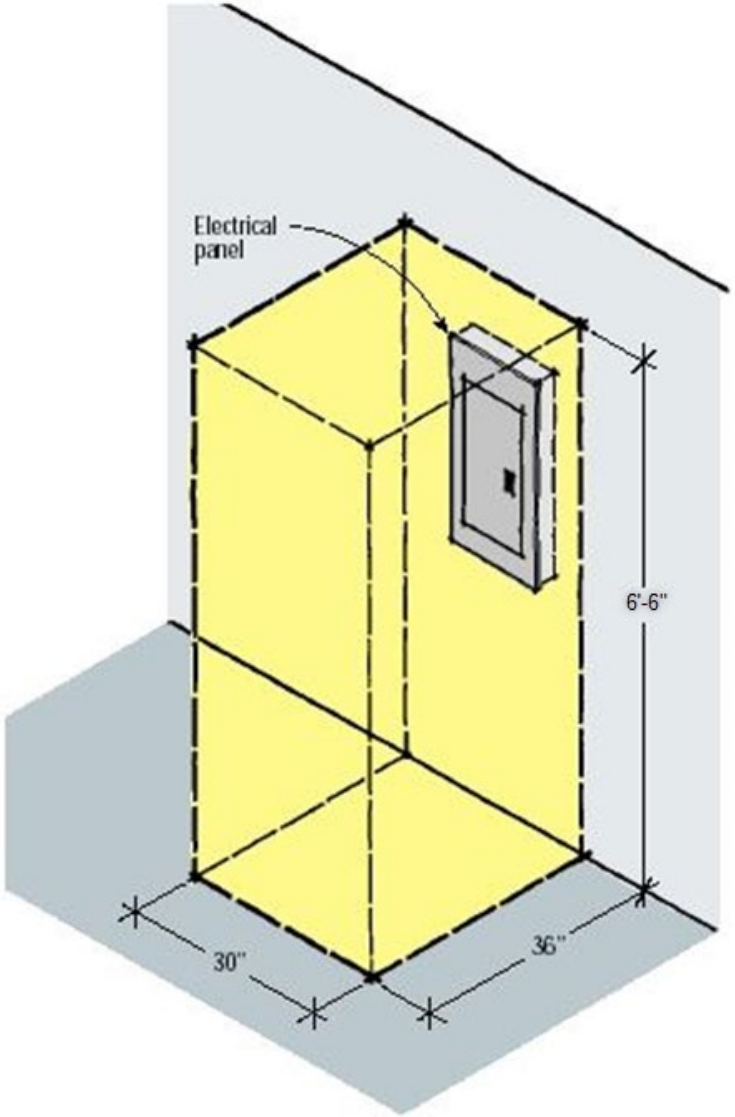
CLEAR ELECTRICAL WORKING SPACE (CEWS)

Issue

The site continues to experience repeated violations of clear working space around electrical equipment (OSHA 1910.303(g)(1)(i)(B), NFPA 70E 130.6.H, 8Q-12 Section 5.1.21.D, 18Q-1 Section 5.1.6). Recently our customer has expressed concern over these repeated violations and expects the issue to be properly addressed.

Summary of Requirement

- Minimum of 30” wide working space must be maintained in front of electrical equipment.
- Minimum of 36” depth working space must be maintained in front of electrical equipment
- Minimum height shall be clear and extend from the grade, floor, or platform to a height of 6.5 feet or the height of the equipment, whichever is greater.
- Working space generally may not be used for any type item for any period.



Consequences

- Delay in access to electrical equipment during normal maintenance and servicing.
- Delay in accessing electrical panels in an emergency increasing the probability of equipment damage, environmental impacts or even death.
- Possible increased fire hazard
- Customer citing none compliance with 10 CFR 851 and 29 CFR 1910.

What Type of Electrical Equipment Requires a Working Space Clearance?

Electrical disconnect switches, breakers, motor control starters, switchgear, lighting and power panelboards, power meters, control panels, and similar type equipment are examples of equipment that require a working space. Electrical equipment that may require examination, troubleshooting, servicing or switching when the equipment is energized is included. Note that "examination" includes voltage testing for the presence or absence of voltage and visual inspection of equipment when energized.

Is the Working Clearance Required for Dry Type Transformers?

