

# BILL

No. 39 of 1917.

An Act to provide for Protection of Electrical Workers.

(Assented to \_\_\_\_\_, 1917.)

**HIS MAJESTY**, by and with the advice and consent of the Legislative Assembly of the Province of Alberta, enacts as follows:

1. This Act may be cited as "*The Electrical Workers' Protection Act.*"

2. It shall be unlawful from and after the passage of this Act for any officer, agent, or employee of the Province of Alberta, or any city, town or other municipality thereof, or for any other person, firm or corporation, or its officers, agents or employees, to run, place, erect, maintain or use any electrical apparatus or construction, except in accordance with the provisions of this Act:

Provided that this Act shall not apply to any mine as interpreted by *The Mines Act*, being chapter 4 of the Statutes of Alberta, 1913, and amendments thereto.

3. No wire or cable carrying a current of less than six hundred (600) volts of electricity within the corporate limits of any city or town shall be run, placed, erected, maintained or used on any insulator the centre of which is less than thirteen (13) inches from the centre line of any pole and no such wire shall be run past any pole to which it is not attached at a distance of less than thirteen (13) inches from the centre line thereof. This section shall not apply to any wire or cable where the same is run from underground and placed vertically on the pole; nor to any wire or cable where the same is attached to the top of the pole; nor to a pole top fixture as between it and the same pole; nor to any wire or cable between the points where the same is made to leave any pole or fixture thereon for the purpose of entering any building or other construction and the point of attachment to such building structure; nor to any jumper wire or cable carrying a current or connected with a transformer or other appliance on the same pole; nor to a bridle or jumper wires on any pole which are attached to or connected with signal wires on the same pole; nor to any aerial cable as between such cable and any pole on which it originates or terminates; nor to exclusive telephone or telegraph toll lines; nor to aerial cable containing telephone, telegraph or signal wires, or wires continuing from same, where the cable is attached to poles on which no wires or cables other than the wires continuing from said cable are maintained on the same side of the street or highway and upon which said aerial cable is placed.

4. No wire or cable used to carry a current of over six hundred (600) volts of electricity within the incorporated limits of any city or town shall be run, placed, erected, maintained or used on any insulator the center of which is

nearer than thirteen (13) inches to the center line of any pole. And no such wire or cable shall be run past any pole to which it is not attached at a distance of less than thirteen (13) inches from the centre line thereof:

Provided that this shall not apply to any wire or cable where the same is run from underground and placed vertically on the pole; nor to any wire or cable where the same is attached to the top of the pole; nor to a pole top fixture, as between it and the same pole; nor to any wire or cable between the points where the same is made to leave any pole or fixture thereon for the purpose of entering any building or other structure, and the point of attachment to said building or structure; nor to any jumper wire or cable carrying a current or connected with transformers or other appliances on the same pole:

Provided further, that when said wire or cable is run vertically it shall be rigidly supported and where possible run on the ends of the cross-arms.

**5.** No wire or cable carrying a current of more than seven hundred and fifty (750) volts, and less than seventy-five hundred (7,500) volts of electricity, shall be run, placed, erected, maintained or used within three and one-half ( $3\frac{1}{2}$ ) feet of any wire or cable carrying a current of seven hundred and fifty (750) volts or less of electricity, and no wire or cable carrying a current of more than seventy-five hundred (7,500) volts of electricity shall be run, placed, erected, maintained or used within seven (7) feet of any wire or cable carrying less than seventy-five hundred (7,500) volts:

Provided that the foregoing provisions of this section shall not apply to any wire or cable within buildings or other structures; nor where the same are run from underground and placed vertically upon the pole; nor to any service wire or cable where the same is made to leave the pole or fixture thereon for the purpose of entering any building or other structure; and the point of attachment to said building or structure; nor to any jumper wire or cable carrying a current or connected with a transformer or other appliance on the same pole:

Provided that where run vertically wires or cables shall be rigidly supported and where possible run on to the ends of the cross-arms;

Provided further that as between any two wires or cables mentioned in sections 3, 4 and 5 of this Act only the wires and cables last in point of time so run, placed, erected or maintained shall be held to be in violation of the provisions thereof.

