

# Overhead Power Line Safety for Contractors Working in the City of Lodi

**Lodi Electric Utility**



**By following simple procedures, you can  
save lives and prevent accidents**

(209) 333-6766

## Working Safely

As a contractor, before you can even break ground on a construction project, you have a lot of up front work to accomplish. This booklet provides information that will assist you in your job planning and construction phases, along with information about safety precautions, on-site supervision, safe monitoring of heavy equipment operators and crane operators. Lodi Electric is willing to be your partner when it comes to working safely around utility installations near your construction project. Working together, we can save lives and prevent accidents.



## Overhead Utilities

*Blinding sunlight struck Jim's eyes as he surveyed the project site. Only a few power lines were overhead. Easily avoidable, thought Jim, as his crew began to gather around. "It's going to be a nice day", said one workman, as the crane slowly moved into place, its boom swinging too high and far to the right. "Hey, watch the boom!" yelled Jim, waving his hands at the crane operator. Startled, the crane operator strained to hear him over the engine's drone. "What?" Then he saw it, just before the boom struck the lines. Sparks flew as the operator jumped from the cab to the ground. Everyone scattered. "Watch it, the area's energized with electricity, shouted Jim, warning his crew. That's when Jim saw his crane operator on the ground. He's hurt," shouted a co-worker.*



**What could have been done to prevent this accident?**

Electrical contacts are among the most frequently repeated of all construction accidents, and many involve equipment contacting overhead electrical power lines, such as cranes. In fact, power line contact is the largest single cause of fatalities associated with cranes. If correct safety procedures are actively practiced, these incidents can be avoided.

When operating any type of high-lift or heavy equipment near power lines, or electrical equipment, it is important to exercise extreme caution and adhere to safe equipment operation guidelines. Do not allow any part of machinery or equipment to come within the allowable approach distance of power lines (see table A). Not only does that violate the Occupational Safety and Health Administration (OSHA) rule, section 1926.600, but it also

is dangerous for the operator and other employees in the area.

When working near any overhead power line, keep a 10-foot circle of safety between you, your equipment and the line. Practice the 10-foot safety rule and be safe. For crane operations reference the Crane Procedures section of this pamphlet.



## Safety Considerations

Electricity will flow through any metal or other conducting material touching energized lines, even wood. When machinery, equipment, or materials contact electrical lines, all conductive parts become energized and are dangerous.

Electric lines can break or burn, in two, causing the energized line to fall onto communication wires, fences, or other objects. These, in turn, may become energized and dangerous.

Only trained personnel using special tools and personal protective equipment (PPE) can work around high voltage. These tools and equipment are regularly maintained, tested, and inspected.

Please notify us of any incident involving contact with an energized Lodi Electric power lines so we may inspect the site, make



the appropriate repairs, and avoid future problems or damage. Other local utilities or government agencies may also need to be notified.

If contact occurs, completely inspect the machine for possible damage. Wire rope should be replaced if it touches a power line since the arc is usually of sufficient high temperature to either weld or badly damage the wires.

## Pre-Job Planning

During the pre-job planning phase – after your first site survey is made – plans should be developed for working around any energized electric lines. Overhead power lines can be a hazard in any construction project, whenever any



conductive objects are raised into the air, such as when guying towers or structures, moving houses, installing TV antennas, constructing a scaffold or tower, or operating cranes and high-lift equipment. Take care of any safety concerns prior to the start of work or the arrival of any heavy equipment to prevent accidents and avoid job delays. Don't take chances with your safety.



### **Safety Precautions**

- Post warning signs prominently on all cranes or high lift equipment to effectively keep job personnel on the alert for accidental electrical contact and what to do in an emergency.

- Do not stockpile, load, or unload any material near, underneath power lines.
- Do not locate access roads or ramps near, underneath power lines.
- Treat all power lines energized until confirmed by a utility employee they are de-energized.
- Exercise caution when working near overhead lines that have long spans between poles. Wind can make them swing laterally. Ice buildup causes sagging.

### **Site Supervision**

When power lines are present near the work area, the person in charge of the job site is responsible for the safety of the general public, equipment, and personnel. Contractors should establish and enforce the following to prevent contact and accidents:

- Let employees and subcontractors know the absolute limit of approach –



the area surrounding every energized electrical power line.

- Choose operating locations to maintain maximum clearances from power lines.
- Do not, under any circumstances, move any crane boom, high-lift equipment, or load line into this area. All commercial-cage type boom guards, insulating links, and proximity warning devices have limitations; utilize these devices with extreme caution.

### General Equipment

For all equipment (except cranes), the following clearances need to be in place for “unqualified” personnel.

- For voltages to ground 50kV or below – 10 feet.
- For voltages to ground over 50kV – 10 feet plus 4 inches or every 10kV over 50kV.

**TABLE A**

Line Voltage	Absolute Limit of Approach
Up to 50,000	10 feet
50,001 115,000	12 feet
115,001 to 230,000	16 feet
230,001 to 500,000	25 feet

### There is no substitute for abiding by the above safety measures.

A good rule of thumb for avoiding contact with the overhead power lines is to keep a 10-foot circle of safety between you, your equipment, and the line. Do not permit any part of your equipment, or any person working on or around it, to come within 10-feet of any power line. Serious injuries could result to you or others working near you.

If you do come in contact with an energized line refer to the “If Contact Occurs” section of this pamphlet.

