



Power Line Hazards

A Contractor Safety Handbook

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Power Line Hazards

A Contractor Safety Handbook

Electrical Safety for Boom Truck, Crane
and Heavy Equipment Operators

This handbook, prepared and distributed by Maritime Electric, is not by any means an exhaustive treatment of the subject cover. It is intended to remind construction workers and others of a very simple but sometimes overlooked principle: If you put yourself, even for an instant, between a power line or other energized equipment and a ground, you will likely be killed or injured.

The information contained herein has been recognized by the Prince Edward Island Occupational Health and Safety Division of the Workers Compensation Board.

For additional information refer to the current edition of the Prince Edward Island Occupational Health and Safety Act and Regulations.



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Preface

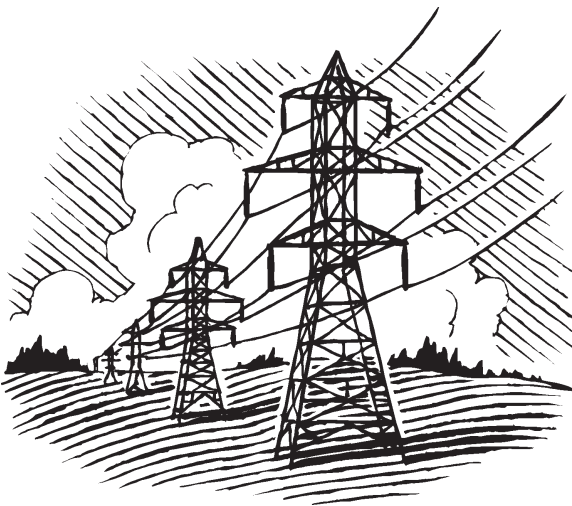
When treated with respect, electricity provides us with many benefits, but each year people are injured or killed in electrical contract accidents.

The following fatal accidents clearly illustrate the need for workers to treat electricity with the utmost respect.

A twenty-eight year old construction workers was on the ground guiding cast iron pipe which was being off-loaded from a boom truck. The operator of the truck accidentally contacted the 12,500 volt power line with the boom. The worker guiding the pipe was electrocuted.

A twenty-six year old man was assisting with the transport of a house on a flat bed trailer. He was electrocuted when he contacted a 7,200 volt energized line while standing on the roof of the house raising wires to enable the load to pass underneath.

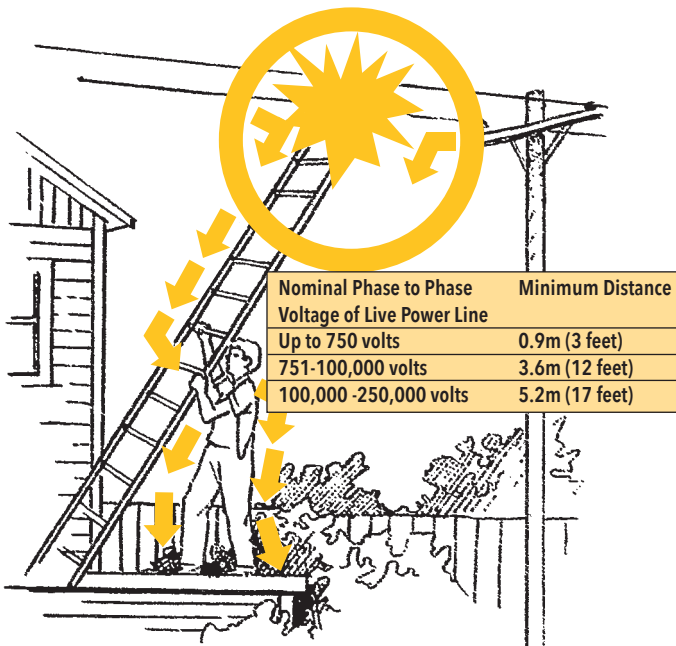
A thirty year old man was fatally injured while assisting in the off-loading of a boat from a flatbed boom truck. He was standing on the ground and touching the truck when the boom contacted a 12,500 volt power line.



