

Decision No. 68835 Application No. 47208 (Filed December 23, 1964)

Opinion

Southern California Edison Company (Edison) request an order amending and revising certain provisions of Rule 48.1 of General Order No. 95 "Rules for Overhead Electric Line Construction", relating to specifications and dimensions for wood poles.

The Commission's presently effective General Order No. 95 governing overhead electric line construction provides safety factors for wood poles in Rule 48.1. This rule presently provides that the values to be used for moduli of rupture for wood in bending shall not exceed 7,400 psi (pounds per square inch) for round Douglas fir poles and for round Southern pine poles and 5,600 psi for round Western red cedar poles. The existing provisions of Rule 48.1 are based upon the specifications of American Standards Associations, designated ASA 05.6-1941 for Douglas fir Poles and 05.4-1941 for Southern pine poles.

On March 5, 1963, the American Standards Association approved a revision in fiber stress ratings of Douglas fir, Southern pine and Western red cedar pole. The revisions are included in the American Standard Specifications and Dimensions for Wood Poles, designated ASA 05.1-1963. A copy of said Standard is Attached to the application as Exhibit I.

Edison states full size pole strength tests have been conducted at the U.S. Forest Products Laboratory at Madison, Wisconsin, under the supervision of American Society for Testing and Materials (ASTM) Committee D& on Wood and sponsored by pole vendors and pole users. The over-all research program covered tests of over 600 full size poles and 14,000 tests of small specimens to evaluate the properties of clear wood. In wood these tests it has been determined that Douglas fir, Southern pine, and Western red cedar are stronger than previously rated. As a result, the American Standards Association's new specification ASA 05.1-1963 (which supersedes the earlier Standard upon which the provisions of Rule 48.1 of General Order No. 95 are based) contains fiber stress ratings which have been increased from 7,400 PSI to 800 psi for Douglas fir and Southern pine and from 5,600 psi to 6,000 psi for Western red cedar. In turn, minimum ground line circumferences have been reduced by $\frac{1}{2}$ to $1 - \frac{1}{2}$ inches, depending upon class and length of pole.

Edison further states that through its distribution, transmission and timber products engineering group, it has investigated ASA 05.1-1963 and found the new ratings of fiber stress and reduced ground line circumferences for wood poles acceptable and desirable and that pole suppliers have indicated they are

willing to produce poles under the new ASA specifications because the smaller ground line circumferences give them a greater selection by class.

For many years suitable preservatives other than creosote have been available for the treatment of poles. Many poles users have adopted the practice of treating Douglas fir poles with such other substances where circumstances indicate this to be more desirable than the use of creosoted poles. General Order No. 95 should be modified to reflect this practice.

The principal pole users in California are electric and telephone utilities subject to the requirement of General Order No. 95. Edison request that the General Order No. 95 be amended by revising Rule 48.1, Table 5, to conform to ASA 05.1-1963. Edison states and this Commission has information that the major electric and telephone utilities in California support the revision of Rule 48.1 of General Order No. 95 to reflect the provisions of the new ASA specification.

Applicant proposed that the present requirement for "Creosoted" poles stated in footnote (b), Table 5 of Rule 48.1 be revised to refer to "full length treated" poles. Subsequently, by letter dated February 19, 1965, applicant has requested, in order to adequately describe the required preservative treatment, that the "full length treated" be deleted from the proposed revision and the sentence "Such poles shall be given suitable preservative treatment" be added. Said letter is hereby received as Exhibit II herein.

After investigation the Commission finds that Douglas fir, Southern pine, and Western red cedar poles are stronger than previously rated; that suitable preservatives other than creosote are available; the safety standards are not reduced; and that General Order No. 95 should be modified to conform to American Standards Association's new specifications ASA 05.1-1963. A public hearing is not necessary.

Order

IT IS ORDERED that General Order No. 95, Rule 48.1, Table 5, be amended as follows:

- a. Change the value for modulus of rupture in bending for cedar, Western red round poles from 5,600 lbs. per sq. in. to 6,000 lbs. per sq. in.
- b. Change footnote reference (b) of said table to read "Where poles meet specifications of American Standards Association, 05.1-1963 for Douglas Fir Poles and for southern Pine Poles this value may be

increased to not more than 8,000-lbs. Per square inch. Such poles shall be suitable preservative treatment."

IT IS FURTHER ORDERED that the Secretary shall cause a copy of this order to be served upon each electric and telephone utility subject to the jurisdiction of this Commission and, further, to cause a suitable number of copies to be made available for distribution to such other utilities and the general public as may request the same.

The effective date of this order shall be the date hereof.

