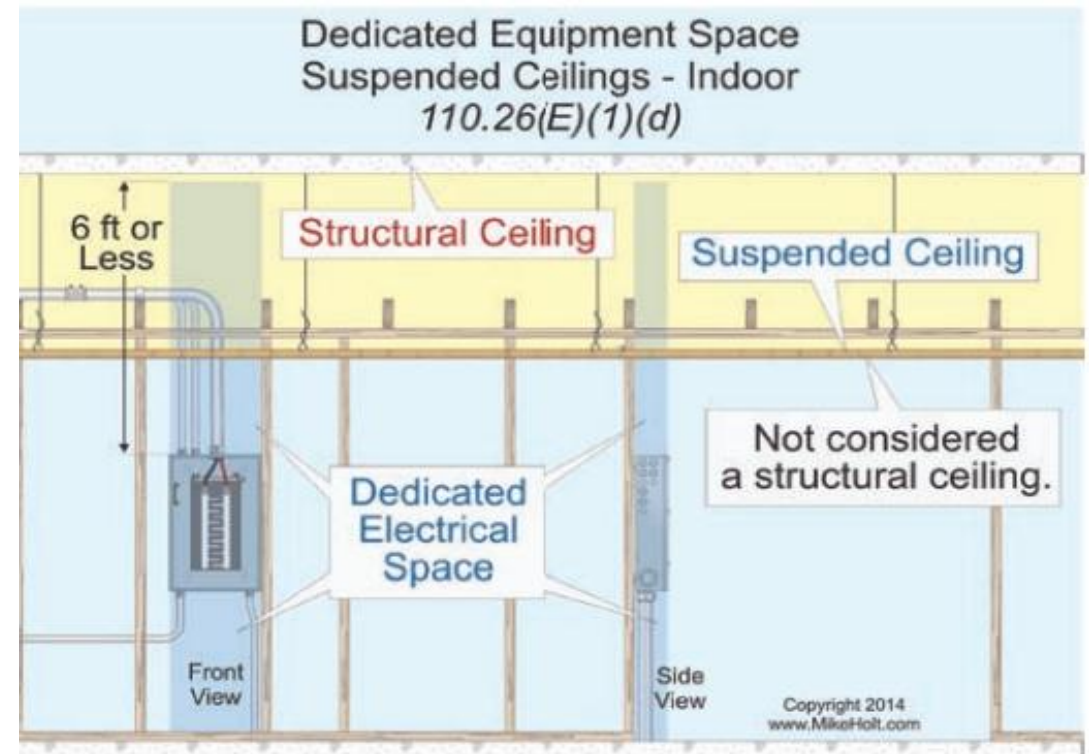
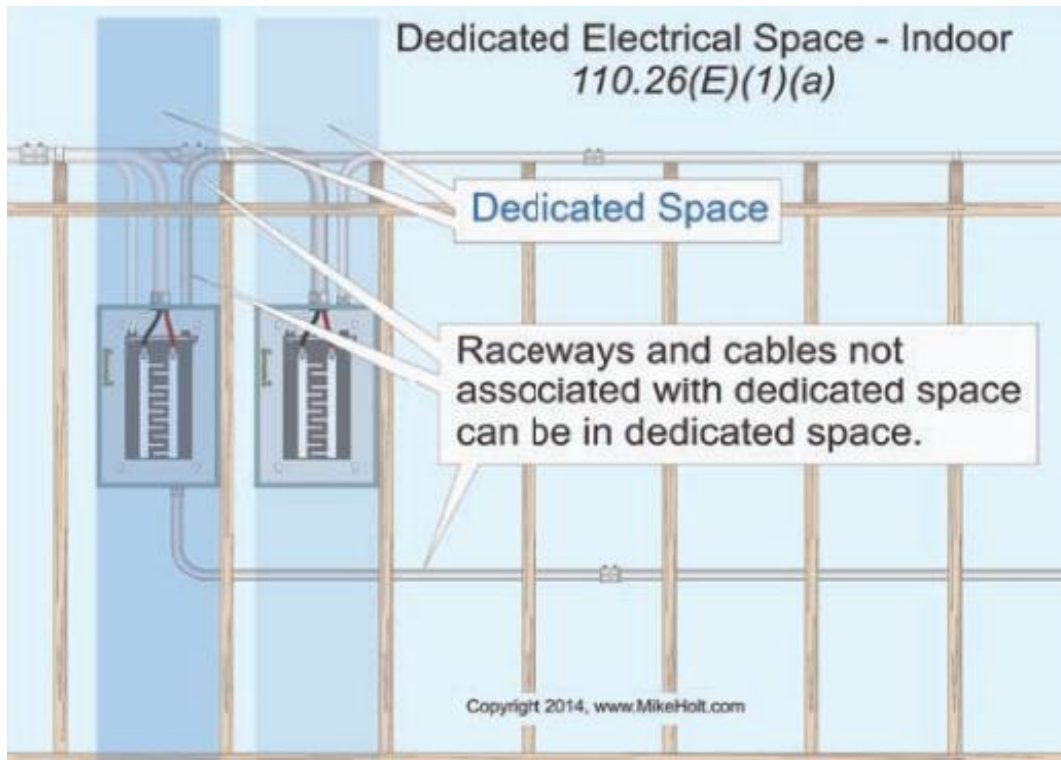
2. Dedicated Electrical Space:

- Raceways, cables

Electrical raceways and cables not associated with the dedicated space can be within the dedicated space. These aren't considered "equipment foreign to the electrical installation."

