PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

SAFETY DIVISION
UTILITIES SAFETY BRANCH

RESOLUTION SU-10
January 21, 1992

R E S O L U T I O N

RESOLUTION SU-10, ORDER AUTHORIZING RULE CHANGES TO GENERAL ORDER NO. 95 (G.O. 95), RULES FOR OVERHEAD ELECTRIC LINE CONSTRUCTION

SUMMARY

1. The staff of the Safety Division's Utilities Safety Branch requests authorization for changes to G.O. 95 contained in the enclosed Appendix A.

2. The request follows submittal of proposed changes by the General Orders 95/128 Rules Committee, which is composed of representatives from operators of electric and communications lines in California. The committee has obtained a consensus of investor owned utilities, utility districts, municipalities, the California Cable Television Association, and the associated labor unions concerning the changes.

3. The changes authorized are to rules concerning strength of materials, grounding, bonding, conductor clearances, conductor spacing, guy clearances, guy sectionalizing insulators, trolley line clearances, and communication service drops.

BACKGROUND

1. The changes are the result of informal proposals by the General Orders 95/128 Rules Committee. The committee represents operators of overhead and underground lines and the associated labor unions in California. It was formed by the line operators to review electric and communication line construction and maintenance methods and materials. All operators are invited to participate in ongoing workshops held in numerous locations each year to consider state-of-the-art methods and materials for the industry, along with changes in the General Orders.

2. Members of the Commission's Utilities Safety Branch staff attend meetings of the rules committee and its subcommittees to participate in its discussions and assist in its work.

FINDINGS

1. We find that the changes to G.O. 95 authorized in this Resolution are just and reasonable.

THEREFORE, IT IS ORDERED THAT:

1. The changes in text shown in Appendix A shall be made in G.O. 95.

2. All rules changed shall be marked "Revised January 21, 1992, by Resolution SU-10".

3. This resolution is effective today.

I hereby certify that this Resolution was adopted by the Public Utilities Commission at its regular meeting on January 21, 1992. The following Commissioners approved it.

NEAL J. SHULMAN
Executive Director

DANIEL Wm. FESSLER
President
JOHN B. OHANIAN
PATRICIA M. ECKERT
NORMAN D. SHUMWAY
Commissioners

CORRECTION

THIS DOCUMENT HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY

3. When a study group or subcommittee of the "Rules Committee" drafts a rule change proposal, the draft is sent to the whole committee for evaluation. The proposal may be modified to obtain a consensus of the committee; if consensus is not reached, the proposal is dropped.

4. After a final draft of the proposed rule changes is approved in committee meetings the draft is mailed with a ballot to all members so that those who may have missed any discussion sessions may review and vote on each change. Any dissenting vote requires that meetings be held to resolve the issues.

5. Safety is of primary concern when a rule change is proposed. As noted in the rationale for changes in Appendix A, safety to workers and the general public is considered.

DISCUSSION

1. The proposed rule changes are presented in the enclosed Appendix A. A list of the rules is contained in the Table of Contents of Appendix A.

2. The rule changes are divided generically into eighteen (18) items. Each is preceded with the rationale explaining the change, followed by the existing rule and the proposed rule changes (deletions struck out and additions underlined), and the final proposed rule marked by an asterisk (*).

The following sections of the General Orders are affected by the proposal:

General Order No. 95, Rules: 48, 49, Table 4, 52.7-F, 53.4, 54.4-A, 54.4-C4b, 54.4-D6b, 54.8, 54.10-D, 54.12 (new rule), 56.4-A1, 56.4-C2, 56.4-C3, 56.4-C4, 56.4-D, 56.4-F, 56.5, 56.6-A, 56.6-D, 56.7-A, 56.7-B, 56.7-C, 56.8-A, 56.8-C, 57.4-A, 57.4-B2, 57.4-F, 57.4-G, 57.5, 57.7, 59.3-A, 59.3-F, 74.4-E, 77.4-B, 84.8-A, 84.8-B1, 84.8-B2, 84.8-C, 84.8-C1, 84.8-C2, 84.8-C3, 84.8-D1, and 92.1-F4.

3. Except for the addition of Figures 54-9, 56-1, 56-2 and 92-1, where a pictorial representation is part of the rule, the pictorial representation has been taken from the appendix at the end of G.O. 95 and moved into the text of the rule. This should lend clarity and aid in the interpretation of the rules.

4. The staff believes the changes provide for increased safety to workers and the general public; the changes incorporate state-of-the-art methods and materials and should provide for economical construction and maintenance. The Safety Division staff recommends authorization of the changes.

FINDINGS

1. We find that the changes to G.O. 95 authorized in this Resolution are just and reasonable.

THEREFORE, IT IS ORDERED THAT:

1. The changes in text shown in Appendix A shall be made in G.O. 95.

2. All rules changed shall be marked "Revised January 21, 1992, by Resolution SU-10".

3. This resolution is effective today.

I hereby certify that this Resolution was adopted by the Public Utilities Commission at its regular meeting on January 21, 1992. The following Commissioners approved it.

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APPENDIX A

PROPOSED RULE CHANGES

RULES FOR OVERHEAD
LINE CONSTRUCTION, GENERAL ORDER NO. 95

STATE OF CALIFORNIA PUBLIC UTILITIES COMMISSION

NOTE: (1) For each rule proposed to be changed, the appendix provides the following:
(a) The rationale for the change.
(b) The existing rule and the proposed rule changes, with deletions struck out and additions underlined.
(c) The final proposed rule, marked by an asterisk (*).

(2) The changes are divided generically into 18 items.

APPENDIX A - TABLE OF CONTENTS

APPENDIX A - TABLE OF CONTENTS
(Continued)

ITEM 1

- Rule 48
- Rule 49
- Table 4

RATIONALE FOR PROPOSED RULE CHANGES

MATERIAL STRENGTH

- RULE 48 -
ULTIMATE STRENGTH OF MATERIALS
- RULE 49 -
DETAILED STRENGTH REQUIREMENTS
- TABLE 4 -
MINIMUM SAFETY FACTORS (RULE 44.1)

Present General Order 95 language restricts crossarm and structural materials, which limits the ability to apply new state-of-the-art technology. This proposal would allow the use of other materials.