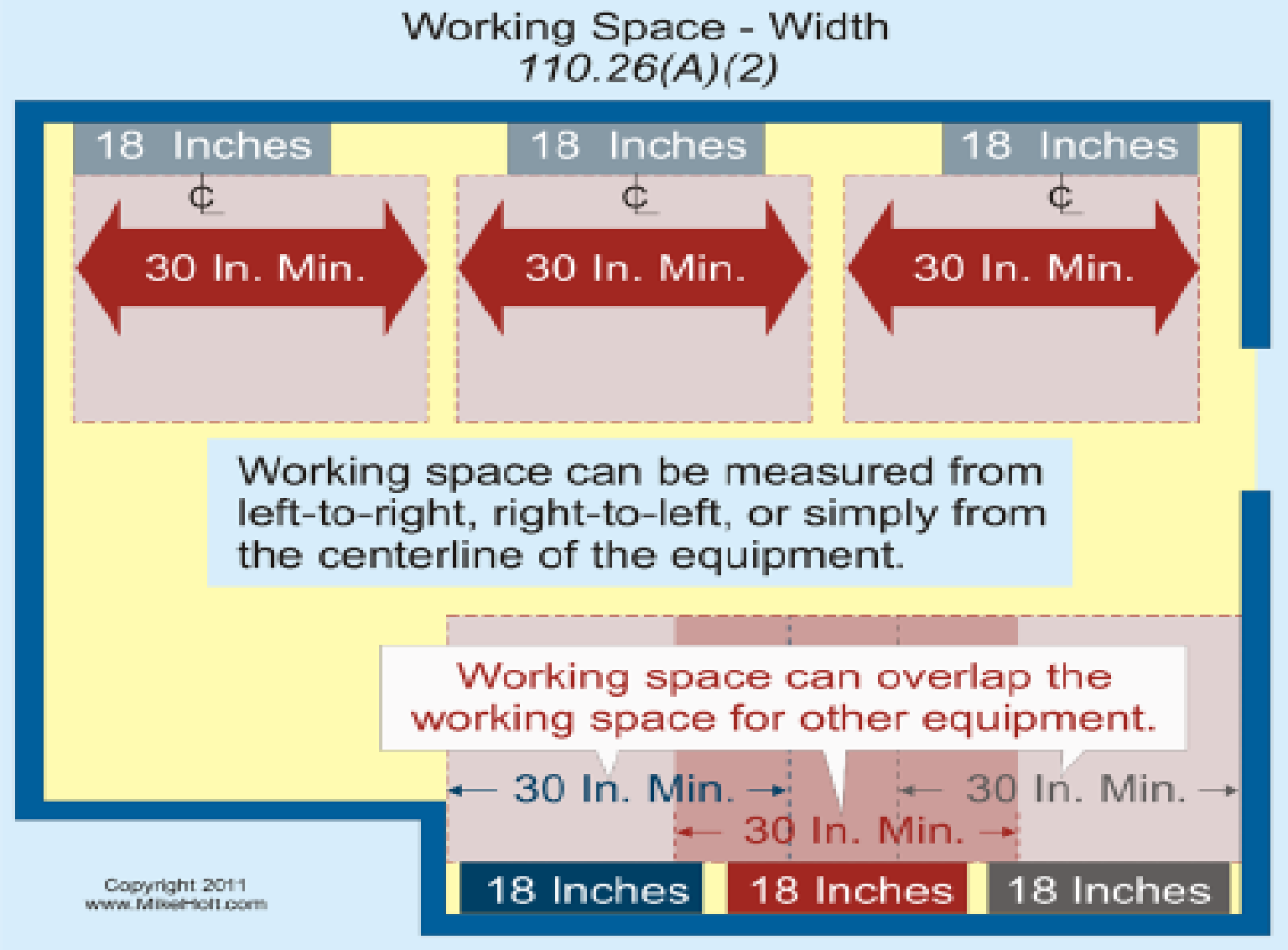
No. Transformers are not meant to be worked on while energized, therefore the work space in front of a transformer can be less. Consideration should be given to air flow required for cooling.

Is Working Space Applicable to New and Existing Installations?

OSHA states that any electrical installation and all utilization equipment installed or overhauled after March 15, 1972, shall comply with the provisions for a working space. Equipment installed prior to this date must comply with the code of record for the installation (e.g., the NEC edition established for the design and construction of the equipment). New installations must comply with the NEC edition adopted at the time of the design phase. The minimum working space dimensions for electrical equipment installed after March 15, 1972 and new installations is provided below.

What is the Minimum Working Space Width?