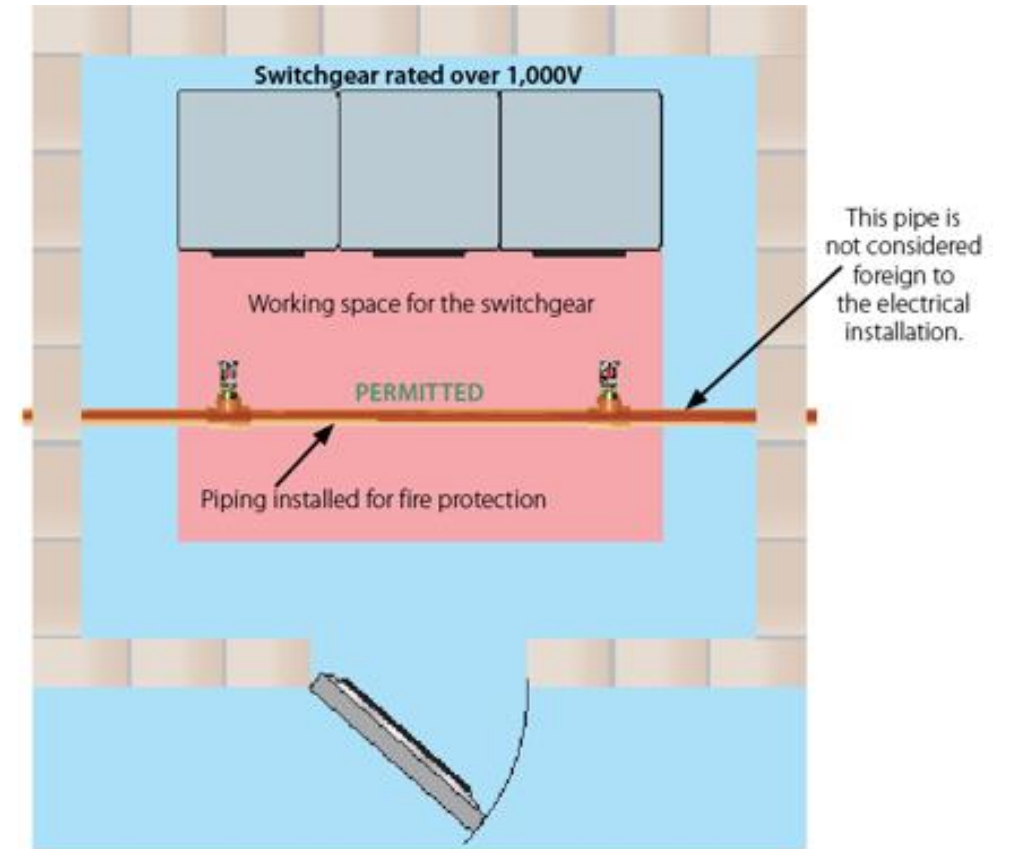
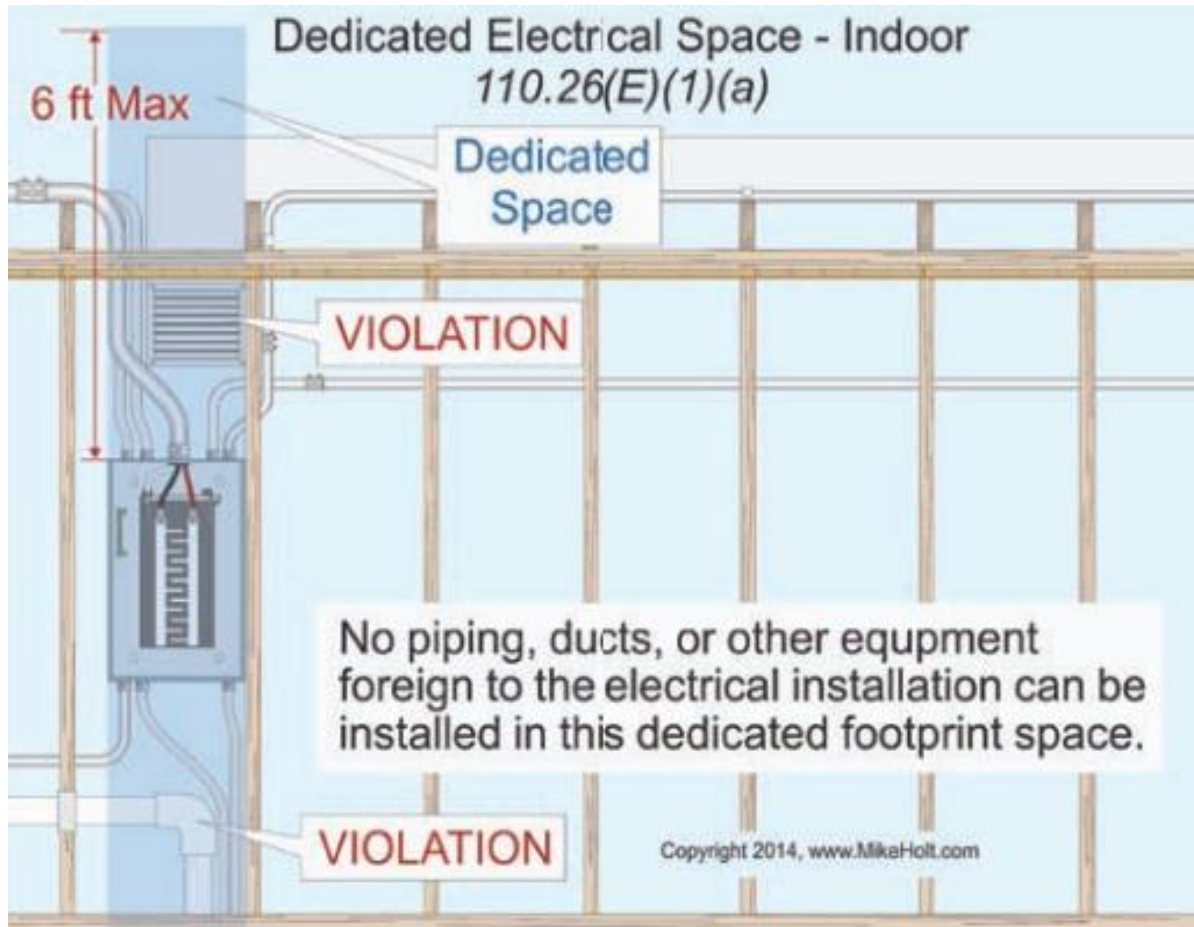
- Suspended Ceiling:

Dropped, suspended, or similar ceiling isn't considered a structural ceiling.



2. Dedicated Electrical Space:

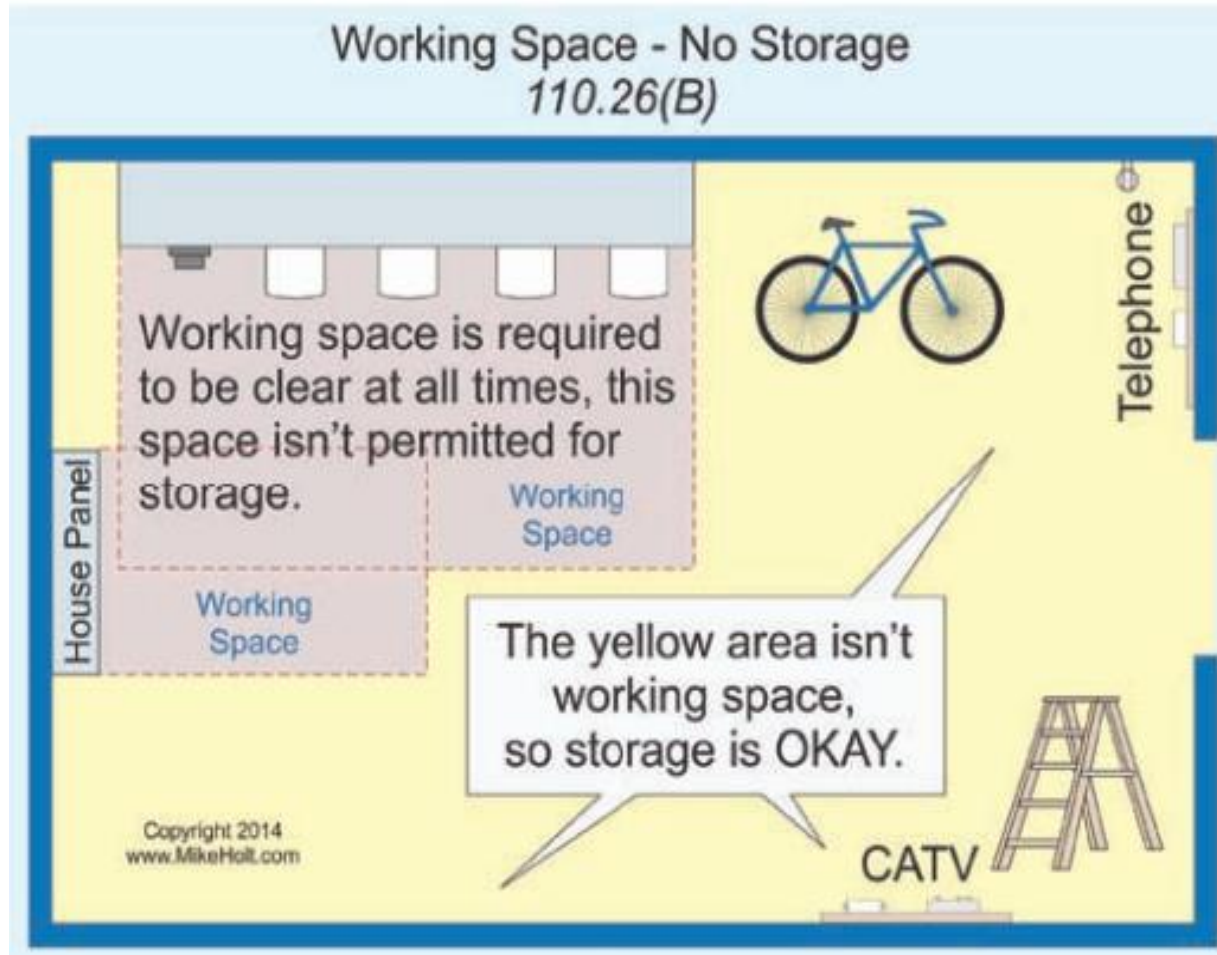
- Violations



Piping and other facilities shall not be considered foreign if provided for fire protection of the electrical installation [110.34(F)].