48. ULTIMATE STRENGTH OF MATERIALS

Values used for the ultimate strength of materials, in connection with the safety specified in Rule 44 shall be not more than as follows:

48.1 Wood

Values used for moduli of rupture for wood in bending, in conjunction with the 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, crossarms, etc. (a)	Round Poles
Cedar, western red	4,700 lbs. per sq. in.	6,000 lbs. per sq. in.
Douglas fir, dense	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, 05.1-1979 for Douglas fir poles and Southern pine poles, this value may be increased to not more than 8,000 lbs. per square inch. Such poles shall be given suitable preservative treatment.

NOTE: Revised April 26, 1965 by Decision No. 68835.

48.2 Structural Material (Other Than Wood)

Structural members and their connections shall be designed and constructed so that the structures and parts thereof will not fail or be seriously distorted at any load less than their maximum working loads (developed under the current construction arrangements with loadings as specified in Rule 43) multiplied by the safety factor specified in Rule 44.

The safety factors specified in Rule 44 shall be applied as follows to structural steel:

Tension and Bending: The yield point, 33,000 pounds per square inch, shall be divided by the safety factor to determine the maximum allowable working stress.

Compression: The maximum allowable working stress shall be calculated by the following formula:

$$S_{max} = \frac{1}{f_s} \left(YP - \left(\frac{YP - 12{,}000}{200}\right) \frac{l}{r}\right),$$

Where S_{max} = maximum allowable working stress, lbs. per sq. in.

f_s = safety factor specified in Rule 44

YP = yield point of the steel, 33,000 lbs. per sq. in.

l = unsupported length of member, inches

r = radius of gyration of member, inches

Shear: The ultimate tensile strength, 60,000 pounds per square inch, shall be multiplied by 2/3 and divided by the safety factor specified in Rule 44 to determine the maximum allowable working stress.

Where the figures given are used, structural steel shall conform to Standard Specifications A7-39 of American Society for Testing Materials for carbon steel of structural quality. Other values may be used for steel of other strength provided the yield point and ultimate tensile strength are determined by test.

For other structural materials (other than concrete), the safety factor specified in Rule 44 shall be applied as follows:

Tension: The yield strength of the material used shall be divided by the safety factor specified in Rule 44 to determine the maximum allowable working stress.

Compression: The ultimate compressive strength of the material used shall be divided by the safety factor specified in Rule 44 to obtain the allowable working stress. The ultimate compressive strength shall be determined by suitable formulae for the material used, considering yield strength of the material, modulus of elasticity, slenderness ratio and eccentricity of connection. In no case shall the ultimate compressive stress be greater than the yield strength of the material.

Shear: The ultimate shear strength of the material used shall be divided by the safety factor specified in Rule 44 to determine the maximum allowable working stress.

NOTE: Revised March 30, 1968 by Decision No. 73813.

48.3 Concrete

A. REINFORCED CONCRETE

Values used for ultimate strengths of reinforced concrete, in conjunction with safety factors given in Rule 44, shall not exceed the following:

Reinforcing steel, tensile or compressive strength, pounds per square inch 55,000

Concrete, 1:2:4 mixture ..... Age	Compressive Strength
7 days	900 lbs per sq in.
30 days	2,400 lbs per sq in.
90 days	3,100 lbs per sq in.
6 months	4,400 lbs per sq in.

If reinforced concrete is designed for higher strength values which are proven by test, such values may be used in lieu of the figures given.

B. PRESTRESSED CONCRETE

The minimum strength of the materials used in prestressed concrete structures used in conjunction with the safety factors given in Table 4 shall be as follows:

Reinforcing Steel - yield strength ..... 40,000 lbs per sq in.
Prestressing Steel - yield strength ..... 188,000 lbs per sq in.
Concrete - compressive strength
at 28 days ..... 4,000 lbs per sq in.

Other strength values may be used provided the strength values used for design are proven by tests.

NOTE: Rule 48.3-B added on February 13, 1974 by Decision No. 82466.

48.4 Conductors, Span Wires, Guys and Messengers

Values used for ultimate strengths of wires and cable shall not exceed those given in Appendix B. The ultimate strengths given in Tables 17 to 24 of Appendix B, except for medium-hard drawn copper, are based on the minimum ultimate strengths given in the standard specifications of the American Society for Testing Materials. The ultimate strengths given in Appendix B for medium-hard-drawn copper are based on the standard specifications of the ASTM and provide an allowance above the minimum values of one-quarter of the range between minimum and maximum values. For use of types of wires and cables of other materials not included in Appendix B, values for ultimate strengths similarly derived from specifications of the ASTM shall be used except that, if such specifications are nonexistent, maker's specifications may be used provided that test have been made which shall justify the maker's rating for ultimate strength.

48.5 Tower or Pole Foundations and Footings

In calculating the resistance of foundations or footings of towers, poles and pole line structures to uplifts, the weight of concrete shall be taken as not more than 145 pounds per cubic foot and the weight of earth (calculated 30 degrees from the vertical) shall be taken as not more than 90 pounds per cubic foot. The resistance of soil to the depression of foundations or footing shall be calculated from the best available data on the soil in question. In lieu of calculation, the strength of foundations or footings against uplift or depression may be determined by tests under the soil conditions prevailing.

48.6 Metallic Service and Meter Poles

Metallic service and meter poles shall be designed and constructed so that the poles and parts thereof will not fail or by seriously distorted at any load less than the maximum working loads (see Rule 43 for loadings) multiplied by the Safety factors specified in Table 4, Rule 44. The safety factors specified in Table 4, Rule 44 shall be applied as follows:

Tension: The yield strength of the metal used shall be divided by the safety factor specified in Table 4, Rule 44 to determine the maximum allowable working stress.

Compression: The critical buckling strength of the material used, as determined by applicable formulas employing the effective slenderness ratio and yield strength, shall be divided by the safety factors specified in Table 4, Rule 44, to determine the maximum allowable working stress.

Shear: The yield strength of the material used shall be divided by the safety factors given in Table 4, Rule 44 to determine the maximum allowable working stress.

NOTE: Added July 26, 1966 by Decision No. 71009.

