

## Great Western Painting

### Cal/OSHA Electrical High - Voltage

#### **ELECTRICAL HIGH - VOLTAGE**

Cal/OSHA T8 CCR 2940

Cal/OSHA T8 CCR 2940.2

Cal/OSHA T8 CCR 2940.4

Cal/OSHA T8 CCR 2940.6

Cal/OSHA T8 CCR 2946

Cal/OSHA T8 CCR 2947

Per Cal/OSHA T8 CCR 2946, Provisions for Preventing Accidents Due to Proximity to Overhead Lines, no person, firm, or corporation, or agent of same, shall require or permit any employee to perform any function in proximity to energized high-voltage lines; to enter upon any land, building, or other premises and there engage in any excavation, demolition, construction, repair, or other operation; or to erect, install, operate, or store in or upon such premises any tools, machinery, equipment, materials, or structures (including scaffolding, house moving, well drilling, pile driving, or hoisting equipment) unless and until danger from accidental contact with said high-voltage lines has been effectively guarded against.

Per Cal/OSHA T8 CCR 2947, Warning Signs Required, the owner, agent, or employer responsible for the operations of equipment shall post and maintain in plain view of the operator and driver on each crane, derrick, power shovel, drilling rig, hay loader, hay stacker, pile driver, or similar apparatus, a durable warning sign legible at 12 feet reading:

**"Unlawful To Operate This Equipment Within 10 Feet  
Of High-Voltage Lines of 50,000 Volts Or Less."**

In addition to the above wording, the following statement in small lettering shall be provided on the warning sign::

**"For Minimum Clearances of High-Voltage Lines In  
Excess of 50,000 Volts, See California Code of  
Regulations, Title 8, Article 37, High-Voltage  
Electrical Safety Orders."**

When working with high voltage, the following work procedures and operating procedures will be followed:

1. All work locations shall be **safely accessible** whenever work is to be performed.
2. Employees shall be instructed to inspect each safety device, tool or piece of equipment, each time it is used and to use only those in

good condition. The employer shall require the use of safety devices and safeguards where applicable.

3. **Only qualified electrical workers** shall work on energized conductors or equipment connected to energized high-voltage systems. Except for replacing fuses, operating switches, or other operations that do not require the employee to contact energized high-voltage conductors or energized parts of equipment, clearing "trouble" or in emergencies involving hazard to life or property, no such employee shall be assigned to work alone. Employees in training, who are qualified by experience and training, shall be permitted to work on energized conductors or equipment connected to high-voltage systems while under the supervision or instruction of a qualified electrical worker.
4. During the time work is being done on any exposed conductors or exposed parts of equipment connected to high-voltage systems, a qualified electrical worker, or an employee in training, shall be in close proximity at each work location to:
  - a. **act primarily as an observer** for the purpose of preventing an accident, and
  - b. render immediate assistance in the event of an accident. Such observer will not be required in connection with work on overhead trolley distribution circuits not exceeding 1,500 volts D.C. where there is no conductor of opposite polarity less than 4 feet there from, or where such work is performed from suitable tower platforms or other similar structures.
5. **Illumination** shall be provided as needed to perform the work safely.
6. **Insulating equipment** designed for the voltage levels to be encountered shall be provided and employees will be instructed to use the equipment.
7. Insulated gloves, sleeves and blankets must be visually inspected and electrically re-tested periodically at prescribed intervals or when found to be damaged or defected.
8. We are responsible for the periodic visual and electrical re-testing of all insulating gloves, sleeves and blankets. The following maximum re-testing intervals for the items covered by the listed ASTM standards shall apply:

**Testing Intervals:**

In Service Sleeves and Blankets	12 Months
In Service Gloves	6 Months

Gloves, Sleeves and Blankets will be marked to indicate compliance with the re-test schedule and will be marked with either the date tested or the date the next test is due.

**Note: Gloves, sleeves, and blankets that have been electrically tested but not issued for service shall not be placed into service unless they have been electrically tested within the previous twelve months.**

**Note: Gloves, sleeves and blankets shall be marked to indicate compliance with the re-test schedule and shall be marked with either the date tested, or the date the next test is due.**

9. Insulating equipment found to be defective or damaged will be immediately removed from service.

**Clearances:**

No employee shall be permitted to approach or take any conductive object without an approved insulating handle closer to exposed energized parts than shown in Table 2940.2 unless:

1. The employee is insulated or guarded from the energized part (gloves or gloves with sleeves rated for the voltage involved shall be considered insulation of the employee from the energized part), or
2. The energized part is insulated or guarded from the employee and any other conductive object at a different potential.