**6.** No wire or cable used for telephone, telegraph district messenger or call bell circuit, fire or burglar alarm, or any other similar system, shall be run, placed, erected, maintained or used on any pole at a distance of less than three (3) feet from any wire or cable carrying a current of over three hundred (300) volts of electricity; and in all cases (except those mentioned in exceptions to sections 3, 4 and 5) where such wires or cables are run above or below, or cross over or under electric light or power wires, or a trolley wire, a suitable method of construction or insulation or protection to prevent contact shall be maintained as between such wire or cable and such electric light, power or trolley wire; and said methods of con-

struction, insulation or protection shall be installed by, or at the expense of the person owning the wire last placed in point of time.

7. Transformers, either single or in bank, that exceed a total capacity of over seven and one-half ( $7\frac{1}{2}$ ) K.W. shall be supported by a double cross-arm, or some fixture equally strong. No transformer shall be placed, erected, maintained or used on any cross-arm or other appliance on a pole upon which is placed a series electric arc lamp or arc light:

Provided that this shall not apply to a span wire supporting a lamp only. All aerial and underground transformers used for low potential distribution shall be subjected to an insulation test in accordance with the standardized rules of the American Institute of Electrical Engineers. In addition to this each transformer shall be tested at rated line voltage prior to each installation and shall have attached to it a tag showing the date on which the test was made, and the name of the person making the test.

8. No wire or cable carrying more than seventy-five hundred (7,500) volts of electricity shall be run, placed, erected, maintained or used on curves or corners of greater than fifteen (15) degrees without maintaining guards sufficient to hold such wire or cable in case of breakage of pins or insulators to which the same are attached, except where said wire or cable terminates or dead-ends on curves or corners.

(2) No wire or cable covered by this clause, other than ground wires, used to conduct or carry electricity shall be placed, run, erected, maintained or used vertically on any pole without causing such wire to be at all times sufficiently insulated the full length thereof to insure the protection of anyone coming in contact with said wire or cable.

9. The neutral point or wire of all transformer secondaries strung or erected for use in low potential distributing systems shall be grounded in all cases where the normal maximum difference of potential between the ground and any point in the secondary circuit will not exceed one hundred and fifty (150) volts. When no neutral point or wire is accessible one side of the secondary circuit shall be grounded in the case of single phase transformers, and any one common point in the case of interconnected poly-phase bank or banks or transformers.

(2) Where the maximum difference of potential between the ground and any point in the secondary circuit will, when grounded, exceed one hundred and fifty (150) volts, grounding shall be permitted. Such grounding shall be done in the manner provided in section 35 of this Act.

10. In all cases where a wire or cable larger than No. 14 B. & S. gauge, carrying a current of over one hundred and fifty (150) volts, originates or terminates on insulators attached to any pin or other appliance, said wire or cable shall be attached to at least two insulators:

Provided, however, that this section shall not apply to service wires to buildings; nor to wires run vertically on a pole; nor to wires originating or terminating on strain insulators or circuit breakers; nor to telephones, telegraph or signal wires outside the limits of any incorporated city or town.

**11.** All poles along which shall be run vertically any wire or cable used to conduct or carry a current of over two hundred and fifty (250) volts shall be provided with steps, and no steps shall be placed on any pole nearer the ground than seven (7) feet or nearer than three (3) feet to the first cross-arm on said pole.

**12.** Fixtures placed or erected on the roofs of buildings for the support of wires shall be of sufficient strength to withstand strains to which they may be subjected, due to the breaking of all wires on one side thereof, except where insulated wires or cables are held close to fire walls by straps or rings, and all fixtures placed or erected on the roofs of buildings for the support of wires carrying a current of over one hundred and fifty (150) volts shall be of such height and so placed that all the wires supported by such fixtures shall be at least seven (7) feet above any point of roofs less than quarter pitch over which they pass or may be attached and no roof fixture or wire shall be so placed that they will interfere with the free passage of persons upon, over, to or from roofs, except as specified above.

