

## 39. TELEPHONE-LINES ON ELECTRIC-LINE POLES.

(a.) Telephone wire or wires supported on electric-line poles shall be of hard-drawn copper or other suitable material, and shall not be less than No. 12 S.W.G. The minimum clearance between the lowest point of the span and the ground shall be 18 ft.

(b.) The wires shall be suitably guarded against lightning, and shall be fused.

(c.) If carried on poles also carrying high- or extra-high-pressure wires such arrangements shall be made where the telephone is placed as will prevent the possibility of injury resulting to any person using the telephone as the result of a conductor coming into contact with the telephone-wires, or as the result of leakage or of induction.

## 40. PROTECTION OF TELEGRAPH-WIRES, ETC.

The licensee shall take all reasonable precautions in constructing, laying down, placing, and using the electric lines so as not injuriously to affect, whether by induction or otherwise, any telegraph-line, whether such telegraph-line is or is not in existence at the time of the construction, laying-down, or placing of the electric lines.

All generators shall be designed with a wave form as nearly as possible to the sine wave in order to minimize inductive interference with telephone circuits.

Where extra-high-pressure circuits run parallel with telegraph-lines the wires of both circuits shall be transposed or revolved so as to reduce inductive interference to a minimum, and where two adjacent extra-high-pressure circuits are operated in parallel they shall be so connected as to reduce inductive interference to a minimum.

Where electric lines intersect or menace telegraph-lines the following conditions shall apply:—

(a.) High-pressure electric lines shall be insulated with vulcanized rubber of not less than 600-megohm grade, unless the electric lines are bare as provided in clause 37, in which case the special conditions of paragraphs (o), (p), (q), and (r) of this clause shall apply.

(b.) Low-pressure electric lines shall be covered with triple braiding thoroughly impregnated with weatherproof compound, unless the electric lines are bare as provided in clause 37, in which case the special conditions of paragraphs (o), (p), (q), and (r) of this clause shall apply.

(c.) Where lead-covered telegraph-cables and high- or low-pressure electric lines intersect, the electric lines shall be insulated with vulcanized rubber of not less than 600-megohm grade.

(d.) The distance between high-pressure electric lines and telegraph-lines at any point shall not be less than 4 ft., and between low-pressure electric lines and telegraph-lines shall not be less than 2 ft.

(e.) Where high- or low-pressure electric lines and telegraph-lines intersect, the electric lines shall cross above or below the telegraph-lines as may be decided by the Minister of Telegraphs.

(f.) Where high- or low-pressure electric lines and telegraph-lines intersect, the electric lines shall, wherever practicable, cross at a telegraph-pole; but where crossing at a pole is not practicable the crossing may, subject to the approval of the Minister of Telegraphs, be made in the span.

(g.) Where high- or low-pressure electric lines and telegraph-lines intersect, whether at a pole or in the span, such electric lines shall be erected and maintained in such a manner and subject to such conditions as may from time to time be prescribed by the Minister of Telegraphs.

(h.) Where electric lines at extra-high pressure intersect or menace telegraph-lines the electric lines shall be subject to such special conditions as may be required by the Minister of Telegraphs in each case.

(i.) Wherever in the opinion of the Minister of Telegraphs efficient guard-wires effectively earthed, or other approved methods or devices, are necessary for the protection of telegraph-lines they shall be provided by the licensee to the satisfaction of the Minister of Telegraphs.

(j.) Where electric lines and telegraph-lines intersect, the maximum tension in any conductor in every crossing-span shall not exceed one-half the elastic limit of the conductor under the conditions of minimum temperature and wind-pressure specified in clause 32.

(k.) In cases where electric lines are erected before the telegraph-lines, the licensee, on receipt of notice from the Minister of Telegraphs that it is proposed to run a telegraph-line along or across the route, shall forthwith make all alterations to the electric lines which may be considered necessary by the Minister of Telegraphs for the protection of telegraph-lines.

