

"**Earthed**" applied to any conductor means that such conductor shall be so connected to the general mass of earth as to ensure at all times an immediate and safe discharge to earth of electric energy.

"**Electric line**" means any wire, wires, conductor, or other means used for conveying, transmitting, or distributing electricity for power, lighting, or heating purposes, and includes any instrument, insulator, casing, tubing, pipe, covering, or post enclosing or supporting an electric line or anything connected therewith.

"**Inspecting Engineer**" means and includes any inspecting engineer appointed by the Minister to inspect works to be constructed or maintained by virtue of any electric-line licenses, or any water-power licenses, or any combined water-power and electric-line licenses issued under the Public Works Act, 1908, and any or all of its amendments, or under any one or more of such amendments only or any Act or Acts passed in amendment thereof or substitution thereof.

"**Low pressure**" means pressures up to 650 volts.

"**Minister**" means the Minister of Public Works.

"**Pressure**" means difference of electric potential between any two conductors through which supply of energy is given, or between any part of either conductor and the earth.

"**Street**" includes road.

"**Telegraph**" includes telephone.

"**Telegraph line**" has the same meaning as "electric line" in the Post and Telegraph Act, 1908.

System of Supply.

2. The system of supply shall be a three-wire direct-current system, with a declared voltage at consumer's terminals of 460 volts between the outers and 230 volts between each outer and the intermediate conductor.

The supply to street lighting incandescent lamps and to private consumers for lighting purposes shall be at 230 volts.

Connection of Circuits with Earth.

3. The intermediate conductor shall be earthed at one point only—viz., the main switchboard at the power-station; but otherwise efficiently insulated throughout its length.

The earth connection shall be provided with a switch or link for cutting off the earth connection, and with a recording ammeter reading to a maximum of 5 amperes.

Regulation of Pressure.

4. The pressure shall be maintained within 4 per cent. on lighting-distributing circuits above or below the declared pressure at the consumers' terminals. The Board shall supply a suitable recording voltmeter for this service, and on complaint by any consumer that the variations in voltage exceed these limits, or on the instructions of the Inspecting Engineer, the Board shall connect a recording voltmeter to record the pressure between the lines at their entrance to the consumers' premises, and shall supply to the Inspecting Engineer a chart showing the variations in voltage between the lines at this point for a period of seven consecutive days. If the variations thus recorded exceed the above limits the Board shall take immediate steps to comply with this regulation. If after thirty days a similar chart shows that the above limits of variations in voltage are not complied with a breach of these regulations shall be deemed to have been committed. If the accuracy of the Board's recording voltmeter is questioned by the consumer a standard instrument shall be supplied by the Inspecting Engineer, the reading of which shall be accepted as final.

Switchboards.

5. All switchboards shall be made of and mounted on material that is not inflammable, and the maximum permissible current in any switchboard conductor or conductor leading thereto shall not exceed the value permitted under the rules of the Institution of Electrical Engineers of Great Britain.

Every switch intended to be used for breaking a circuit and every circuit-breaker shall be so constructed or arranged that it cannot with proper care be left in partial contact, or accidentally fall or move into contact when left out of contact.

All switchboard circuits shall be so arranged that the course of any conductor can be readily identified.

Adequate means for access, free from danger, shall be provided for every switchboard passage-way, and the following provisions shall apply to all switchboard working-platforms and passage-ways, unless the bare conductors, whether overhead or at the sides of the passage-ways, are otherwise adequately protected against danger by divisions or screens or other suitable means:—

(a.) Passage-ways constructed for low-pressure switchboards shall have an overhead clearance of 7 ft. between the conductors and the floor, and a clear width measured from bare conductor of not less than 3 ft.

(b.) Bare conductors shall not be exposed on both sides of the switchboard passage-way unless (1) the clear width of the passage is not less than 4 ft. 6 in., measured between bare conductors; or (2) the conductors on one side are so guarded that they cannot accidentally be touched.

Suitable means, such as rubber mats and gloves, shall be provided and used when necessary adequately to prevent danger.

Circuit-breakers.

6. All outgoing feeders and distributors from any generating-station or power-house shall be provided with automatic circuit-breakers or fuses set to open at 100 per cent. excess current over the rated full load of such feeder or distributor, with a time-limit not exceeding ten seconds.

Distribution.

7. The distribution may be carried out either by underground or overhead conductors; provided that if at any time it is deemed by the Minister to be detrimental to the public safety for the conductors or any particular class of conductors to be overhead, such conductors shall, on receipt of notification to that effect from the Minister and within ten months of such notification, be laid underground, and all consequent and necessary alterations made by and at the cost of the Board.

Overhead Electric Lines.

8. The diameter of any conductor in any electric line laid or erected for the supply of electrical energy shall not be less than 0.104 in. diameter (No. 12 S.W.G. or 7/20 S.W.G.). If the material of the conductor is aluminium the conductor shall be stranded.

The stress in overhead conductors shall not exceed 25,000 lb. per square inch for copper, 12,000 lb. per square inch for aluminium, 34,000 lb. per square inch for steel, and 22,500 lb. per square inch for iron in the extreme case of a temperature of 32° Fahr. and a wind-pressure of 18 lb. per square foot of diametral plane occurring simultaneously. The span between supports and the sag shall be determined to conform with the above limiting stresses.

No overhead low-pressure electric lines shall come within 3 ft. of any aerial wires or cables belonging to another authority except where it may be permitted to pass either set of wires between other wires at a pole or support.

Electric lines at low pressure shall be insulated throughout with triple braiding impregnated with waterproof compound; provided that where circumstances permit the lines may, with the consent of the Minister, be bare.

Earthed neutrals may in all low-pressure circuits be bare.

All overhead electric lines at low pressure shall be carried at a minimum height of 18 ft. above the ground, except at road-crossings, where the minimum height shall be 20 ft., and shall not in any part thereof be within 5 ft. measured horizontally or 7 ft. measured vertically from any building or erection other than a support for the line, except where brought into a building for the purpose of supply.

When an aerial line crosses a street the angle between the line and the direction of the street at the place of crossing shall not be less than 60°, and the span shall be as short as possible.

Where an aerial line crosses or is in proximity to any metallic substance precautions shall be taken by the Board against the possibility of the line coming into contact with the metallic substance by breakage or otherwise.

Supports for Overhead Lines.

9. All aerial wires shall be attached to suitable insulators, carried on cross-arms of suitable material and cross-section, and they shall be so attached to the insulators or guarded that they cannot fall away from the support. Conductors covered with insulating material shall be so attached that their insulation shall not be impaired where they are secured to the insulator.

Every support for an aerial line shall be of durable material and properly strengthened against forces due to wind-pressure, change of direction of line, and unequal length of span. The factor of safety of such supports shall be at least 4 (four) if of iron, steel, or reinforced concrete, and 6 (six) if of wood, taking into consideration all possible stresses, including wind-pressure at 30 lb. per square foot on plane surfaces and 18 lb. per square foot of diametral plane for cylindrical surfaces.

The distance between distribution-line supports shall not exceed 200 ft. except by approval of the Minister.