Always keep a “minimum safe distance” between yourself and power lines

Electrical current will flow along wires without causing any harm unless it is somehow interrupted, so keep a “minimum safe distance” between yourself, or any conducting object, and power lines at all times.

It is important to remember that electricity seeks the fastest and shortest route of ground. If you are the object that interrupts the flow, the electricity will be conducted through you to the ground causing injury or death. If you get too close to or touch an overhead wire with any conducting object or your body, the electricity will seek the fastest route to ground – through you.



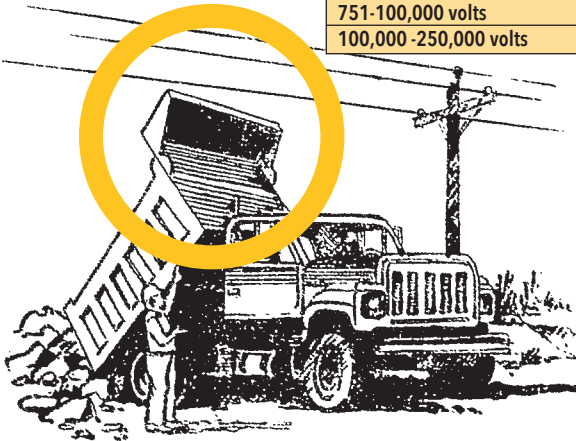
Always look up first and watch for the lines.

High voltage wiring is not insulated. Touch it and you could be injured or killed

Electrical wires and extension cords we use in the home have a protective covering, so we can touch them and not come in direct contact with electricity.

Electrical power lines are not insulated with a protective outer covering; there are usually bare. Most electrical accidents are caused by people making contact with overhead power lines. If you touch them or even get too close to them with anything such as a ladder, boom truck or any other piece of equipment, the current will be directed on the ground through the object and you, causing injury or death.

Nominal Phase to Phase Voltage of Live Power Line	Minimum Distance
Up to 750 volts	0.9m (3 feet)
751-100,000 volts	3.6m (12 feet)
100,000 -250,000 volts	5.2m (17 feet)



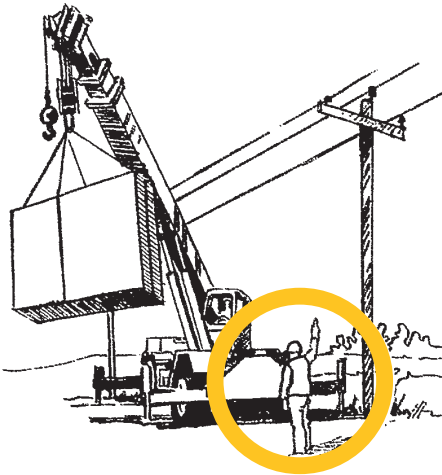
Keeping a “minimum safe distance” from power lines is essential on the construction site.

Maritime Electric cautions workers to inspect each work site for overhead power lines before starting the job

When in doubt, call Maritime Electric for assistance and advice. See the back of this booklet for useful telephone numbers. To reach Maritime Electric call 1-800-670-1012.

The proper use of competent signal persons will help to ensure safe clearances from overhead power lines.

After the job has been completed, great care should be taken when dismantling scaffolds and lowering cranes. This is often the most dangerous part of the job as workers on site may have become complacent to the surrounding wires.



When operating lifting equipment use a competent signal person to guard against getting too close to overhead wires. If the "minimum safe distances" cannot be maintained, call Maritime Electric at 1-800-670-1012.