The minimum width of the working space in front of electrical equipment must be the width of the equipment or 30 inches, whichever is greater. The working space shall permit at least a 90-degree opening of equipment doors or hinged panels. The working space is not required to be directly centered on the equipment. The width can overlap the working space for other electrical equipment.


Working Space - Width
110.26(A)(2)
18 Inches
18 Inches
18 Inches
30 In. Min.
30 In. Min.
30 In. Min.
Working space can be measured from left-to-right, right-to-left, or simply from the centerline of the equipment.
Working space can overlap the working space for other equipment.
30 In. Min.
30 In. Min.
30 In. Min.
18 Inches
18 Inches
18 Inches
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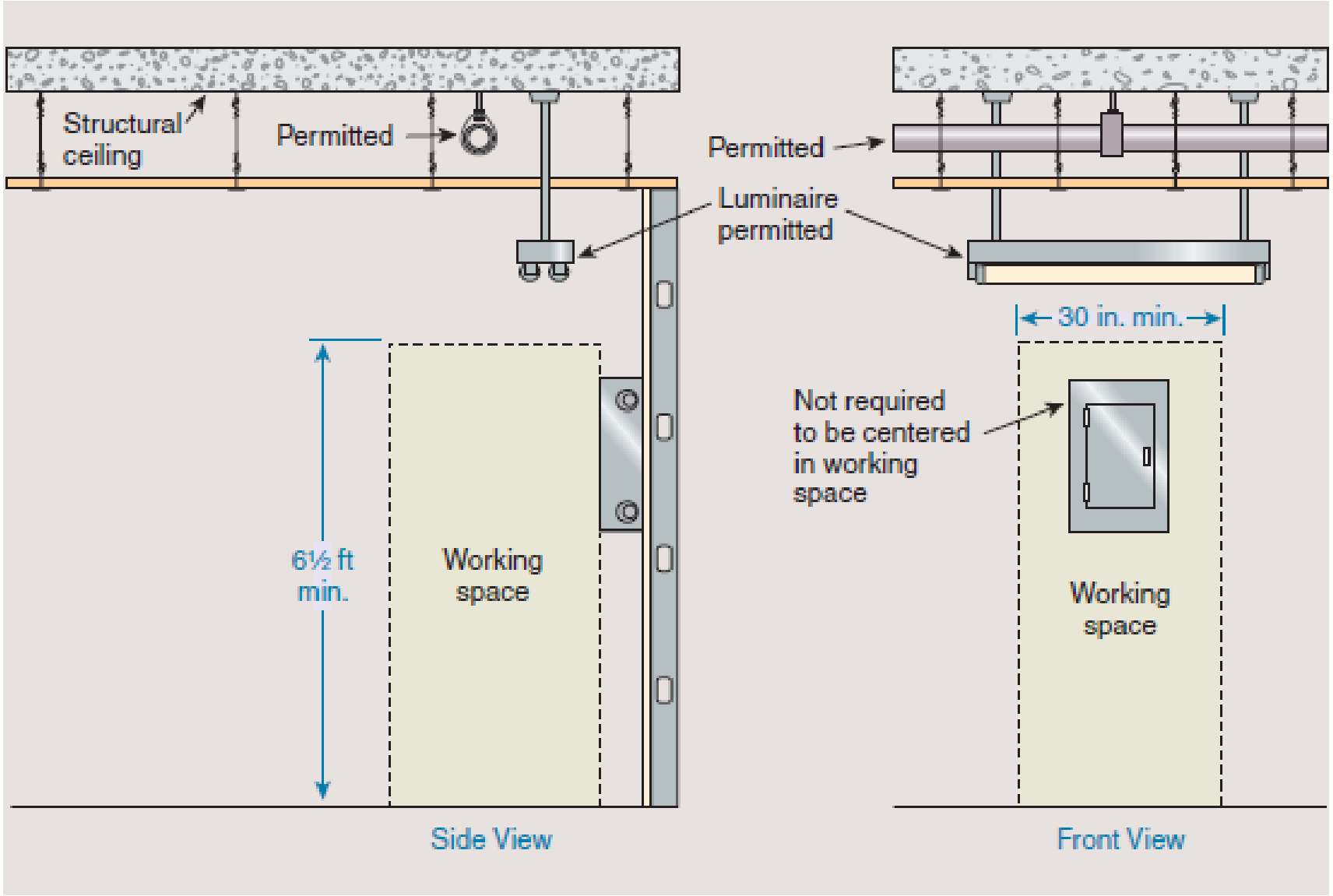
What is the Minimum Working Space Height?