Dated at San Francisco, California, this 6th day of April, 1965.

Strikeout and Underline Section Added April 5, 2002 by Raymond G. Fugere

Original Version
Rule 48.1 & Table 5

48.1 Wood

Values used for moduli of rupture for wood in bending, in conjunction with safety factors given in Rule 44, shall not exceed those shown in Table 5.

Table 5
Wood strengths

Species	Modulus of rupture in bending	
	Sawed rectangular poles, crossarm, etc. (a)	Round Poles
Cedar, western red	4,700 lbs. Per sq in	5,600 lbs. Per sq in
Douglas fir, sense	6,300 lbs. Per sq in	6,800 (b) lbs. Per sq in
Douglas fir, not dense	5,800 lbs. Per sq in	6,800 (b) lbs. Per sq in
Fir, white or red, local	4,700 lbs. Per sq in	5,600 lbs. Per sq in
Pine, southern yellow, dense	6,300 lbs. Per sq in	6,800 (b) lbs. Per sq in
Pine, southern yellow, not dense	5,800 lbs. Per sq in	6,800 (b) lbs. Per sq in
Redwood, virgin	5,300 lbs. Per sq in	6,200 lbs. Per sq in
Redwood, second growth	3,900 lbs. Per sq in	4,600 lbs. Per sq in

(a) Figures given are for select structural grade of material under short time loading with the neutral plane parallel to a side. Multiply the values shown by 1.4 where the neutral plane is on the diagonal of a square. Multiply the given values by 0.55 where the loading being considered is a long time loading (continuous load for one year or more).

(b) Where poles meet specifications of American Standards Association, 05.6-1941 for Douglas Fir Poles (creosoted) and 05.4-1941 for southern Pine Poles (creosoted), this value may be increased to not more than 7,400 lbs. Per square inch.

Strikeout and Underline Version

Rule 48.1 & Table 5

48.1 Wood

Values used for moduli of rupture for wood in bending, in conjunction with safety factors given in Rule 44, shall not exceed those shown in Table 5.

Table 5
Wood strengths

Species	Modulus of rupture in bending	
	Sawed rectangular poles, crossarm, etc. (a)	Round Poles
Cedar, western red	4,700 lbs. Per sq in	<u>6,000</u> 5,600 lbs. Per sq in
Douglas fir, sense	6,300 lbs. Per sq in	6,800 (b) lbs. Per sq in
Douglas fir, not dense	5,800 lbs. Per sq in	6,800 (b) lbs. Per sq in
Fir, white or red, local	4,700 lbs. Per sq in	5,600 lbs. Per sq in
Pine, southern yellow, dense	6,300 lbs. Per sq in	6,800 (b) lbs. Per sq in
Pine, southern yellow, not dense	5,800 lbs. Per sq in	6,800 (b) lbs. Per sq in
Redwood, virgin	5,300 lbs. Per sq in	6,200 lbs. Per sq in
Redwood, second growth	3,900 lbs. Per sq in	4,600 lbs. Per sq in

(a) Figures given are for select structural grade of material under short time loading with the neutral plane parallel to a side. Multiply the values shown by 1.4 where the neutral plane is on the diagonal of a square. Multiply the given values by 0.55 where the loading being considered is a long time loading (continuous load for one year or more).

(b) Where poles meet specifications of American Standards Association, 05.1-1963 ~~05.6-1944~~ for Douglas Fir Poles (~~creosoted~~) and 05.4-1944 for southern Pine Poles (~~creosoted~~), this value may be increased to not more than 8,000 ~~7,400~~ lbs. Per square inch. Such poles shall be suitable preservative treatment.

Final Version
Rule 48.1 & Table 5

48.1 Wood

Values used for moduli of rupture for wood in bending, in conjunction with safety factors given in Rule 44, shall not exceed those shown in Table 5.

Table 5
Wood strengths

Species	Modulus of rupture in bending	
	Sawed rectangular poles, crossarm, etc. (a)	Round Poles
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Fir, white or red, local	4,700 lbs. Per sq in	5,600 lbs. Per sq in
Pine, southern yellow, dense	6,300 lbs. Per sq in	6,800 (b) lbs. Per sq in
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(a) Figures given are for select structural grade of material under short time loading with the neutral plane parallel to a side. Multiply the values shown by 1.4 where the neutral plane is on the diagonal of a square. Multiply the given values by 0.55 where the loading being considered is a long time loading (continuous load for one year or more).

(b) Where poles meet specifications of American Standards Association, 05.1-1963 for Douglas Fir Poles and for southern Pine Poles this value may be increased to not more than 8,000-lbs. Per square inch. Such poles shall be suitable preservative treatment.