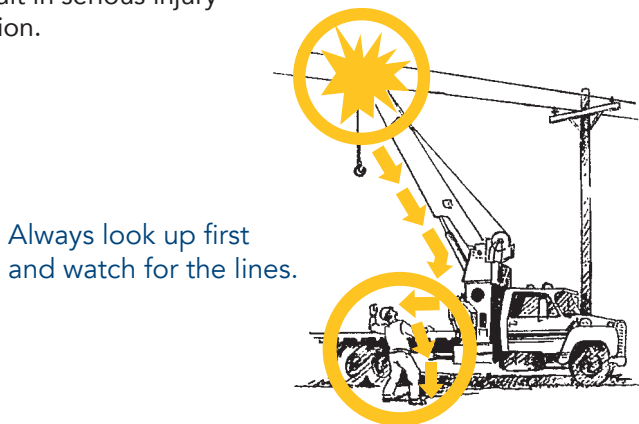
If you or your equipment comes within the “minimum safe distance” to an energized power line, you and your fellow coworkers are at a very high risk of being seriously injured or killed

If the equipment does make contact with power lines or other Maritime Electric equipment, remain in or on the equipment and warn others to stay clear. Try to lower or swing the crane boom away from the wires, or move the vehicle to free it.

If at all possible, stay on the vehicle or other equipment until someone from Maritime Electric tells you it is safe to leave. Trying to jump free of the vehicle or other equipment, if still in contact with power lines, will probably result in fatal electrocution. This CANNOT BE OVEREMPHASIZED.

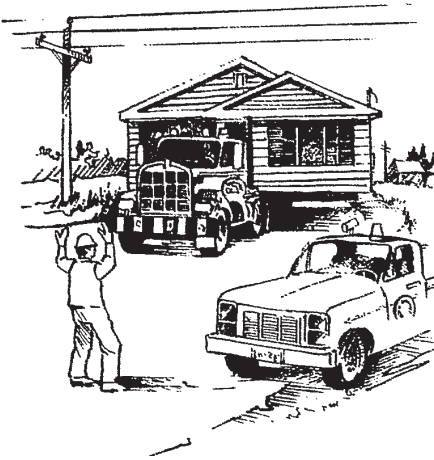
If you absolutely must leave the vehicle or other equipment before the arrival of electric utility personnel, just free so your body isn't touching the vehicle or equipment and the ground at the same time, land with your feet together and hop away from the scene to a distance at least 50 feet (15 metres). Warn others to remain clear and call Maritime Electric.

As illustrate below, touching the energized vehicle and the ground at the same time will likely result in serious injury or fatal electrocution.



When transporting high loads, never attempt to raise wires

If you intend to move a building or structure along public streets or roads where the maximum vehicle and load dimensions exceed 4.15 metres (13.5 feet) in height, 2.6 metres in width or 25 metres in length, you must first contact the Department of Transportation and Public Works and/or the municipality involved. Where the overall moving heights exceeds 16 feet (4.88 metres), local utilities must be contacted to determine whether or not an escort is required and/or lines need to be moved.



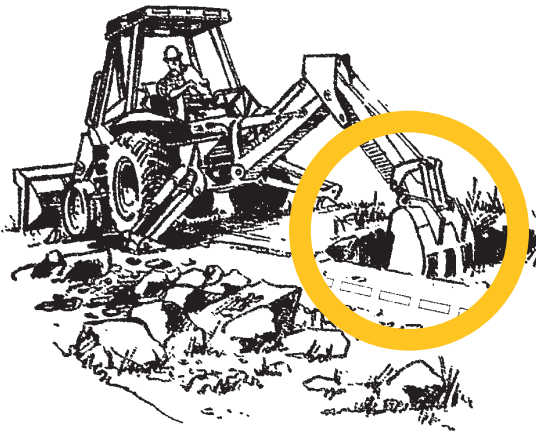
Raising electrical wires can only be done safely by qualified utility workers using specialized equipment. Don't put yourself and others at risk. Call Maritime Electric at 1-800-670-1012.

Underground wiring can be as dangerous as overhead wiring – call the utility before you dig

Underground wiring is becoming more common. Underground power lines are insulated and protected, but if damaged they are as dangerous as uninsulated overhead lines.

Operators of large excavation equipment must constantly be aware of both underground and overhead power lines.