49. DETAILED STRENGTH REQUIREMENTS

49.1 Poles, Towers and Other Structures

A. STRENGTH

Wood poles shall be of sound timber, free from defects which would materially reduce their strength or durability and they shall have sufficient strength to withstand, with safety factors not less than those specified in Rule 44, the maximum stresses to which they are subjected under the loading conditions specified in Rule 43. The modulus of rupture used in calculation of safety factors shall be not greater than the value given in Rule 48.1.

Metallic, prestressed concrete and reinforced concrete poles, tower and structures, together with their foundations, shall be of such material and dimensions as to withstand, with safety factors not less than those specified in Rule 44, the maximum stresses to which they are subjected under the loading conditions specified in Rule 43. The fiber stress values used in calculation of safety factors shall be as specified in Rules 48.2, 48.3 and 48.6.

Certain poles are subject to special stresses due to angles in the line, dead-ending of conductors or other attachments, which stresses must be included in computing the loading and safety factor. Poles subject to these special stresses sometimes require the use of guys, in which case the pole below the point of guy attachment shall be considered merely as a strut, the guy taking all lateral stresses. In such cases, the pole strength requirement shall apply at the point of guy attachment rather than at the ground line.

49.2 Crossarms

A. MATERIAL

(1) **Wood:** Wood crossarms shall be of suitable grades of Douglas fir, Southern Yellow pine or other accepted species.

(2) **Metal:** Metal crossarms shall be of structural steel, cast steel, or malleable cast iron, properly galvanized or otherwise protected to resist corrosion, or may be of any corrosion-resisting metal or alloy.

(3) **Prestressed Concrete:** Prestressed concrete crossarms may be used provided they are designed in accordance with Rule 48.3-B.

NOTE: Part (3) added February 13, 1974 by Decision No. 82466.

B. MINIMUM SIZE

(1) **Wood:** Crossarms used to support or guard supply conductors shall have cross-sectional dimensions not less than the following:

One piece (homogeneous): 3 1/4 x 4 1/4 inches,
Fabricated: any single member, 1 3/4 x 4 1/4 inches, or
Laminated: 3 x 4 inches.

Crossarms supporting or guarding communication conductors shall provide the strength of Douglas fir having a cross section not less than 3 by 4 1/4 inches except that crossarms six and one-half feet or less in length which support sixteen wires or less shall provide the strength of Douglas fir having a cross section not less than 2 3/4 by 3 3/4 inches.

(2) **Metal:** The physical properties as a result of dimensions, shape and cross-sectional area of metal crossarms shall be such as to result in sufficient strength to meet the requirements of Rules 46, 47 and 48.2, provided the thickness of any element shall be not less than 3/32 inch.

(3) **Prestressed Concrete:** The minimum dimension of any prestressed concrete member shall be 3 inches.

NOTE: Part (3) added February 13, 1974 by Decision No. 82466.

C. STRENGTH

Crossarms shall be securely supported by bracing, where necessary, to withstand unbalanced vertical loads and to prevent tipping of any arm sufficiently to decrease clearances below the values specified in Section III. Such bracing shall be securely attached to poles and crossarms. Supports in lieu of crossarms shall have means of resisting rotation in a vertical plane about their attachment to poles or shall be supported by braces as required for crossarms. Metal braces or attachments shall meet the requirements of Rules 48.2 and 49.8. In computing the strength requirements to meet vertical loads the effect of such bracing may be considered.

TABLE 4

Minimum Safety Factors

Element of Line	Grades of Construction			
	Grade "A"	Grade "B"	Grade "C"	Grade "F"
Conductors, splices and conductor fastenings (other than tie wires)	2	2	2	1
Pins	2	2	2	1
Pole line hardware	2	2	2	2
Line insulators (mechanical)	3	2	2	2
Guy insulators (mechanical)				
Interlocking	2	2	2	2
Noninterlocking wood	3	3	3	-
Noninterlocking glass fiber	3	2 (a)	2 (b)	-
Guys, except in light loading rural districts	2	2	2	1 1/4
Guys in light loading rural districts	2	1 1/2	1 1/2	1 1/4
Messengers and span wires	2	2	2	2
Wood poles..	4	3	2	1
Metallic service and meter poles	-	2	2	-
Structural or tubular metallic poles, towers, structures, crossarms and metallic members of foundations	1 1/2 (c)	1 1/4 (c)	1 1/4 (c)	-
Foundations against uplift	1 1/2	1 1/2	1 1/2	-
Foundations against depression	3	2	2	-
Reinforced concrete poles	4	3	3	-
Crossarms (wood)	2	2	2	1
Prestressed concrete poles, structures, and crossarms...	1.8	1.5	1.5	-

(a) Insulators are to be replaced before safety factors have been reduced (due to deterioration or changes in construction, arrangement, or other conditions subsequent to installation) to less than 95 percent of the safety factor specified in Rule 44.1.

(b) Insulators are to be replaced before safety factors have been reduced (due to deterioration or changes in construction, arrangement, or other conditions subsequent to installation) to less than 75 percent of the safety factor specified in Rule 44.1.

(c) For aluminum members subject to tension caused by one or more estimated loads and where the critical load combination for the tension member would not endanger adjacent compression members, the factor of safety on ultimate tension shall be 2 Grade "A" construction and 1.67 for Grades "B" and "C" construction.

NOTE: Revised July 26, 1966 by Decision No. 71009; January 6, 1968 by Decision No. 73455; March 30, 1968 by Decision No. 73813 and February 13, 1974 by Decision No. 82466.

44.2 Replacement

Lines or parts thereof shall be replaced or reinforced before safety factors have been reduced (due to deterioration or changes in construction arrangement or other conditions subsequent to installation) in Grades "A" and "B" construction to less than two-thirds of the construction safety factors specified in Rule 44.1 and in Grades "C" and "F" construction to less than

48. ULTIMATE STRENGTH OF MATERIALS

Structural members and their connections shall be designed and constructed so that the structures and parts thereof will not fail or be seriously distorted at any load less than their maximum working loads (developed under the current construction arrangements with loadings as specified in Rule 43) multiplied by the safety factor specified in Rule 44.

Values used for the ultimate strength of materials shall comply with the safety factors specified in Rule 44.

