PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

RESOLUTION NO. E-1088
UTILITIES DIVISION
DIVISION: Electric
May 31, 1960

SUBJECT: Protective Covering, Suitable, and Protective Covering; Rules 22.2, 54.6C, and 84.6B, General Order No. 95

WHEREAS: SOUTHERN CALIFORNIA EDISON COMPANY, by letter dated April 21, 1960, has requested permission to use as suitable protective covering, and protective covering material known as rigid unplasticized polyvinyl chloride pipe specified by United States Department of Commerce, Commercial Standard CS 207-60, as Type II High Impact, Normal Chemical Resistance, Schedule 80 and Schedule 40, and

WHEREAS: following staff investigation it appears that said materials are satisfactory for use as suitable protective covering and protective covering, and in the absence of the Commission's permission the use of such materials would not be authorized by the present provisions of Rules 22.2, 54.6C, and 84.6B of General Order No. 95, and

WHEREAS: the use of such materials in many instances will afford construction economies to all overhead electric line operators, and

WHEREAS: it appears that safety to workmen and to the public will not be lessened by the use of said materials and that Rules 22.2, 54.6C, and 84.6B of General Order No. 95 should be changed for clarification and to permit use of said material and good cause appearing,

IT IS HEREBY ORDERED that:

1. Rule 22.2 of General Order No. 95 be modified to read as follows:

22.2 PROTECTIVE COVERING, Suitable, means a covering of wood, or other material as authorized by the Public Utilities Commission, having the electrical insulating efficiency and mechanical strength of 1 ½ inches of redwood. Materials meeting the requirements of this definition, when installed in a workmanlike manner include:

A. IMPREGNATED FIBER CONDUIT, having a wall thickness of not less than one quarter of an inch, installed over rigid metal conduit as illustrated in Figure 82 of Appendix G.

B. HARDWOOD MOULDING (oak or rock elm) three eights of an inch in thickness, or having a cross-section as shown in Figure 81 of Appendix G,

when used as a covering for ground wires and communication conductors.

C. PLASTIC PIPE made of rigid unplasticized polyvinyl chloride having the properties and dimensions specified as Type II, High Impact, Schedule 80 in United States Department of Commerce Commercial Standard No. CS 207-60. The plastic pipe herein specified shall be installed only on poles or structures within the light loading district as defined in Rule 21.0-C and Rule 43.

2. Rule 54.6C of General Order No. 95 be modified to read as follows:

C. LATERAL CONDUCTORS

(1) CONDUCTORS OF 0-750 VOLTS: Lateral runs of conductors of 0-750 volts may be less than the clearances from center line and surface of pole, and from the surface of crossarm, as specified in Table 1, Cases 8 and 9, provided such conductors are suitably insulated and placed along the bottom surface of crossarms and are protected by wood moulding or impregnated fiber conduit of thicknesses not less than as specified in Rule 22.2, or are protected by plastic pipe designated as Type II, Schedule 40 in the standard specified in Rule 22.2-C.

(2) CONDUCTORS OF MORE THAN 750 VOLTS: Lateral runs of conductors of more than 750 volts may be less than the clearances from center line and surface of pole, and from the surface of crossarm, as specified in Table 1, Cases 8 and 9, provided such conductor s are suitably insulated and are protected by the impregnated fiber conduit or plastic pipe specified in Rule 54.6C(1), such conduit or pipe being placed along and attached to the bottom surface of crossarm.

(3) EXTENT OF RUN: The wood moulding, fiber conduit, or plastic pipe required for protection by this Rule 54.6C shall extend entirely under and along the arm to the outer position of any conductor in the run and in no case shall the covering be terminated within 15 inches from center line of pole.

(4) CONDUCTOR CLEARANCES: The radial clearances between conductors, specified in Table 2, Cases 16 and 17, are not required between the suitably insulated conductors in the same lateral run.

3. The first paragraph of Rule 84.6B of General Order No. 95 be modified to read as follows:

B. GROUND WIRES

Ground wires, other than lightning protection wires not attached to equipment or ground wires on grounded structures, shall be covered by metal pipe or suitable

covering of wood or metal or of plastic pipe material designated as Type II in the standard specified in Rule 22.2, for a distance above ground sufficient to protect against mechanical injury, but in no case shall such distance be less than 7 feet. Such covering may be omitted providing the ground wire in this 7-foot section has a mechanical strength at least equal to the strength of No.6 AWG medium-hard-drawn copper.

The Secretary is directed to cause appropriate notice of the issuance of this order to be given to all operators of overhead electric supply and communications lines coming within the jurisdiction of this Commission.