2. Dedicated Electrical Space:

- Storage

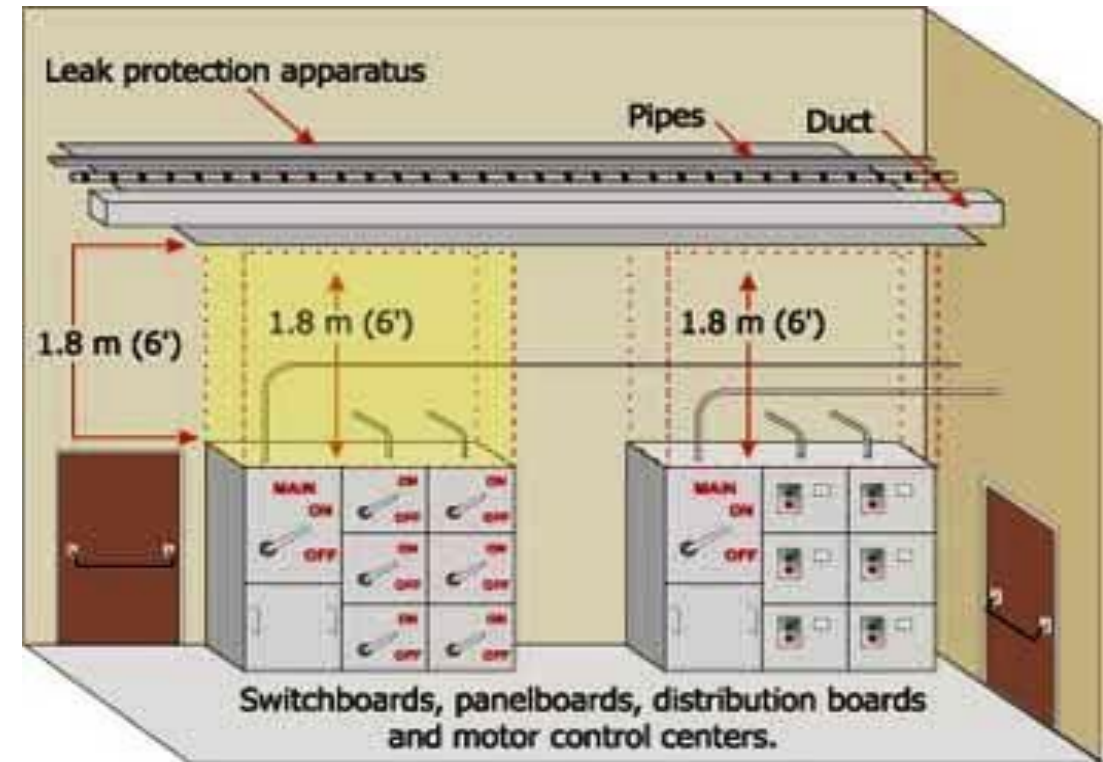
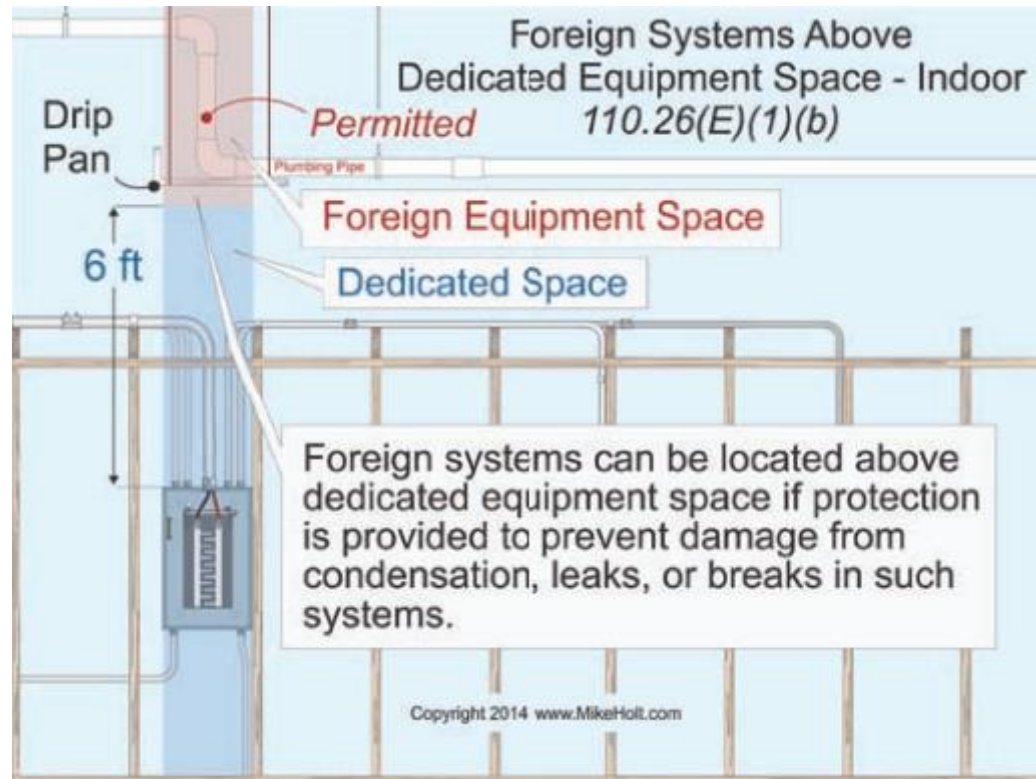