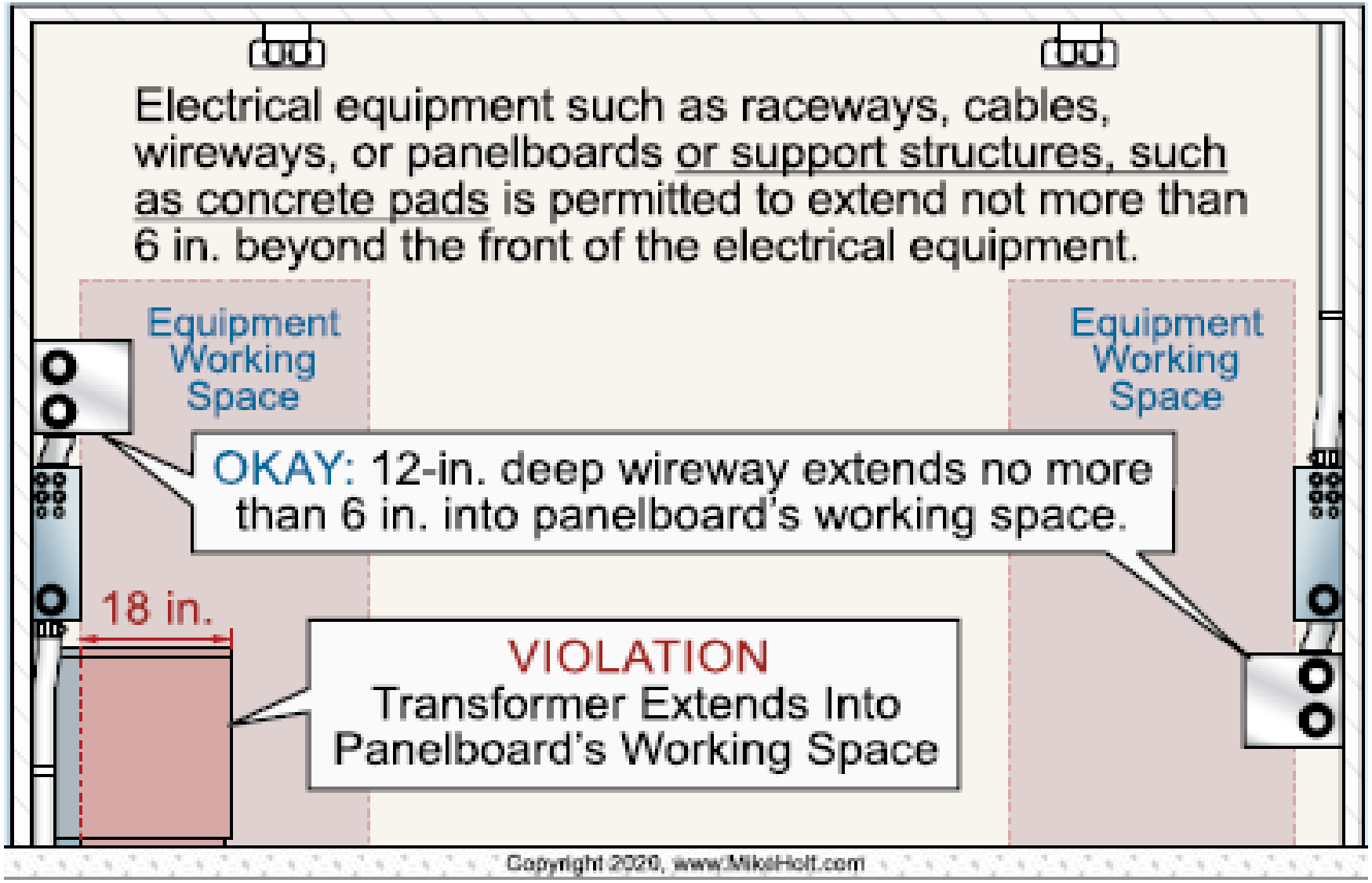
The working space height shall be clear and extend from the grade, floor, or platform to a height of 6.5 feet or the height of the equipment, whichever is greater. Within this height requirement, other equipment associated with the electrical installation and located above or below the electrical equipment is permitted to extend not more than 6 inches beyond the front of the equipment.