(l.) Where electric lines, braided or rubber-covered as provided by the first part of clause 37, are erected along a route in accordance with the provisions of these regulations, and it is proposed to intersect such electric lines by telegraph-lines erected subsequent to the electric lines, the cost of any guard-wires or other special insulation or protection, or of

any alterations to the electric lines required by the Minister of Telegraphs, will be borne by the Post and Telegraph Department.

(m.) Where electric lines, braided or rubber-covered as provided by the first part of clause 37, are erected subsequent to the telegraph-lines, and intersect or menace such telegraph-lines, the cost of all insulation or protection or of any alterations considered necessary by the Minister of Telegraphs shall be borne by the licensee.

(n.) In the event of any dispute as to whether or not the telegraph-lines are menaced by the electric lines the decision of the Minister of Telegraphs shall be final.

(o.) Where bare electric lines, as provided in clause 37, intersect or menace telegraph-lines the special additional conditions in the following paragraphs of this clause shall also apply:—

(p.) Where telegraph-lines intersect or are menaced by the licensee's bare electric lines at low, high, or extra-high pressure the licensee shall bear the cost of insulating, protecting, and maintaining the insulation and protection of all telegraph-lines, whether erected before or after the bare electric lines, and also the cost of all special work, and the maintenance thereof, which the Minister of Telegraphs deems it necessary to carry out in consequence of the licensee's electric lines being bare.

(q.) When in the opinion of the Minister of Telegraphs it is considered necessary that the bare electric lines at any intersection should be replaced by braided or rubber-covered electric lines, the licensee shall, at his own expense, replace such bare electric lines when requested to do so by the Minister of Telegraphs.

(r.) When work on telegraph-lines is being done by the Minister of Telegraphs in the proximity of bare electric lines, such electric lines shall be temporarily disconnected from the source of supply during the progress of such work if considered necessary by the District Engineer of the Post and Telegraph Department.

## 41. LINES NOT IN OPERATION TO BE REMOVED.

An overhead electric line shall not be permitted to remain erected after it has ceased to be used for the supply of energy unless the licensee intends within a reasonable time again to use such line.

## 42. RAILWAY-CROSSINGS.

No work of any nature shall be erected or constructed upon, over, or under any part of the New Zealand Government railways until the licensee has obtained the consent of the Minister of Railways thereto, as required by section 4 of the Government Railways Amendment Act, 1910 (No. 2).

Where overhead lines cross the railway the span between the supports shall not exceed 100 ft. in length where practicable. The pole on each side of the railway shall be embedded in concrete where carrying transmission or distribution lines.

The lines over the railway, and for a span each side of the railway, shall be erected with a factor of safety on the basis that a maximum tension in the conductor shall not exceed half the elastic limit of the conductor under the conditions of minimum temperature and wind-pressure as specified in clause 32.

The minimum clearance above rail-level shall be 24 ft. for all lines working at low or high pressure, and 27 ft. for all lines working at extra-high pressure. The dip or sag shall be calculated on the assumption of a maximum temperature of 120° F. The supports of the lines shall have a factor of safety of 4 under conditions of wind-pressure hereinbefore specified.

The conductors shall be hard-drawn stranded aluminium or copper cable.

For any pressure not exceeding 6,600 volts the conductors in the crossing-span may be bare or may be insulated. For extra-high pressure the conductors shall be bare.

Where bare conductors are carried through the crossing-span provision shall be made for the erection of approved earthing-devices, which shall be so fixed under each conductor that, in the event of a conductor breaking, contact with the earthing-device shall be made by such conductor before coming into contact with a passing train.

Telephone-wires may be run with a minimum clearance above the rails of 24 ft., and shall be of galvanized iron or hard-drawn copper of not less than No. 12 S.W.G. where they cross the railway, and for a clear span on either side.

Guard-wires shall be erected by the Railway Department over the railway-wires at the expense of the licensee wherever they may be deemed to be necessary by the Minister of Railways.

Wherever the words "Minister of Telegraphs" or "Minister" appear in clauses 5, 6, and 40, the same shall be read as "Minister of Railways" in all cases where the Railway Department's interests are affected.

## 43. EARTH-WIRES ON POLES.

Earth-wires, where led down poles, shall be protected by a wooden casing for a distance of 8 ft. from the ground.