**13.** No guy wire or cable shall be placed, run, erected, maintained or used within the incorporated limits of any city or town on any pole or appliance to which is attached any wire or cable used to conduct electricity without causing said guy wire or cable to be efficiently insulated with circuit breakers at all times at a distance of not less than eight (8) feet nor more than ten (10) feet measured along the line of said guy wire or cable from each end thereof:

Provided that no circuit breaker shall be required at the lower end of the guy wire or cable where the same is attached to a ground anchor, nor shall any circuit breaker be required where said guy wire or cable runs direct from a grounded messenger wire to a grounded anchor rod:

Provided further, that this section shall not apply to any wire or cable used for telephone, telegraph or signal wires.

**14.** In all span wires used for the purpose of supporting trolley wires or series arc lamps there shall be at least two circuit breakers, one of which shall at all times be maintained not less than four (4) feet nor more than six (6) feet distant from the trolley wire or series arc lamp, and in cases where the same is supported by a building or metallic pole, the other circuit breaker shall be maintained at the building or at the poles:

Provided that in span wires which support two or more trolley wires no circuit breaker shall be required in the span wire between any two of the trolley wires;

Provided further, that in span wires supporting trolley wires attached to wooden poles only the circuit breaker adjacent to the trolley wire shall be required.

**15.** At all points where in case of a breakdown of trolley span wires the trolley wire would be liable to drop within seven (7) feet of the ground there shall be double span wires and hangers placed at such points.

**16.** All wires or appliances carrying a current less than seventy-five hundred (7,500) volts, inside of any building or vault, for the distribution of electrical energy, shall be sufficiently insulated, or so guarded, located or arranged as to protect any person from injury. All wires or appliances carrying a current of over seventy-five hundred (7,500) volts shall be insulated or so located or arranged as to protect any person from injury; or shall be protected by a grounded metallic guard screen or other device equally efficient, so arranged that no person may come within three times the arcing distance of the given voltage of such conductor or appliance as rated by the American Institute of Electrical Engineers for distance between needle points; or by a guard rail or other device so arranged that no person may come within three (3) feet of the same.

**17.** The secondary circuit of current transformers, the casings of all potential regulators and arc light transformers, all metal frames of all switch boards, metal oil tanks used on all switches, except where the tank is part of the conducting system, all motor and generator frames, the entire frame of the crane and the tracks of all travelling cranes and hoisting devices shall be thoroughly grounded as provided in section 35.

**18.** All generators and motors having a potential of more than three hundred (300) volts shall be provided with a suitable insulated platform or mat so arranged as to permit the attendant to stand upon such platform or mat when working upon the live parts of such generators or motors.

**19.** Suitable insulated platforms or mats shall be provided for the use of all men working on any live part of switchboards on which any wire or appliance carries a potential in excess of three hundred (300) volts.

**20.** Every generator, motor, transformer, switch or other similar piece of apparatus and device used in the generation, transmission or distribution of electrical energy in stations or sub-stations shall either be provided with a name plate giving the capacity in volts and amperes or have this information stamped thereon in such a manner as to be clearly legible.

**21.** In all cases there shall be two switches used at the station or sub-station in each feeder for the transmission of electrical energy at constant potential of six hundred (600) volts or over; one shall be an oil switch so situated as to insure the safety of the person operating the same; the other shall be a disconnecting switch:

Provided that oil switches shall not be required in direct current feeders.

**22.** When the lines of six hundred (600) volts or over are cut out at the station or sub-station to allow employees to work upon them, they shall be short-circuited and grounded at the station and shall in addition, if the line wires are bare, be short-circuited, and where possible grounded at the place where the work is being done.