~~Values used for the ultimate strength of materials in conjunction with the safety factors specified in Rule 44 shall not be more than as follows.~~

48.1 Wood

Values used for moduli of rupture for wood in bending, in conjunction with the 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, crossarms, etc. (a)	Round Poles
Cedar, western red	4,700 lbs. per sq. in.	6,000 lbs. per sq. in.
Douglas fir, dense	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, 05.1-1979 for Douglas fir poles and Southern pine poles, this value may be increased to not more than 8,000 lbs. per square inch. Such poles shall be given suitable preservative treatment.

NOTE: Revised April 26, 1965 by Decision No. 68835.

48.2 Steel

[illegible]

[illegible] shall be applied as follows to structural steel:

Tension and Bending: The yield point, 33,000 pounds per square inch, shall be divided by the safety factor to determine the maximum allowable working stress.

Compression: The maximum allowable working stress shall be calculated by the following formula:

$$S_{max} = \frac{1}{f_s} \left(YP - \left(\frac{YP - 12{,}000}{200}\right) \frac{l}{r}\right),$$

Where S_{max} = maximum allowable working stress, lbs. per sq. in.

f_s = safety factor specified in Rule 44

YP = yield point of the steel, 33,000 lbs. per sq. in.

l = unsupported length of member, inches

r = radius of gyration of member, inches

Shear: The ultimate tensile strength, 60,000 pounds per square inch, shall be multiplied by 2/3 and divided by the safety factor specified in Rule 44 to determine the maximum allowable working stress.

Where the figures given are used, structural steel shall conform to Standard Specifications A7-39 of American Society for Testing Materials for carbon steel of structural quality. Other values may be used for steel of other strength provided the yield point and ultimate tensile strength are determined by test.

[illegible]

[illegible]

[illegible]

~~Shear: The ultimate shear strength of the material used shall be divided by the safety factor specified in Rule 44 to determine the maximum allowable working stress.~~

NOTE: Revised March 30, 1968 by Decision No. 73813.

48.3 Concrete

A. REINFORCED CONCRETE

Values used for ultimate strengths of reinforced concrete, in conjunction with safety factors given in Rule 44, shall not exceed the following:

Reinforcing steel, tensile or compressive strength, pounds per square inch 55,000

Concrete, 1:2:4 mixture .... Age		Compressive Strength
	7 days	900 lbs per sq in.
	30 days	2,400 lbs per sq in.
	90 days	3,100 lbs per sq in.
	6 months	4,400 lbs per sq in.

If reinforced concrete is designed for higher strength values which are proven by test, such values may be used in lieu of the figures given.

B. PRESTRESSED CONCRETE

~~Structural members and their connections shall be designed and constructed so that the structures and parts thereof will not fail or be seriously distorted at any load less than their maximum working loads (developed under the current construction arrangements with loadings as specified in Rule 43) multiplied by the safety factor specified in Rule 44.~~

The minimum strength of the materials used in prestressed concrete structures used in conjunction with the safety factors given in Table 4 shall be as follows:

Reinforcing Steel - yield strength .... 40,000 lbs per sq in.
Prestressing Steel - yield strength .... 188,000 lbs per sq in.
Concrete - compressive strength
at 28 days .... 4,000 lbs per sq in.

Other strength values may be used provided the strength values used for design are proven by tests.

NOTE: Rule 48.3-B added on February 13, 1974 by Decision No. 82466.

48.4 Other Structural Materials

For other structural materials, the safety factor specified in Rule 44 shall be applied as follows:

Tension: The yield strength of the material used shall be divided by the safety factor specified in Rule 44 to determine the maximum allowable working stress.

Compression: The ultimate compressive strength of the material used shall be divided by the safety factor specified in Rule 44 to obtain the allowable working stress. The ultimate compressive strength shall be determined by suitable formulae for the material used, considering yield strength of the material, modulus of elasticity, slenderness ratio and eccentricity of connection. In no case shall the ultimate compressive stress be greater than the yield strength of the material.

Shear: The ultimate shear strength of the material used shall be divided by the safety factor specified in Rule 44 to determine the maximum allowable working stress.

48.§5 Conductors, Span Wires, Guys and Messengers

Values used for ultimate strengths of wires and cable shall not exceed those given in Appendix B. The ultimate strengths given in Tables 17 to 24 of Appendix B, except for medium-hard drawn copper, are based on the minimum ultimate strengths given in the standard specifications of the American Society for Testing Materials. The ultimate strengths given in Appendix B for medium-hard drawn copper are based on the standard specifications of the ASTM and provide an allowance above the minimum values of one-quarter of the range between minimum and maximum values. For use of types of wires and cables of other materials not included in Appendix B, values for ultimate strengths similarly derived from specifications of the ASTM shall be used except that, if such specifications are nonexistent, maker's specifications may be used provided that tests have been made which shall justify the maker's rating for ultimate strength.

48.§6 Tower or Pole Foundations and Footings

In calculating the resistance of foundations or footings of towers, poles and pole line structures to uplifts, the weight of concrete shall be taken as not more than 145 pounds per cubic foot and the weight of earth (calculated 30 degrees from the vertical) shall be taken as not more than 90 pounds per cubic foot. The resistance of soil to the depression of foundations or footing shall be calculated from the best available data on the soil in question. In lieu of calculation, the strength of foundations or footings against uplift or depression may be determined by tests under the soil conditions prevailing.

48.§7 Metallic Service and Meter Poles

Metallic service and meter poles shall be designed and constructed so that the poles and parts thereof will not fail or by seriously distorted at any load less than the maximum working loads (see Rule 43 for loadings) multiplied by the Safety factors specified in Table 4, Rule 44. The safety factors specified in Table 4, Rule 44 shall be applied as follows:

Tension: The yield strength of the metal used shall be divided by the safety factor specified in Table 4, Rule 44 to determine the maximum allowable working stress.

Compression: The critical buckling strength of the material used, as determined by applicable formulas employing the effective slenderness ratio and yield strength, shall be divided by the safety factors specified in Table 4, Rule 44, to determine the maximum allowable working stress.

Shear: The yield strength of the material used shall be divided by the safety factors given in Table 4, Rule 44 to determine the maximum allowable working stress.