CAUTION: *It's very dangerous to service energized parts in the first place, and it's unacceptable to be subjected to additional dangers by working around bicycles, boxes, crates, appliances, and other impediments.*

2. Dedicated Electrical Space:

- Foreign systems above dedicated space.

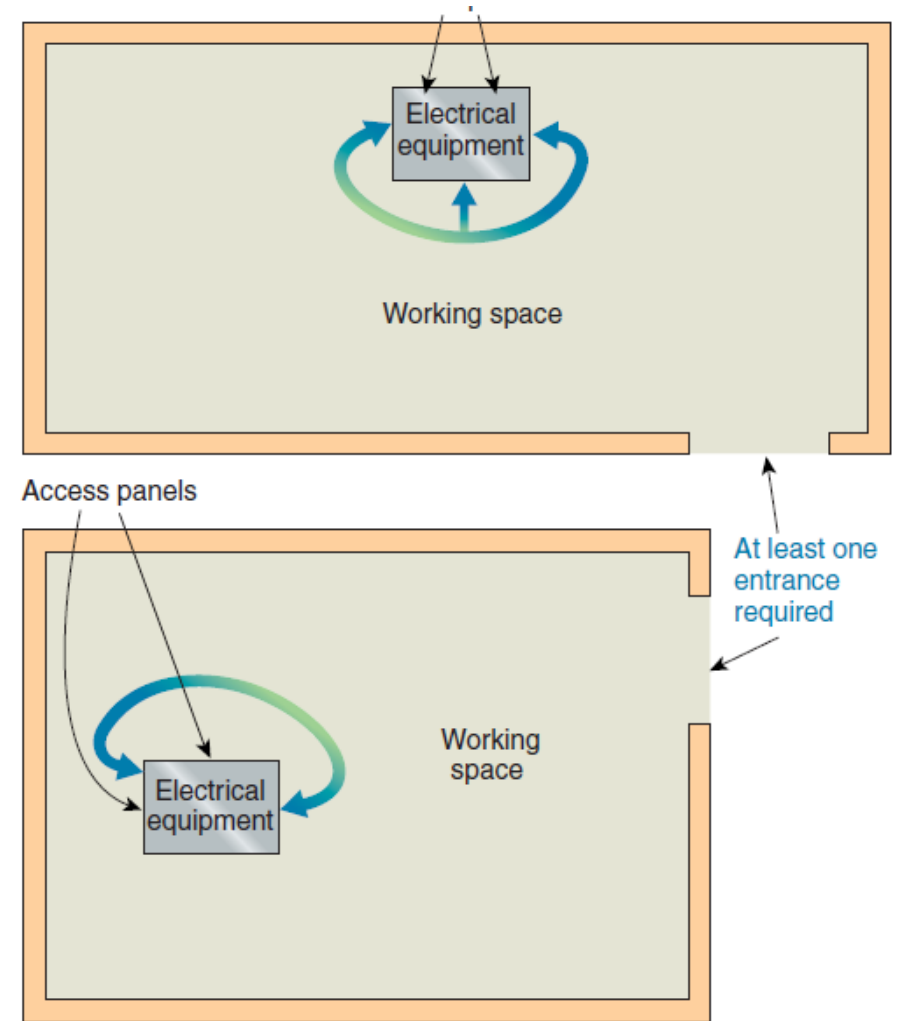
Foreign systems can be located “above” the dedicated space if protection is installed to prevent damage to the electrical equipment from condensation, leaks, or breaks in the foreign systems, which can be as simple as a drip-pan.