If you plan to dig, check with the Maritime Electric to find the exact location of buried power lines.



Call 1-800-670-1012 at least 5 business days before you plan to dig. A Maritime Electric representative will visit your site and locate underground wires.

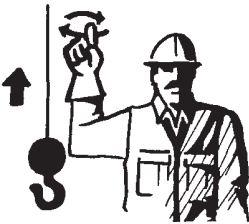
Power line hazards points to remember

1. No worker shall operate a boom truck, mobile crane or similar equipment within the minimum safe distance as specified in the Prince Edward Island Occupational Health and Safety Act and Regulations unless a Maritime Electric representative has visited the work site, recommended the necessary steps to provide a safe work environment and documented the visit.
2. A logbook for regular recording of inspections, tests, repairs and alterations must be maintained for all cranes, derricks and hoists. Operators should inspect hoisting equipment at the start of every shift.
3. If you are coming onto a shift and there is equipment anywhere near power lines, do not assume that the equipment is safely placed. Determine for yourself that it is outside the minimum safe distance indicated under the Occupational Health and Safety Act and Regulations.
4. The operator shall assign a competent signal person whenever he or she does not have a clear view of the path to be travelled by the equipment or load. A competent signal person shall also be assigned when any part of the equipment or load may come inside the minimum safe distance to energized lines.
5. No workers or bystander, except for an equipment operator, shall touch or be permitted to touch any part of the equipment or load while it is in motion within the minimum safe distance of energized electrical wires. If a guide rope is required when moving a load that could come in contact with power lines, call Maritime electric. Specialized equipment and trained personnel can assist to complete the job safely.
6. Take care when setting up a work site. Always look up – watch for the lines and position equipment carefully to minimize risk for all workers on site. It is considered safe practice to position hoisting or similar equipment at a distance greater than the combined length of the extended boom and the minimum safe distance from the lines when working perpendicular to overhead power lines. Be aware that the position of your equipment may affect the work others have to do.
7. Call Maritime Electric at least 24 hours before you begin a job that could bring you or your equipment inside the safe minimum distances. Upon visiting the site, arrangements can be made to provide protective cover for power lines and advice on vehicle grounding. Where protective cover has been provided, call Maritime Electric upon completion of your job to arrange for removal.
8. Call Maritime Electric at least 5 business days before you plan to dig. A representative can locate underground energized power lines so you know exactly where they are.
9. If contact has been made with a power line, stay in or on the vehicle making sure that no part of your body is allowed to touch the ground and the energized vehicle at the same time. **THIS CANNOT BE OVEREMPHASIZED**; your ability to jump clear of the vehicle is probably much lower than you think, and you will probably be killed if you try it. If you are operating the controls while standing beside equipment that has made contact, move yourself clear and warn others to stay clear. Do not touch the controls or any other part of the equipment until a qualified Maritime Electric representative informs you that it is safe to do so. If contact has been made with energized power lines, the vehicle and all pertinent apparatus must be inspected before turning to work.

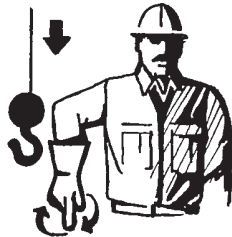
Hand signals for controlling crane operations



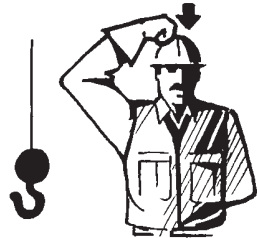
STOP - Both arms outstretched at the sides horizontally, fingers outstretched.



HOIST - With forearm vertical, forefinger pointed up, move hand in small horizontal circles.



LOWER - With arm extended downward, forefinger pointed down, move hand in small horizontal circles.



USE MAIN HOIST - Tap fist on head, then use regular signals.



USE WHIPLINE - (auxiliary hoist)
Tap elbow with one hand, then use regular signals.



RAISE BOOM - Arm extended, fingers closed, thumb pointed upwards.