NOTE: Added July 26, 1966 by Decision No. 71009.

49.1 Poles, Towers and Other Structures

A. STRENGTH

Wood poles shall be of sound timber, free from defects which would materially reduce their strength or durability, and they shall have sufficient strength to withstand, with safety factors not less than those specified in Rule 44, the maximum stresses to which they are subjected under the loading conditions specified in Rule 43. The modulus of rupture used in calculation of safety factors shall ~~be not~~ not be greater than the value given in Rule 48.1.

~~Metallic, prestressed concrete and reinforced concrete poles, tower and structures, together with their foundations, shall be of such material and dimensions as to withstand, with safety factors not less than those specified in Rule 44, the maximum stresses to which they are subjected under the loading conditions specified in Rule 43. The fiber stress values used in calculation of safety factors shall be as specified in Rules 48.2, 48.3 and 48.6.~~

Materials, other than wood used for poles, towers and structures, together with their foundations, shall be of such strength as to withstand, with safety factors not less than those specified in Rule 44, the maximum stresses to which they are subjected under the loading conditions specified in Rule 43.

Certain poles are subject to special stresses due to angles in the line, dead-ending of conductors or other attachments, which stresses must be included in computing the loading and safety factor. Poles subject to these special stresses sometimes require the use of guys, in which case the pole below the point of guy attachment shall be considered merely as a strut, the guy taking all lateral stresses. In such cases, the pole strength requirement shall apply at the point of guy attachment rather than at the ground line.

49.2 Crossarms

A. MATERIAL

(4) Other Material: Other materials may be used for crossarms provided they comply with Rule 48.4

B. MINIMUM SIZE

The physical properties as a result of dimensions, shape and cross-sectional area of crossarms shall be such as to result in sufficient strength to meet the requirements of these Rules.

~~(1) Wood: Crossarms used to support or guard supply conductors shall have cross-sectional dimensions not less than the following:~~

~~One piece (homogeneous) 3 1/4 x 4 1/4 inches~~

~~Fabricated: any single member 1 3/4 x 4 1/4 inches, or~~

~~Laminated: 3 x 4 inches~~

~~Crossarms supporting or guarding communication conductors shall provide the strength of Douglas fir having a cross section not less than 3 by 4 1/4 inches except that crossarms six and one-half feet or less in length which support sixteen wires or less shall provide the strength of Douglas fir having a cross section not less than 2 3/4 by 3 3/4 inches.~~

~~(2) Metal: The physical properties as a result of dimensions, shape and cross-sectional area of metal crossarms shall be such as to result in sufficient strength to meet the requirements of Rules 46, 47 and 48.2, provided the thickness of any element shall be not less than 3/32 inch.~~

~~(3) Prestressed Concrete: The minimum dimension of any prestressed concrete member shall be 3 inches.~~

TABLE 4

Minimum Safety Factors

Element of Line	Grades of Construction			
	Grade "A"	Grade "B"	Grade "C"	Grade "F"
Conductors, splices and conductor fastenings (other than tie wires)	2	2	2	1
Pins	2	2	2	1
Pole line hardware	2	2	2	2
Line insulators (mechanical)	3	2	2	2
Guy insulators (mechanical)				
Interlocking	2	2	2	2
Noninterlocking wood	3	3	3	-
Noninterlocking glass fiber	3	2 (a)	2 (b)	-
Guys, except in light loading rural districts	2	2	2	1.25
Guys in light loading rural districts	2	1.5	1.5	1.25
Messengers and span wires	2	2	2	2
Foundations against uplift	1.5	1.5	1.5	-
Foundations against depression	3	2	2	-
Poles Towers and Structures				
Wood poles	4	3	2	1
Metallic service and meter poles	-	2	2	-
Structural or tubular metallic poles, towers, structures, crossarms and metallic members of foundations	1.5(c)	1.25 (c)	1.25 (c)	-
~~Foundations against uplift~~	~~1.5~~	~~1.5~~	~~1.5~~	~~-~~
~~Foundations against depression~~	~~3~~	~~2~~	~~2~~	~~-~~
Reinforced concrete poles	4	3	3	-
Prestressed concrete poles, structures, and crossarms.	1.8	1.5	1.5	-
Other Structural Materials	1.5	1.25	1.25	-
Crossarms				
Wood	2	2	2	1
Steel	1.5	1.25	1.25	-
Concrete	1.8	1.5	1.5	-
Other Structural material	1.5	1.25	1.25	-

(a) Insulators are to be replaced before safety factors have been reduced (due to deterioration or changes in construction, arrangement, or other conditions subsequent to installation) to less than 95 percent of the safety factor specified in Rule 44.1.

(b) Insulators are to be replaced before safety factors have been reduced (due to deterioration or changes in construction, arrangement, or other conditions subsequent to installation) to less than 75 percent of the safety factor specified in Rule 44.1.

(c) For aluminum members subject to tension caused by one or more estimated loads and where the critical load combination for the tension member would not endanger adjacent compression members, the factor of safety on ultimate tension shall be 2 Grade "A" construction and 1.67 for Grades "B" and "C" construction.

NOTE: Revised July 26, 1966 by Decision No. 71009; January 6, 1968 by Decision No. 73455; March 30, 1968 by Decision No. 73813 and February 13, 1974 by Decision No. 82466.

48. ULTIMATE STRENGTH OF MATERIALS

Structural members and their connections shall be designed and constructed so that the structures and parts thereof will not fail or be seriously distorted at any load less than their maximum working loads (developed under the current construction arrangements with loadings as specified in Rule 43) multiplied by the safety factor specified in Rule 44.

Values used for the ultimate strength of materials shall comply with the safety factors specified in Rule 44.

48.1 Wood

Values used for moduli of rupture for wood in bending, in conjunction with the 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, crossarms, etc. (a)	Round Poles
Cedar, western red	4,700 lbs. per sq. in.	6,000 lbs. per sq. in.
Douglas fir, dense	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, 05.1-1979 for Douglas fir poles and Southern pine poles, this value may be increased to not more than 8,000 lbs. per square inch. Such poles shall be given suitable preservative treatment.

NOTE: Revised April 26, 1965 by Decision No. 68835.