3. Entrance and Egress:

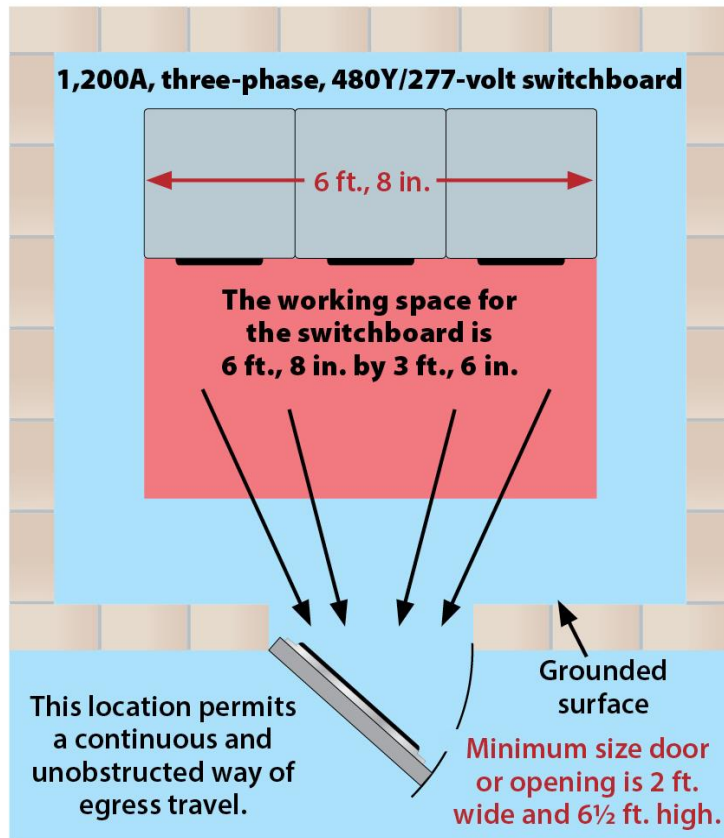
- Small Equipment (below 1200A or “6 ft = 1.8288 m” wide)

At least one entrance of sufficient area must provide access to and egress from the working space.



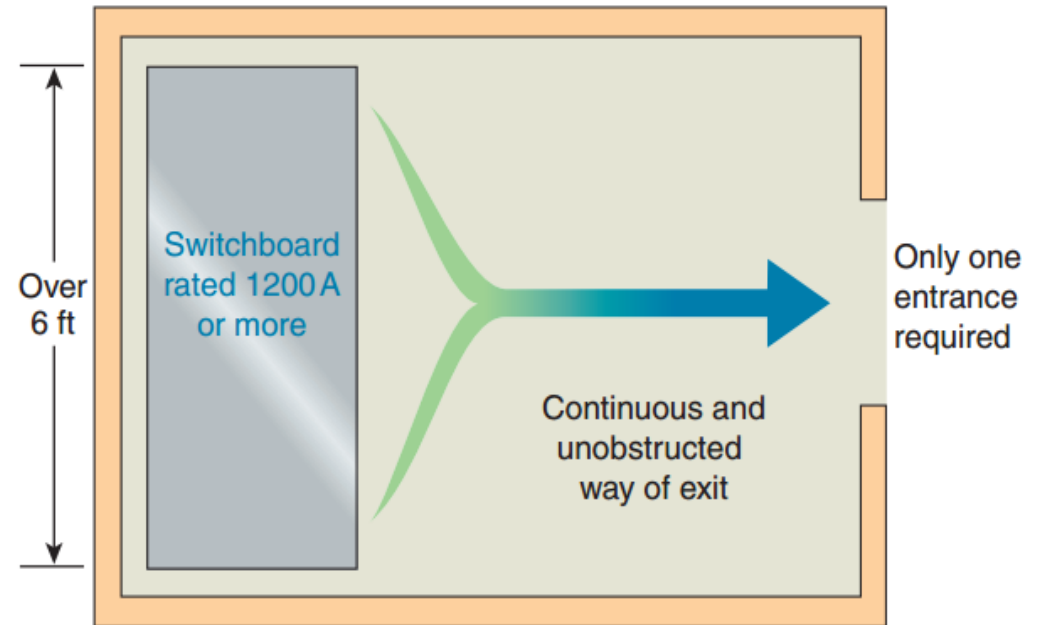
3. Entrance and Egress:

- Large Equipment (“1200A or above” or “more than {6 ft = 1.8288 m}” wide)
 - (Case - A) Unobstructed Egress: Only one entrance is required where the location permits a continuous and unobstructed way of egress travel.



Large equipment (equipment rated 1,200A or more and more than 6 feet wide) containing overcurrent devices, switching devices, or control devices normally requires each end of the working space to have an entrance to and egress from the required working space.

Where a space contains large equipment, a single entrance to and egress from the required working space is permitted if the installation complies with either 110.26(C)(2)(a) or 110.26(C)(2)(b).