For example, electrical equipment such as raceways, cables, wireways, or panelboards or support structures, such as concrete pads are permitted to extend not more than 6 in. beyond the front of the electrical equipment.


Structural ceiling
Permitted
Permitted
Luminaire permitted
30 in. min.
6½ ft min.
Working space
Not required to be centered in working space
Working space
Side View
Front View

What is the Minimum Working Space Depth?

The minimum working space depth, measured from the enclosure front or the live parts if the equipment is not enclosed, must be at least 36 inches in the direction of the live parts. The depth, however, may be greater than 36 inches, if live parts or grounded parts are opposite the face or front of the equipment or panel. The depth of working space, which is measured from the enclosure front and not the live parts, is not permitted to be less than the distances contained in Tables S1 and S2 of OSHA 1910.303 or Tables 110.26(A)(1) and 110.34(A) in the NEC. The minimum distance in these tables are dependent on voltage and three different conditions. Consult the OSHA 1910 standard or NEC for specific table distances.


Electrical equipment such as raceways, cables, wireways, or panelboards or support structures, such as concrete pads is permitted to extend not more than 6 in. beyond the front of the electrical equipment.
Equipment Working Space
Equipment Working Space
OKAY: 12-in. deep wireway extends no more than 6 in. into panelboard's working space.
18 in.
VIOLATION
Transformer Extends Into Panelboard's Working Space
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Is the Working Space Required to be Marked?

There is no requirement for the required clear electrical working space to be marked. However, some facilities may choose to mark the working space with painted blocks or tape on the floor to remind employees not to store materials in the designated location. Some facilities place signs or labels on or near the equipment to warn of the working space requirement. Marking may be performed on a case by case basis such as a location that is likely to be used for temporary storage.

Can Empty Boxes or Relocatable Furniture be stored temporarily in the Working Space?

This working space must be kept clear at all times for operation and maintenance personnel and may not be used for intermittent/incidental storage of nonpermanent equipment or furniture, which could interfere with ready access to the electric equipment in the event of an emergency. Empty boxes, furniture, mops, tools, vacuum cleaning equipment, chairs on casters, etc. are not permitted to be stored in the working space even for a short period of time.

Is It Acceptable for An Electrical Worker to Have Tools in the Space During Maintenance?

When maintenance, servicing, examination or adjustment of the equipment is being performed while energized, tools and test equipment are generally required to be in the working space. The qualified worker is responsible to ensure that these tools and/or equipment are positioned such as not to impede his/her safe egress from the space in the event of an emergency such as an arc flash. If the worker leaves the work location temporarily (e.g. lunch break, bathroom, etc.), the tools and equipment may remain in the space if a controlled work area (e.g. safety signs and tags, barricades, or attendants) is established and maintained.

Does the Working Space Apply to Equipment that is Out-of-Service?

The OSHA and NFPA working space requirement is not applicable unless equipment is designated Out of Commission (OOC) in accordance with Manual 8Q, Procedure 121 or has never been energized and placed into service (e.g. new construction).

What if I Identify Equipment Permanently Installed Within the Working Space Clearance?

If equipment is permanently mounted or installed in the required working space, it must be relocated outside the space. If not feasible to relocate the equipment, Engineering must evaluate the installation to determine if it can be considered a de minimis condition in accordance with Engineering Standard TM-95-1, Responsibilities and Requirements. If the condition does not meet the criteria for de minimis, Engineering must evaluate and determine other alternatives or if a variance is required.

Until the working space issue is dispositioned by the Design Authority Engineer, the electrical equipment may remain in service only if the equipment is tagged and controlled by the facility such that no work can be performed on the equipment when energized (e.g. no examination, servicing, adjustment, or

Are there any Exceptions to the OSHA and NEC Working Distance Clearances?

OSHA Table S-1 (600 Volts and less) permits a minimum depth of 2.5 feet for installations built before April 16, 1981 and a minimum height of 6.25 feet for installations built before August 13, 2007. OSHA Table S-2 also permits similar exceptions for the minimum depth for installations with a nominal voltage to ground above 25,000 volts and built before April 16, 1981. Consult the Table S-2 notes in the OSHA Standard for additional information regarding voltages above 25,000 volts.

Other Actions being taken to Reduce CEWS Violations:

-FMs have been given STAR items to produce a plan for their facilities

-EBRM is being developed post on SERB and SLIC (link) Home Page

-Video is being developed to address CEWS and use as facilities and organizations see fit

Questions