When performing work with live line tools, minimum clear distances in Table 2940.2 shall be maintained. Conductor support tools, such as link sticks, strain carriers, and insulator cradles, shall be permitted to be used provided that the clear insulation is at least as long as the insulator string or the minimum distance specified in Table 2940.2 for the operating voltage.

**TABLE 2940.2  
ALTERNATING CURRENT--MINIMUM APPROACH DISTANCE**

Nominal Voltage Range (Phase to Phase) Kilovolt	Minimum Approach Distance Phase to Ground Exposure
Above 0.6 to 15.0	2 ft. 1 in.
Above 15 to 36.0	2 ft. 4 in.
Above 36 to 46.0	2 ft. 7 in.
Above 46 to 72.5	3 ft. 0 in.
Above 72.5 to 121.0	3 ft. 4 in.
Above 121 to 145.0	3 ft. 7 in.
Above 145 to 169.0	4 ft. 0 in.
Above 169 to 242.0	5 ft. 3 in.
Above 242 to 362.0	8 ft. 6 in.
Above 362 to 552.0	11 ft. 3 in.
Above 552 to 765.0	15 ft. 0 in.

**Note: Above 242 KV the minimum working distance and the minimum approach distance shall be permitted to be reduced provided that such distances are not less than the shortest distance between the energized part and a grounded surface.**

### **Clearances or Safeguards:**

Except where overhead electrical distribution and transmission lines have been de-energized and visibly grounded, the following provisions shall be met:

1. The operation, erection, or handling of tools, machinery, apparatus, supplies, or materials, or any part thereof, over energized **overhead high-voltage lines** shall be prohibited.

**Exception: Tower cranes (Hammerhead) installed not closer than the minimum clearances set forth in Table 2, whereon the trolley or boom travel is controlled by limit switches which will prevent carrying a load over energized overhead high-voltage lines or within a horizontal distance closer than the minimum clearances set forth in Table 2.**

2. The operation, erection, handling, or transportation of tools, machinery, materials, structures, scaffolds, or the moving of any house or other building, or any other activity where any parts of the above or any part of an employee's body will come closer than the minimum clearances from energized overhead lines as set forth in Table 1 shall be prohibited.
3. The erection, operation or dismantling of any **boom-type** lifting or hoisting equipment, or any part thereof, closer than the minimum clearances from energized overhead high-voltage lines set forth in Table 2 shall be prohibited.
4. The **storage** of tools, machinery, equipment, supplies, materials, or apparatus under, by, or near energized overhead high-voltage lines is hereby expressly prohibited if at any time during such handling or other manipulation it is possible to bring such tools, machinery, equipment, supplies, materials, or apparatus, or any part thereof, closer than the minimum clearances from such lines as set forth in Table 1.

Operation of boom-type equipment shall conform to the minimum clearances set forth in **Table 2**, except in transit where the boom is lowered and there is no load attached, in which case the distances specified in Table 1 shall apply.

**TABLE 1**

**General Clearances Required from Energized Overhead High-Voltage Conductors**

<u>Nominal voltage (Phase to Phase)</u>	<u>Minimum Required Clearance (Feet)</u>
600.to 50,000	6
over 50,000 to 345,000	10
over 345,000.to 750,000	16
over 750,000 to 1,000,000	20

The specified clearance shall not be reduced by movement due to any strains impressed (by attachments or otherwise) upon the structures supporting the overhead high-voltage line or upon any equipment, fixtures, or attachments thereon.

Any overhead conductor shall be considered to be energized unless and until the person owning or operating such line verifies that the line is not energized, and the line is visibly grounded at the work site.

**TABLE 2**

**Boom-type lifting or hoisting equipment clearances required from energized overhead high-voltage lines**

<u>Nominal voltage (Phase to Phase)</u>	<u>Minimum Required Clearance (Feet)</u>
600.to 50,000	10
over 50,000 to 75,000	11
over to 75,000 to 125,000	13
over 125,000 to 175,000	15
over 175,000 to 250,000	17
over 250,000 to 370,000	21
over 370,000 to 550,000	27
over 550,000 to 1,000,000	42