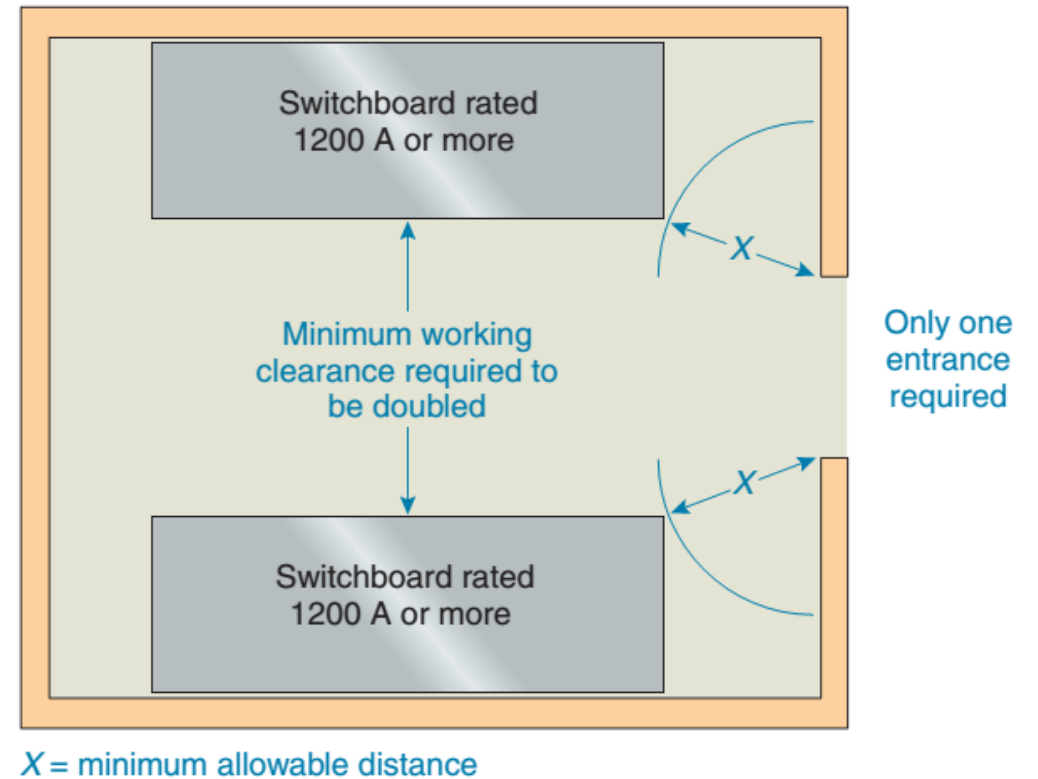
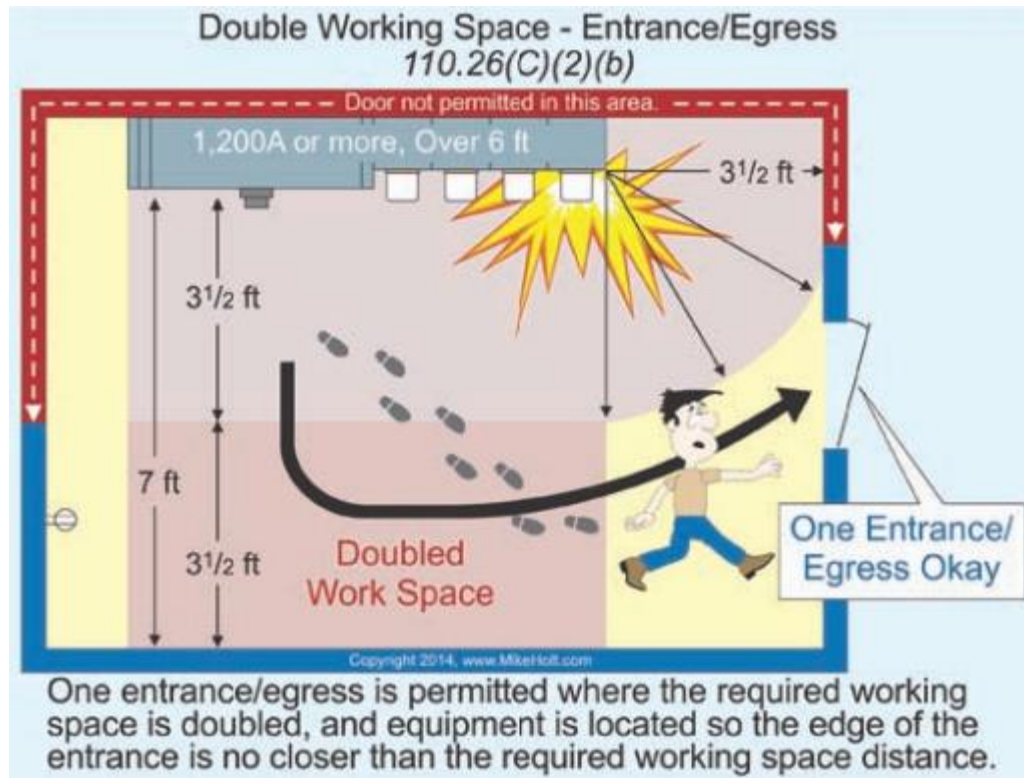


Where the location for large equipment permits a continuous and unobstructed way of egress travel, a single entrance to the working space shall be permitted [110.26(C)(2)(a)].