### Spotter

A person shall be designated to observe clearance of equipment and give timely



warning for all operations where it is difficult for the operator to maintain the desired clearance by visual means.

Here are the safety precautions spotters should adhere to:

- Have no other duties while the equipment is working near the power line.
- Position himself or herself in full view of the operator and, if using hand signals, close enough for the signals to be seen clearly.
- Warn the operator when the machine is approaching the lines because the operator may not be able to accurately judge the distance.



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## Crane Procedures

Preparing the job site for a crane to work in the area of power lines is crucial to working safely. The company controlling or directing the crane operation must, through their project engineer, superintendent or foreman, provide a well prepared working area for the crane.

The following OSHA regulatory requirements apply to crane work. These are the responsibility of the crane operator employer:

- Perform a hazard assessment before beginning equipment operations. The hazard assessment must identify the work zone, by either:
  - Demarcating boundaries and prohibiting the operator from operating equipment past those boundaries or by
  - Defining the work zone as the area 360 degrees



around the equipment's maximum working radius.

- Determine if any of the equipment, load line, or load if operated up to the maximum working radius could get closer than following distances to a power line.

- Up to 350 kV = 20 feet minimum clearance

- Over 350 kV = 50 feet minimum clearance

If any part of the crane can get closer than the trigger distance (20/50 ft.) one of the following three options, specified in the OSHA Crane standard, must be followed:

- Option 1: De-energize and ground. Confirm from the utility owner/operator that the power line has been de-energized and visibly grounded at the work site.

- Crane operator employer needs to contact the utility operator to determine if the line can be de-energized.

- Option 2: 20/50 Foot Clearance – ensure that no part of the load, load line, or equipment get closer than 20/50 feet to the power line by implementing the measures specified in the OSHA Crane standard.

- Option 3: Table A Clearance – To use this option, line voltage must be followed.

Here are additional safety preparations to keep in mind when planning and conducting crane work:

- Make sure there is enough room to erect and extend the boom away from overhead power lines.

- Operating locations should be far enough away from shoring, excavations, trenches, buried utilities, foundations, etc. to eliminate risk of collapse.

- Be especially careful when moving the crane because uneven ground can cause the





boom to weave and swing into power lines.

- Whenever cranes or large equipment must repeatedly travel beneath power lines, a plainly marked route and erected “rider poles” must accompany each side of the crossing approach to ensure the equipment (crane) structure is lowered to a safe position. The routes should be located as close to the power line support tower or pole as possible in order to take advantage of the greater ground clearance.
- Notify Lodi Electric about when and where a crane will be working near power lines.
- Treat all wires and electrical equipment as energized until de-energized and visibly grounded by the electric utility.
- Use a qualified signalman when required by the OSHA Crane standard.
- Don’t rely on grounded equipment for safety since

they provide little or no protection to personnel on the ground who may touch the crane.

- Except for the operator, keep all personnel well away from the crane whenever it is working close to power lines. Don’t allow anyone standing on the ground to touch the crane.
- For further information on operating near power lines contact Lodi Electric or visit [www.osha.gov](http://www.osha.gov) and reference 29 CFR Section 1926, 1408-1412 and 1926.600.



## Operator Training



Accidents can be avoided if the heavy equipment operator is trained about proper safety measures when working in the vicinity of power lines. Here are the major training points that should be covered:

- Provide adequate advance notification to the local electrical power company.
- Ensure the electric utility is fully informed about when the operations are to begin, when they are due to be completed, and when any location changes are planned.
- Before setting up or operating on any project, always locate the power lines, assess how they will affect your work and exercise extreme caution around them.

### **If Contact Occurs**

If equipment contacts power lines and the machine or its load becomes energized, follow these safety steps:

- Call 9-1-1. For non-injury contact call Lodi Electric Utility.
- If line does not belong to the City of Lodi we will contact the correct utility company.
- Don't panic. Advise the operator to remain in the machine's cab.
- Keep everyone away from the area. The machine, the load, and the ground around it will be energized.
- Don't move toward the machine to render aid. Even a slow walk can hurt.
- The machine should be moved off and well away from the power line, if possible.
- If the machine is not on fire and cannot be moved away or disentangled from the line, the operator should remain inside the machine until the power company de-energizes the circuit and



confirms that conditions are safe.

If the operator must leave the machine, follow these bail-out procedures:

- DO NOT step down from the vehicle! Under no circumstances should you step down from the vehicle, allowing part of the body to be in contact with the ground while any part is touching the machine.
- JUMP CLEAR of the machine with your feet together. Because there may be hazardous voltage differential in the ground, you should jump with both feet together, maintain balance and shuffle slowly across the affected area. Do not; under any circumstances take large steps, making it possible for one foot to be in a high voltage area and the other foot to be in a lower voltage area.

- Do not touch any person who is in contact with energized equipment.
- After the victim has been cleared from contact with the energized equipment, administer CPR, if necessary, and seek immediate medical attention.



PLEASE...take a moment to review this safety booklet. Put it in a handy place, such as the glove compartment of your vehicle or near your telephone.

## Notifying Lodi Electric

We want you to avoid contact with overhead lines so your project can be accomplished safely. Call us a week in advance and we will discuss the best way to proceed with your project so that it can be done safely and economically. It may be possible to relocate the line, or de-energize the line (in some cases).

**Lodi Electric Utility**

**209-368-5735**

**[www.lodielectric.com](http://www.lodielectric.com)**