I hereby certify that the foregoing Resolution was duly introduced, passed and adopted at a regular conference of the Public Utilities Commission of the State of California, held on the 1st day of May, 1961, the following Commissioners voting favorably thereon:

EVERETT C McKEAGE President
PETER E. MITCHELL,
C. LYN FOX
GEORGE G. GROVER
FREDERICK B. HOLOROFF

Note Strikeout and Underline Section added by Raymond G. Fugere on April 2, 2002

Original Version
Rule 22.2

22.2 **Protective Covering, Suitable**, means a covering of wood or other material having the electrical insulating efficiency and mechanical strength of 1 ½ inches of redwood, or hardwood moulding (oak or rock elm) three-eighths of an inch in thickness or having a cross section as shown in Figure 81 of Appendix G, or as otherwise authorized by the Railroad Commission. Impregnated fiber conduit having a wall thickness of not less than one quarter of an inch and installed over metal conduit meets the requirements of this definition when installed in a workmanlike manner as illustrated in Figure 82 of Appendix G.

Strikeout and Underline Version
Rule 22.2

22.2 PROTECTIVE COVERING, Suitable, means a covering of wood, or other material ~~having the electrical insulating efficiency and mechanical strength of 1 ½ inches of redwood, or hardwood moulding (oak or rock elm) three-eighths of an inch in thickness or having a cross section as shown in Figure 81 of Appendix G, or as otherwise~~ as authorized by the ~~Railroad~~ Public Utilities Commission~~.~~ ~~Impregnated fiber conduit having a wall thickness of not less than one quarter of an inch and installed over metal conduit meets the requirements of this definition when installed in a workmanlike manner as illustrated in Figure 82 of Appendix G.,~~ having the electrical insulating efficiency and mechanical strength of 1 ½ inches of redwood. Materials meeting the requirements of this definition, when installed in a workmanlike manner include:

A. IMPREGNATED FIBER CONDUIT, having a wall thickness of not less than one quarter of an inch, installed over rigid metal conduit as illustrated in Figure 82 of Appendix G.

B. HARDWOOD MOULDING (oak or rock elm) three eights of an inch in thickness, or having a cross-section as shown in Figure 81 of Appendix G, when used as a covering for ground wires and communication conductors.

C. PLASTIC PIPE made of rigid unplasticized polyvinyl chloride having the properties and dimensions specified as Type II, High Impact, Schedule 80 in United States Department of Commerce Commercial Standard No. CS 207-60. The plastic pipe herein specified shall be installed only on poles or structures within the light loading district as defined in Rule 21.0-C and Rule 43.

Final Version

Rule 22.2

22.2 PROTECTIVE COVERING, Suitable, means a covering of wood, or other material as authorized by the Public Utilities Commission, having the electrical insulating efficiency and mechanical strength of 1 ½ inches of redwood. Materials meeting the requirements of this definition, when installed in a workmanlike manner include:

A. IMPREGNATED FIBER CONDUIT, having a wall thickness of not less than one quarter of an inch, installed over rigid metal conduit as illustrated in Figure 82 of Appendix G.

B. HARDWOOD MOULDING (oak or rock elm) three eights of an inch in thickness, or having a cross-section as shown in Figure 81 of Appendix G, when used as a covering for ground wires and communication conductors.

C. PLASTIC PIPE made of rigid unplasticized polyvinyl chloride having the properties and dimensions specified as Type II, High Impact, Schedule 80 in United States Department of Commerce Commercial Standard No. CS 207-60. The plastic pipe herein specified shall be installed only on poles or structures within the light loading district as defined in Rule 21.0-C and Rule 43.

54.6 Vertical and Lateral Conductors

C Lateral Conductors

Lateral runs of conductors of 0-750 volts may be less than the clearances from center line and surface of pole, and from the surface of crossarm, as specified in Table 1, Cases 8 and 9, provided such conductors are suitably insulated and placed along the bottom surface of crossarms and are protected by wood moulding on impregnated fiber conduit of thickness not less than as specified in Rule 22.2.

Lateral runs of conductors of more than 750 volts may be less than the clearances from center line and surface of pole, and from the surface of crossarms, as specified in Table 1, Cases 8 and 9, provided such conductors are suitably insulated and are protected by impregnated fiber conduit attached to the bottom surface of crossarm.

The wood moulding or fiber conduit required for protection in accordance with this Rule 54.6-C shall extend along the arm to the outer position of any conductor in the run and in no case shall the covering be terminated within 15 inches from center line of pole.

The radial clearances between conductors, specified in Table 2, Cases 16 and 17 are not required between suitably insulated conductors in the same lateral run.

Strikeout and Underline Version
Rule 54.6-C

54.6 Vertical and Lateral Conductors

C. LATERAL CONDUCTORS

(1) CONDUCTORS OF 0-750 VOLTS: Lateral runs of conductors of 0-750 volts may be less than the clearances from center line and surface of pole, and from the surface of crossarm, as specified in Table 1, Cases 8 and 9, provided such conductors are suitably insulated and placed along the bottom surface of crossarms and are protected by wood moulding or impregnated fiber conduit of thicknesses not less than as specified in Rule 22.2. or are protected by plastic pipe designated as Type II, Schedule 40 in the standard specified in Rule 22.2-C.