6.5 ft = 1.9812 m
2 ft = 0.6096 m

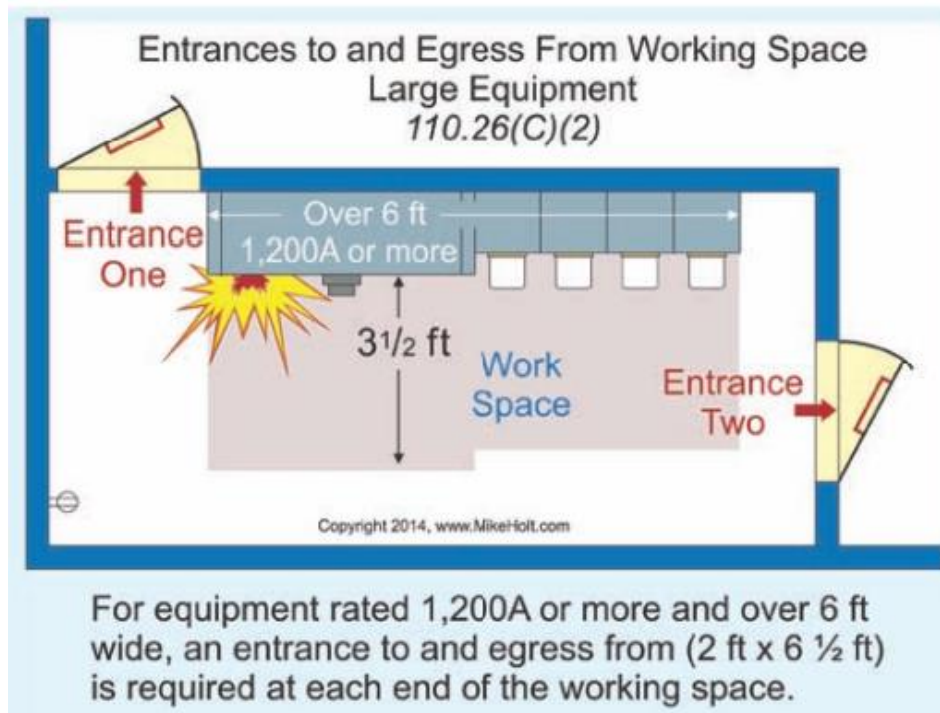
3. Entrance and Egress:

- Large Equipment (“1200A or above” or “more than {6 ft = 1.8288 m}” wide)
 - (Case - B) obstructed Egress with One door “Double Workspace required”: Only one entrance is required where the required working space depth is doubled, and the equipment is located so the edge of the entrance is no closer than the required working space distance.



3. Entrance and Egress:

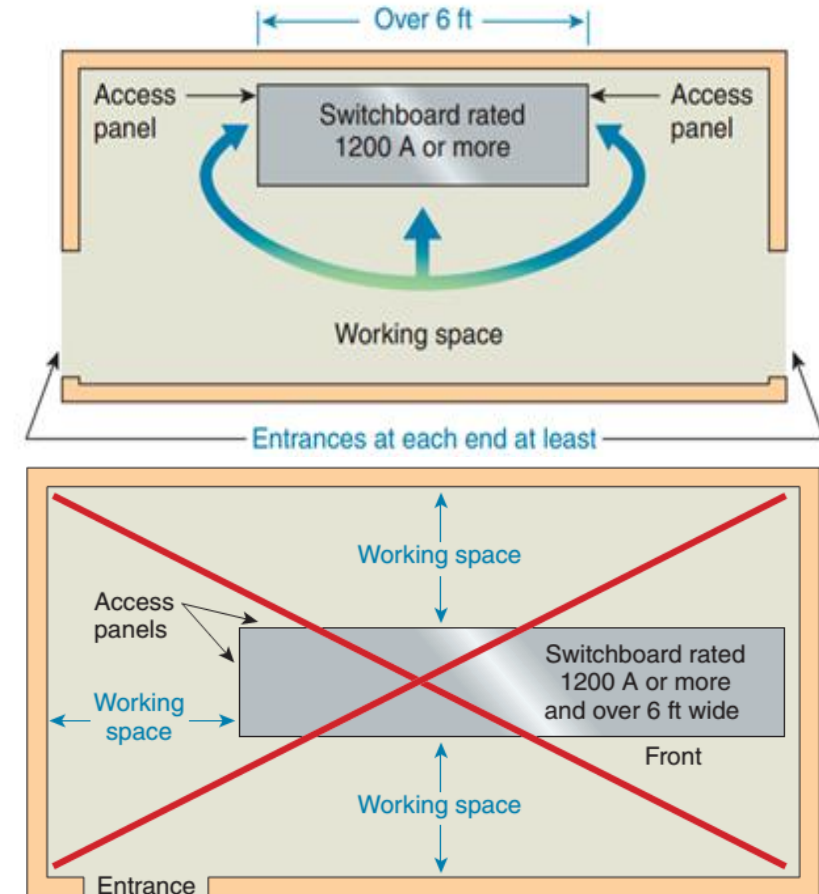
- Large Equipment (“1200A or above” or “more than {6 ft = 1.8288 m}” wide)
 - (Case - C) obstructed Egress with two doors: An entrance to and egress from each end of the working space of electrical equipment rated 1,200A or more that’s over 6 ft wide is required. The opening must be a minimum of 24 in. wide and 6½ ft high,



6.5 ft = 1.9812 m

24 in. = 0.6096 m

2 ft = 0.6096 m



3. Entrance and Egress:

- Importance of Egress doors design to avoid Arc Trap.



3. Entrance and Egress:

- Doors Specs.

If equipment with overcurrent or switching devices rated 800A or more is installed, personnel door(s) for entrance to and egress from the working space located less than 25 ft from the nearest edge of the working space must have the door(s) open in the direction of egress and be equipped with listed panic hardware.