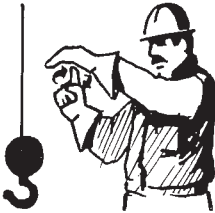
LOWER BOOM - Arm extended, fingers closed, thumb pointed downward.



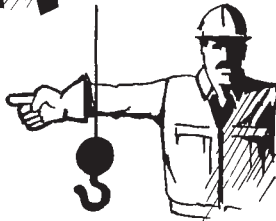
RAISE THE BOOM AND LOWER THE LOAD - Arm extended, fingers closed, thumb pointed upward, other arm bent slightly with forefinger pointed down and rotate hand in horizontal circles.



LOWER THE BOOM AND LOWER THE LOAD -
 Arm extended, fingers closed, thumb pointed downward, other arm vertical, forefinger pointed upward and rotate hand in horizontal circles.



MOVE SLOWLY - Use one hand to give any motion signal and place the other hand motionless in front of the hand giving the motion signal (hoist slowly shown as example).



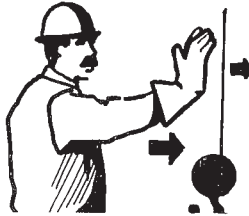
SWING - Arm extended, point with finger in direction of swing and boom.



EXTEND BOOM - (telescoping boom)
 Both fists in front of body with thumbs pointed upward.



RETRACT BOOM - (telescoping boom)
 Both fists in front of body with thumbs pointed toward each other.



TRAVEL - Arm extended forward, hand open and slightly raised, make pushing motion in direction of travel.



TRAVEL - (both tracks) Use both fists in front of body, making a circular motion about each other, indicating direction of travel.



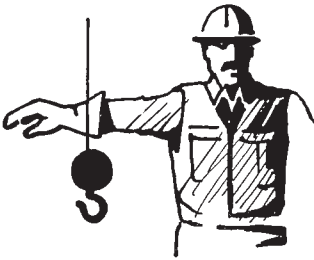
TRAVEL - (one tracks) Lock the track on side indicated by raised fist. Travel opposite track in direction indicated by circular motion of other fist, rotated vertically in front of the body (for crawler cranes only).



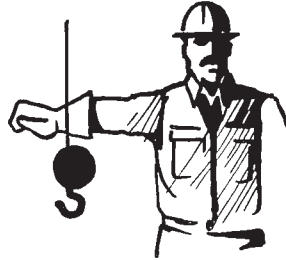
HOIST SLOWLY TO CLEAR FOULED LINE - Hands crossed in front, above shoulders, fingers relaxed.



DOG EVERYTHING - Clasp hands in front of the body.



OPEN CLAM SHELL BUCKET - Arm extended, palm down, open hand.



CLOSE CLAM SHELL BUCKET - Arm extended, palm down, close hand.



MAGNET IS DISCONNECTED - Crane operator spreads both hands apart, palms up.

Notes _____

Useful Telephone Numbers

Maritime Electric.....	1-800-670-1012
City of Summerside Electric	432-1268
City of Summerside Electric (after hours)	436-2389
Island Tel Repair Services	1-800-565-1570

Electrical Inspection Departments

Charlottetown.....	368-5558
Montague	838-0637
Summerside.....	859-8800

The Island Regulatory and Appeals Commission..	1-800-501-6268 or
.....	892-3501

Property Development Officers

Charlottetown.....	368-4892 or 368-4889
Summerside.....	888-8004
O’Leary	859-8850
Montague	838-0639
Souris.....	687-7003

Occupational Health and Safety Services

Charlottetown.....	368-5608
Summerside.....	888-8017
No Charge Dial.....	1-800-237-5049
After Hours Calls.....	628-7513

Emergency Telephone Numbers

Fire Department/Police/Ambulance.....	911
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Other Useful Phone Numbers (please fill in your phone numbers)

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Always be aware of hazards take the necessary steps to ensure a safe operation. Always watch for the overhead lines and check for the lines below before you dig.

look up



for power lines!

Stay away. Stay safe.

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