(2) CONDUCTORS OF MORE THAN 750 VOLTS: Lateral runs of conductors of more than 750 volts may be less than the clearances from center line and surface of pole, and from the surface of crossarm, as specified in Table 1, Cases 8 and 9, provided such conductor s are suitably insulated and are protected by the impregnated fiber conduit or plastic pipe specified in Rule 54.6C(1), such conduit or pipe being placed along and attached to the bottom surface of crossarm.

(3) EXTENT OF RUN: The wood moulding, ~~or~~ fiber conduit, or plastic pipe required for protection by this Rule 54.6C shall extend entirely under and along the arm to the outer position of any conductor in the run and in no case shall the covering be terminated within 15 inches from center line of pole.

(4) CONDUCTOR CLEARANCES: The radial clearances between conductors, specified in Table 2, Cases 16 and 17, are not required between the suitably insulated conductors in the same lateral run.

Final Version
Rule 54.6-C

54.6 Vertical and Lateral Conductors

C. LATERAL CONDUCTORS

(1) CONDUCTORS OF 0-750 VOLTS: Lateral runs of conductors of 0-750 volts may be less than the clearances from center line and surface of pole, and from the surface of crossarm, as specified in Table 1, Cases 8 and 9, provided such conductors are suitably insulated and placed along the bottom surface of crossarms and are protected by wood moulding or impregnated fiber conduit of thicknesses not less than as specified in Rule 22.2, or are protected by plastic pipe designated as Type II, Schedule 40 in the standard specified in Rule 22.2-C.

(2) CONDUCTORS OF MORE THAN 750 VOLTS: Lateral runs of conductors of more than 750 volts may be less than the clearances from center line and surface of pole, and from the surface of crossarm, as specified in Table 1, Cases 8 and 9, provided such conductor s are suitably insulated and are protected by the impregnated fiber conduit or plastic pipe specified in Rule 54.6C(1), such conduit or pipe being placed along and attached to the bottom surface of crossarm.

(3) EXTENT OF RUN: The wood moulding, fiber conduit, or plastic pipe required for protection by this Rule 54.6C shall extend entirely under and along the arm to the outer position of any conductor in the run and in no case shall the covering be terminated within 15 inches from center line of pole.

(4) CONDUCTOR CLEARANCES: The radial clearances between conductors, specified in Table 2, Cases 16 and 17, are not required between the suitably insulated conductors in the same lateral run.

Original Version

Rule 84.6-B

84.6 Vertical and Lateral Conductors

B Ground Wires

Ground wires, other than lightning protection wires not attached to equipment or ground wires on grounded' structures, shall be covered by metal pipe or suitable covering of wood or metal for a distance above ground sufficient to protect against mechanical injury but in no case shall such distance be less than 7 feet, Such covering may be omitted providing the ground wire in this 7 -foot section has a mechanical strength at least equal to the strength of No.6 A WG medium-hard-drawn copper.

Portions of ground wires which are on the surface of wood poles and within 6 feet vertically of unprotected supply conductors supported on the same pole, shall be covered with a suitable protective covering (see Rule 22.2).

Strikeout and Underline Version

Rule 84.6-B

84.6 Vertical and Lateral Conductors

B Ground Wires

Ground wires, other than lightning protection wires not attached to equipment or ground wires on grounded structures, shall be covered by metal pipe or suitable covering of wood or metal or of plastic pipe material designated as Type II in the standard specified in Rule 22.2, for a distance above ground sufficient to protect against mechanical injury, but in no case shall such distance be less than 7 feet. Such covering may be omitted providing the ground wire in this 7-foot section has a mechanical strength at least equal to the strength of No.6 AWG medium-hard-drawn copper.

Portions of ground wires which are on the surface of wood poles and within 6 feet vertically of unprotected supply conductors supported on the same pole, shall be covered with a suitable protective covering (see Rule 22.2).

Final Version
Rule 84.6-B

84.6 Vertical and Lateral Conductors

B Ground Wires

Ground wires, other than lightning protection wires not attached to equipment or ground wires on grounded structures, shall be covered by metal pipe or suitable covering of wood or metal or of plastic pipe material designated as Type II in the standard specified in Rule 22.2, for a distance above ground sufficient to protect against mechanical injury, but in no case shall such distance be less than 7 feet. Such covering may be omitted providing the ground wire in this 7-foot section has a mechanical strength at least equal to the strength of No.6 AWG medium-hard-drawn copper.

Portions of ground wires which are on the surface of wood poles and within 6 feet vertically of unprotected supply conductors supported on the same pole, shall be covered with a suitable protective covering (see Rule 22.2).