**23.** All switches installed with overload protection devices and all automatic overload circuit breakers must have

the trip coils so adjusted as to afford complete protection against overloads and short circuits, and the same must be so arranged that no pole can be opened manually without opening all the poles, and the trip coils shall be instantly operative upon closing.

**24.** All feeders for electric railways must, before leaving the plant or sub-station, be protected by an approved circuit breaker which will cut off the circuit in case of an accidental ground or short circuit.

**25.** There shall be provided in all distributing stations a ground-detecting device.

**26.** There shall be provided in all stations, plants and buildings herein specified warning cards printed on red cardboard not less than  $2\frac{1}{4} \times 4\frac{1}{2}$  inches in size, which shall be attached to all switches opened for the purpose of line-men or other employees working on the wires. The person opening any line switch shall enter upon said card the name of the person ordering the switch opened, the time opened, the time line was reported clear and by whom, and shall sign his own name, it being understood that the person ordering switch opened must give order for closing of same.

**27.** No manhole containing any wire carrying a current of over three hundred (300) volts shall be less than six (6) feet from floor to inside of roof; if circular in shape it shall not be less than six feet in diameter; if square it shall be six feet from wall to wall:

Provided, however, that this section shall not apply to any manhole in which it shall not be required that any person enter to perform work:

Provided further, that the foregoing provision of this section shall not apply where satisfactory proof shall be submitted to the proper authorities that it is impracticable or physically impossible to comply with this law within the space or location designated by the proper authorities.

**28.** All manholes containing any wires or appliances carrying electric current shall be kept in a sanitary condition, free from stagnant water or seepage or other drainage which is offensive or dangerous to health, either by sewer connection or otherwise, while any person is working in the same.

**29.** No manhole shall have an opening to the outer air of less than twenty-four (24) inches in diameter, and the cover shall be provided with vent hole or holes equivalent to three square inches in area.

**30.** No manhole shall have an opening which is, at the surface of the ground, within a distance of three (3) feet at any point from any railway or street car track:

Provided that this shall not apply where satisfactory proof shall be submitted to the proper authorities that it is impracticable or physically impossible to comply with this provision of this section:

Provided further, that in complying with the provisions of this rule only the construction last in point of time performed, placed or erected shall be held to be in violation thereof.

**31.** Whenever persons are working in any manhole whose opening to the outer air is less than three (3) feet from the rail of any street car track, a watchman or attendant shall be stationed on the surface at the entrance of such manhole at all times where work is being performed therein.

**32.** There shall be provided proper switches on all primary and secondary wires in all manholes where the wires are connected with transformers or other electrical devices thereon.

**33.** All persons employed in manholes shall be furnished with insulated platforms so as to protect the workmen while at work in the manholes:

Provided that this section shall not apply to manholes containing only telephone, telegraph or signal wires or cables.

**34.** No work shall be permitted to be done on any live wire, cable or appliance carrying more than six hundred (600) volts of electricity by less than two competent and experienced persons, who, at all times while performing such work, shall be in the same room, chamber, manhole or other place in which or on the same pole on which such work is being done.

(2) No work shall be permitted to be done in any manhole or subway on any live wire, cable or appliance carrying more than three hundred (300) volts of electricity by less than two competent and experienced persons, who at all times while performing such work shall be in the same manhole or subway in which such work is being done.

**35.** The grounding provided for in this Act shall be done in the following manner: By connecting a wire or wires not less than No. 6 B. & S. gauge to a water pipe of a metallic system outside of the meter, if there is one, or a copper plate one-sixteenth inch thick and not less than three (3) feet by six (6) feet area buried in coke below the permanent moisture level, or to other device equally efficient. The ground wire or wires of a direct current system of three or more wires shall not be smaller than the neutral wire at the central station, and not smaller than a No. 6 B. & S. gauge elsewhere:

Provided that the maximum cross-section area of any ground wire or wires at the central station need not exceed one million circular mills. The ground wire shall be carried in as nearly a straight line as possible, and kinks, coils and short bends shall be avoided:

Provided that the provisions of this section shall not apply as to size to ground wires run from instrument transformers or meters.

