Crane Tech Newsletter

CRANE TECH

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Excerpt from ASME B30.5, Table 2: Required Clearance for Normal Voltages in Operation Near High-Voltage Lines.

Minimum Nominal Voltage, kV (Phase to Phase)	Required Clearance in Feet
to 50	10 ft.
Over 50 to 200	15 ft.
Over 200 to 350	20 ft.
Over 350 to 500	25 ft.
Over 500 to 750	35 ft.
Over 750 to 1,000	45 ft.

(1) Environmental conditions such as fog, smoke, or precipitation may require increased clearances.
Note: In transit clearances are not addressed in this Tech Tip.

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Tech Tips©

Crane & Rigging Job Site Safety

Power Line Safety:

If you want to know the number one cause of crane related fatalities you need not look any further than power lines. The Bureau of Labor Statistics reports that a high percentage of electrocution deaths comes from contact with overhead power lines.

Why so many injuries and fatalities result from crane contact with power lines is a continual point of interest. Simply telling operators to "look up" and recognize the danger is not enough. Operators need greater awareness of these dangers and a better visual reference.

When seated in a crane cab it's difficult to judge power line clearance. The difficulty comes in because there is very little reference for an operator looking out to a boom point. And, because power lines are seen as thin black lines in the sky, operators have difficulty distinguishing distance, and they may not even see them.

A few basic rules to help avoid power line contact.
(1) Crane operators must learn to recognize the Prohibited Zone. The Prohibited Zone is the area surrounding energized power lines whose size is dictated by the highest voltage in the lines. (See the table inset)
(2) Plan to have power lines de-energized or relocated as necessary to prevent energizing the crane. Planning ahead gets this job done before your crane arrives.
(3) Plan to ensure proper clearance is maintained if the operator booms down. If the crane's boom could move into the prohibited zone special precautions must be taken to ensure that no part of the crane or load will enter the prohibited zone. Make operating within a boom's length of the prohibited zone a condition requiring special planning.
(4) Never handle loads that are placed under power lines. Barricade these areas to prevent storage of materials or crane entry.
(5) Crane operators must know Minimum Required Clearances of the ASME B30.5, but don't expect operators to know how much voltage a power line carries. Supervisors must find this information and help operators plan their crane's set-up.

Tech Tip Continued:

(6) Never allow a crane to set up on one side of power lines and handle loads on the other side of the power lines. This is an extremely dangerous operation and it must never be allowed to occur.
(7) Alert ground personnel to the dangers associated with power line contact. These are the workers typically killed when a crane comes into contact with power lines. If a power line contact does occur, ground personnel must not go to the operators aid because the crane and ground will be energized.

A short Tech Tip cannot cover every aspect of power line safety, but raising awareness to this deadly subject may improve awareness to this deadly topic.

To help crane operators and ground crews gain a better sense for the location of power lines and load you may find the following practice useful.

Make a Ground Level Reference for the Prohibited Zone:
(1) Determine the distance from power lines that creates the prohibited zone. Increase this distance the greatest amount possible. Don't forget to add in the distance of jibs and/or extensions that are installed but not in use.
(2) Project this distance to the ground and place large high visibility construction cones or barrels along the line created by your prohibited zone measurement.
(3) Advise crane operators and ground crews to not allow loads to move beyond the cones.

High visibility cones and/or barrels create a visual reference line that is easily seen by the crane operator and ground crews. This planning step can reduce the likelihood of a load or crane intruding into the Prohibited Zone.

Read and be thoroughly familiar with ASME B30.5-3.4.5 "Operating Near Electric Power Lines."

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