



Construction Bulletin No.20, March 2008 (revised)

Keep Clear of Overhead Electric Lines

Overhead power lines have become so much a part of our outdoor landscape that it is easy to forget that they are there. When there's sun in your eyes, trees in your line of vision or the need to be watching something else, you cannot see exactly how close you come to power lines.

Therefore, anyone who operates any mobile mechanical plant such as cranes, loaders, excavators, drilling or pile driving equipment, or other like device, needs to take time to focus on what is above as well as what is to be achieved.

Don't let the prospect of having a job done quickly turn into a tragedy.

Overhead power lines carry high voltage electricity. Contact with these lines or other objects that in turn contact them is often fatal. Even if you can't see any power lines, or if you don't think you are near them, the danger is always there.

Site Specific Safety Plan

The site should be visited before work is to commence, to carry out hazard identification and to plan a control process. Particular attention should be taken to see if any power lines will affect the work to be carried out.

If the work involves mobile plant and is conducted near power lines, a trained and competent person should be assigned the role of observer to signal and warn the machine operator if any part of the machine comes any closer than the specified safe distance of the power line.

How Close is Safe?

This depends on the voltage of the power line. The higher the voltage, the greater the safety approach distance required. Electricity can flash over to an object or person without actual contact.

The safe approach distance is the distance that must be maintained between a power line and an object to avoid a dangerous flashover.

Identifying Clearance Distances

The minimum safe approach distance for mobile plant near overhead lines is specified in NZECP 34: 2001 New Zealand *Electrical Code of Practice for Electrical Safety Distances*.

4 Critical Safety Factors

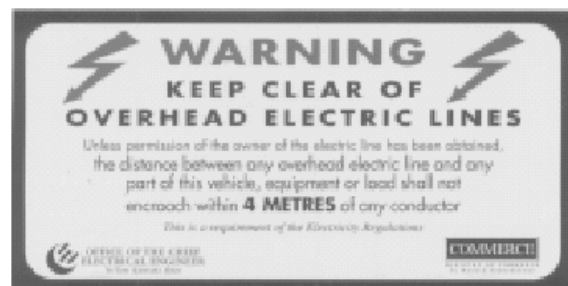
1. Check every time for the location of power lines before moving equipment, loading or unloading vehicles, stacking tall or long loads and scaffolding.
2. Always obtain a safe approach distance from the power line owner if required to work closer than 4 metres.
3. Take particular care:
 - With all cranes and excavators;
 - When dumping material using lift tray trucks; and
 - Fastening loads while standing on top of the load.
4. Do not work on top of a vehicle near power lines.

Some of those distances are included in this bulletin, however you should consult the original document which is available from the Electrical Workers Registration Board, ph: 0800 661 000 or free to download from the website:

http://www.ess.govt.nz/rules/rules_codes.asp

The code of practice requires that the distance between any live overhead electric line and any part of any mobile plant or load carried shall be at least 4.0 metres, unless the operator has received written consent from the overhead electric line owner allowing a reduced distance.

Where any mobile plant is likely to be used at any time in the proximity of power lines, the following warning notice is to be displayed in a conspicuous place as near as practicable to the operator's position.



Safe Working Distance to Buildings, Scaffolding and Other Structures

No person is allowed to erect any building, scaffolding, or other structure at a distance in any direction from the power line conductors of less than that shown in the following table:

Minimum Distance in Any Direction for Construction of Buildings, Scaffolding and Other Structures Near Overhead Power Lines

Circuit voltage (kV)	Max Span Length (m)	Min. Distance beneath under normal conditions (m)	Min. Distance to the side under normal conditions (m)
< 1	50	4	3.5
> 1 < 11	80	5.5	5
> 11 < 33	125	7	8.5
> 33 < 110	125	7.5	9.5
> 110 < 220	125	8.5	11
275 (dc) 350 (dc)	125	8.5	7.5
> 33	250	8	12
> 33 < 110	250	8.5	12.5
> 110 < 220	250	10	14
275 (dc) 350 (dc)	250	10	11
> 33	375	9.5	20.5
> 33 < 110	375	10	21
> 110 < 220	375	11	22.5
275 (dc) 350 (dc)	375	10.5	18

For all other spans engineering advice is required.

Where you need to work at a distance closer than that specified above, the power line owner should be approached to have:

- The line removed; or
- The power disconnected; or
- The conductors insulated to provide added protection along with a specified safe approach distance.

What To Do If Mobile Plant Comes Into Contact With Power Lines

When a vehicle comes into contact with power lines, there is a high risk of serious injury or even fatal shock. If the vehicle you are driving contacts power lines, it is best to remain where you are until the power has been switched off.

Most rural power lines have an automatic reset (auto-reclose) which turns the power back on after a trip.

The exceptions are:

- If you are in danger of direct contact with the power line;
- A fire starts; or
- It is unlikely that anyone else will know your situation.

In these circumstances it may be necessary for you to leave your vehicle.

When leaving your vehicle:

- Do not touch both the vehicle and the ground at the same time.
- Jump off the vehicle so that no part of your body is touching the vehicle and the ground at the same time.

Do not return to your vehicle once you have left it. As electricity flows through the ground, it can cause dangerous voltages to appear such that a person may receive an electric shock foot-to-foot when walking close to the scene. In order to reduce this possibility, it is best to remain still or take short steps to a safe position.

Excavations Near Power Supports

Except with the prior written consent of the pole or stay wire owner, no person shall interfere with any land where the work:

1. Is at a greater depth than 300mm within 2.2m.
2. Is at a greater depth than 750mm within 2.2m and 5m.
3. Creates an unstable batter.

Construction Near Power Supports

Except with the prior written consent of the pole or stay wire owner, no building or similar structure shall be erected closer to power supports than:

Circuit Voltage	Pole	Tower
11kV to 33kV	2m	6m
33kV to 66kV	6m	9m
> 66kV	8m	12m

Spoil or other material is not to be deposited under or near power lines, as this will reduce the safe distance to the conductor.

If you have any questions about matters raised in this bulletin, or any other matters concerning health and safety in the workplace, please contact your nearest Department of Labour office.