48.2 Steel

The safety factors specified in Rule 44 shall be applied as follows to structural steel:

Tension and Bending: The yield point, 33,000 pounds per square inch, shall be divided by the safety factor to determine the maximum allowable working stress.

Compression: The maximum allowable working stress shall be calculated by the following formula:

$$S_{max} = \frac{1}{f_s} \left(YP - \left(\frac{YP - 12{,}000}{200}\right) \frac{l}{r}\right),$$

Where S_{max} = maximum allowable working stress, lbs. per sq. in.

f_s = safety factor specified in Rule 44

YP = yield point of the steel, 33,000 lbs. per sq. in.

l = unsupported length of member, inches

r = radius of gyration of member, inches

Shear: The ultimate tensile strength, 60,000 pounds per square inch, shall be multiplied by 2/3 and divided by the safety factor specified in Rule 44 to determine the maximum allowable working stress.

Where the figures given are used, structural steel shall conform to Standard Specifications A7-39 of American Society for Testing Materials for carbon steel of structural quality. Other values may be used for steel of other strength provided the yield point and ultimate tensile strength are determined by test.

48.3 Concrete

A. REINFORCED CONCRETE

Values used for ultimate strengths of reinforced concrete, in conjunction with safety factors given in Rule 44, shall not exceed the following:

Reinforcing steel, tensile or compressive strength, pounds per square inch 55,000

Concrete, 1:2:4 mixture ..... Age	Compressive Strength
7 days	900 lbs per sq in.
30 days	2,400 lbs per sq in.
90 days	3,100 lbs per sq in.
6 months	4,400 lbs per sq in.

If reinforced concrete is designed for higher strength values which are proven by test, such values may be used in lieu of the figures given.

B. PRESTRESSED CONCRETE

The minimum strength of the materials used in prestressed concrete structures used in conjunction with the safety factors given in Table 4 shall be as follows:

Reinforcing Steel - yield strength ..... 40,000 lbs per sq in.
Prestressing Steel - yield strength ..... 188,000 lbs per sq in.
Concrete - compressive strength
at 28 days ..... 4,000 lbs per sq in.

Other strength values may be used provided the strength values used for design are proven by tests.

NOTE: Rule 48.3-B added on February 13, 1974 by Decision No. 82466.

48.4 Other Structural Materials

For other structural materials, the safety factor specified in Rule 44 shall be applied as follows:

Tension: The yield strength of the material used shall be divided by the safety factor specified in Rule 44 to determine the maximum allowable working stress.

Compression: The ultimate compressive strength of the material used shall be divided by the safety factor specified in Rule 44 to obtain the allowable working stress. The ultimate compressive strength shall be determined by suitable formulae for the material used, considering yield strength of the material, modulus of elasticity, slenderness ratio and eccentricity of connection. In no case shall the ultimate compressive stress be greater than the yield strength of the material.

Shear: The ultimate shear strength of the material used shall be divided by the safety factor specified in Rule 44 to determine the maximum allowable working stress.

NOTE: Revised March 30, 1968 by Decision No. 73813.

48.5 Conductors, Span Wires, Guys and Messengers

Values used for ultimate strengths of wires and cable shall not exceed those given in Appendix B. The ultimate strengths given in Tables 17 to 24 of Appendix B, except for medium-hard drawn copper, are based on the minimum ultimate strengths given in the standard specifications of the American Society for Testing Materials. The ultimate strengths given in Appendix B for medium-hard-drawn copper are based on the standard specifications of the ASTM and provide an allowance above the minimum values of one-quarter of the range between minimum and maximum values. For use of types of wires and cables of other materials not included in Appendix B, values for ultimate strengths similarly derived from specifications of the ASTM shall be used except that, if such specifications are nonexistent, maker's specifications may be used provided that test have been made which shall justify the maker's rating for ultimate strength.

48.6 Tower or Pole Foundations and Footings

In calculating the resistance of foundations or footings of towers, poles and pole line structures to uplifts, the weight of concrete shall be taken as not more than 145 pounds per cubic foot and the weight of earth (calculated 30 degrees from the vertical) shall be taken as not more than 90 pounds per cubic foot. The resistance of soil to the depression of foundations or footing shall be calculated from the best available data on the soil in question. In lieu of calculation, the strength of foundations or footings against uplift or depression may be determined by tests under the soil conditions prevailing.

PROPOSED RULE CHANGE
(FINAL)
MATERIAL STRENGTH

48.7 Metallic Service and Meter Poles

Metallic service and meter poles shall be designed and constructed so that the poles and parts thereof will not fail or by seriously distorted at any load less than the maximum working loads (see Rule 43 for loadings) multiplied by the Safety factors specified in Table 4, Rule 44. The safety factors specified in Table 4, Rule 44 shall be applied as follows:

Tension: The yield strength of the metal used shall be divided by the safety factor specified in Table 4, Rule 44 to determine the maximum allowable working stress.

Compression: The critical buckling strength of the material used, as determined by applicable formulas employing the effective slenderness ratio and yield strength, shall be divided by the safety factors specified in Table 4, Rule 44, to determine the maximum allowable working stress.

Shear: The yield strength of the material used shall be divided by the safety factors given in Table 4, Rule 44 to determine the maximum allowable working stress.

NOTE: Added July 26, 1966 by Decision No. 71009.

49.1 Poles, Towers and Other Structures

A. STRENGTH

Wood poles shall be of sound timber, free from defects which would materially reduce their strength or durability, and they shall have sufficient strength to withstand, with safety factors not less than those specified in Rule 44, the maximum stresses to which they are subjected under the loading conditions specified in Rule 43. The modulus of rupture used in calculation of safety factors shall not be greater than the value given in Rule 48.1.

Materials, other than wood used for poles, towers and structures, together with their foundations, shall be of such strength as to withstand, with safety factors not less than those specified in Rule 44, the maximum stresses to which they are subjected under the loading conditions specified in Rule 43.

Certain poles are subject to special stresses due to angles in the line, dead-ending of conductors or other attachments, which stresses must be included in computing the loading and safety factor. Poles subject to these special stresses sometimes require the use of guys, in which case the pole below the point of guy attachment shall be considered merely as a strut, the guy taking all lateral stresses. In such cases, the pole strength requirement shall apply at the point of guy attachment rather than at the ground line.

