

every such span they shall be suitably suspended from effectively earthed steel bearer-wires if the Minister of Telegraphs shall so require.

Where lead-covered telephone cables may be crossed under by the electric lines, if the height and other circumstances permit—and of this the Minister shall be the judge—the latter wires shall be insulated as in clause 6, and suspended if deemed necessary.

In places where it may be required to cross with the electric lines through any other aerial wires or through cables because of the impracticability of crossing above or below—and crossing above or below shall be done if possible—all such through crossings, if permitted, shall be effected at a pole. In every case of a through crossing, no matter whose property the lines crossed through may be, the method of carrying the electric lines across the pole, protecting them thereon, protecting other wires from coming into contact with them, and protecting persons working on the poles from danger of shock shall be to the satisfaction of the Minister. The electric lines shall be insulated with not less than 300-megohms-per-mile grade of vulcanized rubber where they pass through on the poles and over the whole length of the span on each side of the pole crossed through. Where the insulated wires cross through on the pole they shall be encased in some approved hard protecting substance for the entire length of the arms on such pole. If metal pipe is used to encase the wires it shall be effectively earthed.

#### *Location of Overhead Lines.*

8. In running these lines through streets where no telegraph lines exist, the Council shall keep to one side of the street; and in running service wires to the opposite side of the street to that on which their line of poles is placed the Council shall arrange to supply so as to interfere as little as possible with the route on that side of the street.

Except by permission of the Minister of Telegraphs, all poles for overhead electric lines shall be placed on the opposite side of the streets to that on which any telegraph lines exist, and where the erection of the electric lines necessitates the alteration of telegraph wires that may exist when the electric lines are being run, and such alteration is practicable, the expense of the alteration shall be borne by the Council.

#### *Facilities for supplying Service.*

9. Where the electric lines are on one side of a street and the telegraph wires are on the other, and service is required to be given from each to the other side of the street, each party shall give the other reasonable facilities as far as possible to effect supply.

Where it cannot be arranged otherwise, and there is room on the telegraph poles, and other circumstances do not render it unsafe or impracticable, the electric lines may, subject to the consent of the Minister of Telegraphs, be run along on the telegraph poles, subject to their insulation being not less than 300-megohms-per-mile grade of vulcanized rubber, and to any special conditions that it may be found necessary to impose at the time that the placing of such electric lines on the telegraph poles is being considered. Such wires must be removed from telegraph poles upon reasonable notice being given by the Minister of Telegraphs.

When the electric lines are being laid out provision should be made, by increased length of pole, to provide clearance to facilitate crossing with telegraph service wires to the side of the street occupied by the Council's line.

#### *Rental for Use of Poles.*

10. Telegraph wires shall not be run along or placed on the Council's poles, nor shall the Council's wires be run along or placed on telegraph poles, without a special understanding of requirements and precautions to be observed being arrived at between a responsible officer of the Council and of the Minister of Telegraphs in respect of each case. Rental at a rate to be agreed upon may be charged for the use of poles, but nothing in this license shall be construed to give any party a right to the use of poles other than its own.

#### *Insulation of Mains.*

11. Every main shall be tested for insulation after having been placed in position and before it is used for the purposes of supply, the testing-pressure being at least 220 volts, and the Council shall duly record the results of the tests of each main or section of a main.

The insulation of every complete aerial and underground circuit used for the supply of energy, including all machinery, apparatus, and devices forming part of or in connection with such circuit, shall be so maintained that the leakage current shall not under any conditions

exceed one-thousandth part of the maximum supply current. Every leakage shall be remedied without delay. Every such circuit shall be tested for insulation at least once in every week, and the Council shall duly record the results of the tests.

All material used for insulating electric lines or apparatus shall be of the best quality, and thoroughly durable and efficient, having regard to the conditions of its use. Suitable provision shall be made for the protection of the insulating material against injury or removal. If the protection so provided is wholly or partly metallic it shall be efficiently connected with earth.

#### *Size of Conductors.*

12. The sectional area of the conductor in any electric line laid or erected in any street shall not be less than that of a strand of seven wires, each of which is of No. 20 standard wire gauge, and the sectional area of every wire in a strand forming any such conductor shall not be less than that gauge.

#### *Earthing Conduits.*

13. All metal pipes or coverings containing any electric wire shall be efficiently connected with earth, and shall be so jointed as to make good electrical connection throughout their whole length.

#### *Arc Lamps.*

14. Arc lamps used in any street for public lighting shall be so fixed as not to be in any part at a less height than 10 ft. from the ground. All arc lamps shall be so guarded as to prevent pieces of ignited carbon or broken glass falling from them, and shall not be used in situations where there is any danger of the presence of explosive dust or gas.

#### *Regulation of Pressure.*

15. The pressure shall be maintained within 4 per cent. above or below the declared pressure at the consumers' terminals. The Council shall maintain a suitable recording voltmeter, and on complaint by any consumers that the variations in voltage exceed these limits, or on the instructions of the Inspecting Engineer, the Council 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 Council shall take immediate steps to comply with this regulation. If after thirty days a similar chart shows that the above limits of variation in voltage are not complied with, a breach of these regulations shall be deemed to have been committed. If the accuracy of the Council's recording voltmeter is questioned by the consumer, a standard instrument shall be supplied by the Inspecting Engineer, the readings of which shall be accepted as final.

#### *Transformers.*

16. Transformers shall be placed either on poles or in substation. Where transformers are placed on poles they shall be fitted with watertight cases, and attached to the poles at such a height as to make them inaccessible except by means of a ladder or other special appliance. Where transformers are placed within substation, the substation shall be inaccessible except to authorized persons; all high-tension conductors therein shall be thoroughly insulated or protected from accidental contact. A substantial insulating rubber mat or insulated wooden platform and rubber gloves shall be supplied. The cases of all transformers, whether within or without a substation, shall be earthed in accordance with the rules of the Institution of Electrical Engineers of Great Britain for earthing.

Where cables are led to and from transformer enclosures they shall be protected on the poles by being run in iron pipes which shall be effectively earthed.

In every case where a high-pressure supply is transformed for the purpose of supply to one or more consumers, some suitable automatic and quick-acting means shall be provided to protect the consumer's wires from any accidental contact with or leakage from the high-pressure circuit either within or without the transforming apparatus.

#### *Supports for Overhead Lines.*

17. Every aerial line shall be attached to supports at intervals not exceeding 200 ft. where the direction of the line is straight, or 150 ft. where the direction is curved or where the line makes a horizontal angle at the point of support.

Every support for an aerial line shall be of a durable material, and properly stayed against forces due to wind-pressure, change of direction of the line, or unequal lengths of span. The factor of safety shall be for all