**36.** That all public service companies, the Province of Alberta, city, town or other municipality of the Province of Alberta must furnish rubber gloves and shields (of pattern to be approved by the Board of Public Utility Commissioners) to all its employees engaged at work on wires having a potential of more than one hundred and ten (110) volts, and further must furnish all gangs of men on electrical work in the said province with an emergency kit for the treatment of electric shock, and further that it is imperative that every public service company, the

Province of Alberta, city, town or other municipality in the Province of Alberta engaged in the construction or maintenance of electrical apparatus must install a pulmotor and have at least one man constantly on duty, efficiently instructed in the use of same.

**37.** A copy of this Act printed in a legible manner shall be kept posted in a conspicuous place in all electric plants, stations and storerooms.

**38.** All wires, cables, poles, electric fixtures or appliances of every kind or nature being used or operated at the time of the passage of this Act shall be changed and made to conform with the provisions of this Act on or before ten (10) years from the date of its passage:

Provided, however, that the Board of Public Utility Commissioners of the Province of Alberta shall have power, upon notice and hearing, to order the erection of all guards, protection devices and methods of protection which in the judgment of the said board are necessary and should be constructed previous to the expiration of the time fixed in this section:

Provided, however, that it shall be lawful to place additions, wires, cables, electrical fixtures or appliances upon existing poles or cross-arms so long as the new construction shall be made to conform to the provisions of this Act:

Provided further, that nothing in this Act shall apply to manholes already constructed, except the previous provisions for guards, sanitary conditions, drainage and safety appliances specified in sections 28, 30, 31, 33 and 34.

**39.** It shall be the duty of the Board of Public Utility Commissioners of the Province of Alberta to enforce all the provisions of this Act, and it is hereby empowered to supplement the same by additional rules and regulations, after first giving reasonable public notice and a reasonable opportunity to be heard to all affected thereby.

(2) A violation of any rule herein contained or of any rule or regulation made by the said board, which it is hereby permitted to make, shall be deemed to be a violation of this Act.

**40.** Every public service company, city, town or other municipality of the Province of Alberta, and all officers, agents and employees of any public service company, city, town or other municipality of the Province of Alberta shall obey, observe and comply with every order, rule, direction or requirement made by the Board of Public Utility Commissioners under authority of this Act, so long as the same shall be and remain in force. Any public service company, city, town or other municipality of the Province of Alberta which shall violate or fail to comply with any provision of this Act, or which fails, omits or neglects to obey, observe or comply with any order, rule or any direction, demand or requirement of the said board pursuant to this Act shall be guilty of an offence and shall be subject to a penalty not to exceed the sum of one thousand dollars for each and every offence. Every violation of any such order, direction or requirement of this Act shall be a separate and distinct offence, and in



case of a continuing violation every day's continuance thereof shall be deemed to be a separate and distinct offence.

41. Every officer, agent or employee of any public service company, the Province of Alberta, or any city, town or other municipality of the Province of Alberta who shall violate or fail to comply with, or who procures, aids or abets any violation by any public service company, the Province of Alberta, or any city, town or other municipality of the Province of Alberta, of any provisions of this Act, or who shall fail to obey, observe or comply with any order of the Board of Public Utility Commissioners pursuant to this Act, or any provision of any order of the said board, or who procures, aids or abets any such public service company, the Province of Alberta, or any city, town or other municipality of the Province of Alberta, in its failure to obey, observe and comply with any such order or provision shall be guilty of an offence and shall be subject to the penalties imposed by this Act.

No. 39.

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FIFTH SESSION  
THIRD LEGISLATURE  
7 GEORGE V  
1917

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**BILL**

An Act to provide for Protection of  
Electrical Workers.

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Received and read the

First time.....

Second time.....

Third time.....

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HON. MR. SIFTON.

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EDMONTON:  
W. JEFFERY, KING'S PRINTER.  
A.D. 1917