49.2 Crossarms

A. MATERIAL

(4) Other Material: Other materials may be used for crossarms provided they comply with Rule 48.4

B. MINIMUM SIZE

The physical properties as a result of dimensions, shape and cross-sectional area of crossarms shall be such as to result in sufficient strength to meet the requirements of these Rules.

PROPOSED RULE CHANGE
(FINAL) *
MATERIAL STRENGTH

TABLE 4

Minimum Safety Factors

Element of Line	Grades of Construction			
	Grade "A"	Grade "B"	Grade "C"	Grade "P"
Conductors, splices and conductor fastenings (other than tie wires)	2	2	2	1
Pins	2	2	2	1
Pole line hardware	2	2	2	2
Line insulators (mechanical)	3	2	2	2
Guy insulators (mechanical)				
Interlocking	2	2	2	2
Noninterlocking wood	3	3	3	-
Noninterlocking glass fiber	3	2 (a)	2 (b)	-
Guys, except in light loading rural districts	2	2	2	1.25
Guys in light loading rural districts	2	1.5	1.5	1.25
Messengers and span wires	2	2	2	2
Foundations against uplift	1.5	1.5	1.5	-
Foundations against depression	3	2	2	-
Poles Towers and Structures				
Wood poles	4	3	2	1
Metallic service and meter poles	-	2	2	-
Structural or tubular metallic poles, towers, structures, crossarms and metallic members of foundations	1.5(c)	1.25 (c)	1.25 (c)	-
Reinforced concrete poles	4	3	3	-
Prestressed concrete poles, structures, and crossarms.	1.8	1.5	1.5	-
Other Structural Materials	1.5	1.25	1.25	-
Crossarms				
Wood	2	2	2	1
Steel	1.5	1.25	1.25	-
Concrete	1.8	1.5	1.5	-
Other Structural material	1.5	1.25	1.25	-

(a) Insulators are to be replaced before safety factors have been reduced (due to deterioration or changes in construction, arrangement, or other conditions subsequent to installation) to less than 95 percent of the safety factor specified in Rule 44.1.

(b) Insulators are to be replaced before safety factors have been reduced (due to deterioration or changes in construction, arrangement, or other conditions subsequent to installation) to less than 75 percent of the safety factor specified in Rule 44.1.

(c) For aluminum members subject to tension caused by one or more estimated loads and where the critical load combination for the tension member would not endanger adjacent compression members, the factor of safety on ultimate tension shall be 2 Grade "A" construction and 1.67 for Grades "B" and "C" construction.

NOTE: Revised July 26, 1966 by Decision No. 71009; January 6, 1968 by Decision No. 73455; March 30, 1968 by Decision No. 73813 and February 13, 1974 by Decision No. 82466.

ITEM 2

. Rule 52.7-F
. Rule 53.4

RATIONALE FOR PROPOSED RULE CHANGE
RULE 52.7-F
HARDWARE - GROUNDING

Remove work rules covered in CAL/OSHA Title 8

EXISTING RULE
RULE 52.7F

F. GROUNDING

(1) Circuits of 0-7,500 Volts: On wood crossarms, wood poles, or wood structures, hardware which is less than 3 feet above or 6 feet below unprotected conductors of 0-7,500 volts shall be nongrounded. Excepted from the requirements of this rule are the following:

Hardware of riser terminals treated as specified in Rule 54.6-F;

Hardware associated with grounded cables and messengers supported on crossarms with vertical clearances and pole clearances as specified in Tables 1 and 2 for such cables and messengers; and

Hardware associated with guarded cables and messengers which are treated as specified in Rule 57.4-F.

(2) Circuits of More Than 7,500 Volts: Hardware of circuits of more than 7,500 volts shall be securely and permanently grounded where such hardware can act as a bond between metal parts of the insulating supports of an energized conductor and of a de-energized portion of the same conductor or of the de-energized portion of another conductor where work is to be performed on the de-energized conductor. Such hardware includes the bases of air-break switches and the tanks of oil switches. Bond wires are excepted from this requirement, and are not required to be grounded.

The permanent grounding specified in this rule will not be required provided the regular written operating (safety) rules of the utility concerned require that:

Conductors of circuits exceeding 7,500 volts which are de-energized for work thereon shall be securely grounded during all periods of such work; and

When work is to be performed at the location of hardware described in this rule, such hardware shall be temporarily and securely grounded and securely connected to any de-energized conductors involved during all work at that location. or in lieu of temporary grounding such hardware shall be proven by test to be nonenergized immediately preceding each period of work at that location.

PROPOSED RULE CHANGE

RULE 52.7F

F. GROUNDING

(1) Circuits of 0-7,500 Volts: On wood crossarms, wood poles, or wood structures, hardware which is less than 3 feet above or 6 feet below unprotected conductors of 0-7,500 volts shall be nongrounded. Excepted from the requirements of this rule are the following:

Harware of riser terminals treated as specified in Rule 54.6-F;

Hardware associated with grounded cables and messengers supported on crossarms with vertical clearances and pole clearances as specified in Tables 1 and 2 for such cables and messengers; and

Hardware associated with guarded cables and messengers which are treated as specified in Rule 57.4-F.

(2) Circuits of More than 7,500 Volts: Hardware of circuits of more than 7,500 volts shall be securely and permanently grounded where such hardware can act as a bond between metal parts of the insulating supports of an energized conductor and of a de-energized portion of the same conductor or of the de-energized portion of another conductor where work is to be performed on the de-energized conductor. Such hardware includes the bases of air-break switches and the tanks of oil switches. Bond wires are excepted from this requirement, and are not required to be permanently grounded.

The permanent grounding specified in this rule will not be required provided the regular written operating (safety) rules of the utility concerned require that:

Conductors of circuits exceeding 7,500 volts which are de-energized for work thereon shall be securely grounded during all periods of such work; and

When work is to be performed at the location of hardware described in this rule, such hardware shall be temporarily and securely grounded and securely connected to any de-energized conductors involved during all work at that location. [illegible]

(3) Transformer Cases and Hardware (see Rule 58.3-C3)

FINAL RULE CHANGE *

RULE 52.7F

F. GROUNDING

(1) Circuits of 0-7,500 Volts: On wood crossarms, wood poles, or wood structures, hardware which is less than 3 feet above or 6 feet below unprotected conductors of 0-7,500 volts shall be nongrounded. Excepted from the requirements of this rule are the following:

Hardware of riser terminals treated as specified in Rule 54.6-F;

Hardware associated with grounded cables and messengers supported on crossarms with vertical clearances and pole clearances as specified in Tables 1 and 2 for such cables and messengers; and

Hardware associated with guarded cables and messengers which are treated as specified in Rule 57.4-F.

(2) Circuits of More Than 7,500 Volts: Hardware of circuits of more than 7,500 volts shall be securely and permanently grounded where such hardware can act as a bond between metal parts of the insulating supports of an energized conductor and of a de-energized portion of the same conductor or of the de-energized portion of another conductor where work is to be performed on the de-energized conductor. Such hardware includes the bases of air-break switches and the tanks of oil switches. Bond wires are excepted from this requirement, and are not required to be permanently grounded.

The permanent grounding specified in this rule will not be required provided the regular written operating (safety) rules of the utility concerned require that:

Conductors of circuits exceeding 7,500 volts which are de-energized for work thereon shall be securely grounded during all periods of such work; and

When work is to be performed at the location of hardware described in this rule, such hardware shall be temporarily and securely grounded and securely connected to any de-energized conductors involved during all work at that location.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 53.4
PINS, DEAD ENDS, CONDUCTOR SUSPENSIONS AND FASTENINGS
BONDING

Remove work rules covered in CAL/OSHA Title 8

EXISTING RULE
RULE 53.4

53.4 Bonding

Bonding is not required by these rules. Bonding is not recommended for circuits of 7,500 volts or less but it is recognized that under certain conditions it may be deemed necessary.

Where bonding is used the bond wire or strap shall have a conductivity of not less than No. 10 AWG copper wire, shall in no case be installed on the top surface of any crossarm, and the bonding shall comply with the following requirements:

A. CIRCUITS OF MORE THAN 7,500 VOLTS

(1) At Top of Pole:

(a) Single Circuit: The bond wire of a single circuit in horizontal, triangular or vertical configuration at the top circuit position of the pole may be installed on the face, back or under side of wood crossarms and on the surface of pole without a protective covering. Such bond wire on the surface of a wood pole shall be covered by a suitable protective covering (see Rule 22.2) where within 3 feet vertically of the next conductor level below the top circuit. Crossarm braces may be connected to such bond wire only where positive electrical contact is made and the brace is not less than 3 feet vertically above the next conductor level below the top circuit.

(b) More Than One Circuit: The bonding of any circuit where more than one circuit is installed at the top position of a pole shall be in accordance with the provision of Rule 53.4-A3 below.

(2) Below Top of Pole: Bond wires of any circuit below the top circuit position of the pole shall be covered by a suitable protective covering (see Rule 22.2) except where such bond wires are installed on the underside of crossarms or where bonds (wires or straps) are installed vertically between crossarms at different levels or between and approximately perpendicular to the individual arms of a double crossarm at a distance of not less than 30 inches from center line of pole. Metal braces shall clear such bond wires by not less than 1 1/2 inches (see Rules) 52.7B1 and 52.7-C) and in order to clear braces, an uncovered bond wire carried on the under side of cross arm may be placed on the face or back of a limited portion of crossarms and need not be covered for this limited distance of its run.

NOTE: Revised September 18, 1967 be Decision No. 72984.

PROPOSED RULE CHANGE

RULE 53.4

53.4 BONDING

A. Circuits of More than 7,500 volts

(1) At Top of Pole:

(2) Below Top of Pole:

(3) Conductors of More than One Circuit at Same Level:

(a) Separately Bonded Circuits: Where conductors of not more than two circuits are at the same level and separately bonded, such bond wires shall be separated on the crossarm and on surface of pole by not less than 6 inches. ~~Neither circuit shall be worked on while de-energized unless the de-energized conductors are shorted and securely grounded and the bond wire of the de-energized circuit on which work is being performed is connected to the ground conductors on the pole were work is done.~~

~~Where both circuits are de-energized, shorted and all conductors securely grounded, then bond wires of either circuit need not be connected to the de-energized and grounded conductors, provided that before work commences the bond wires are tested for and drained of any potential differences between themselves and the de-energized and securely grounded conductors.~~

NOTE: Revised September 18, 1967 by Decision No. 92984.

(b) Hardware Bond Wires: Where work is to be performed at such locations, the grounding of hardware bond wires shall be in accordance with Rule 52.7-F (2).

~~(b) Commonly Bonded Circuits: Where conductors of more than one circuit are at the same level and a common bonding system is used, neither circuit shall be worked on de-energized unless the de-energized conductors are shorted and securely grounded and connected to the bonding system on the poles where work is done.~~

B. Circuits of 7,500 Volts or Less

The bonding of circuits of 7,500 volts or less shall comply with the following:

Bond wires on wood poles and wood crossarms shall be fully covered where practicable by a suitable protective covering;

Bond wires shall ~~be~~ not be less than 1 1/2 inches from metal braces and all other hardware except the metal pins and dead ends which are bonded; and

Bond wire of separate circuits shall be separted on crossarms and poles by not less than 3 inches.

FINAL *

PROPOSED RULE

RULE 53.4

53.4 BONDING

A. Circuits of More than 7,500 volts
(1) At Top of Pole:
(2) Below Top of Pole:
(3) Conductors of More than One Circuit at Same Level:
(a) Separately Bonded Circuits: Where conductors of not more than two circuits are at the same level and separately bonded, such bond wires shall be separated on the crossarm and on surface of pole by not less than 6 inches.

NOTE: Revised September 18, 1967 by Decision No. 92984.

(b) Hardware Bond Wires: Where work is to be performed at such locations, the grounding of hardware bond wires shall be in accordance with Rule 52.7-F (2).

B. Circuits of 7,500 Volts or Less

The bonding of circuits of 7,500 volts or less shall comply with the following:

Bond wires on wood poles and wood crossarms shall be fully covered where practicable by a suitable protective covering;
Bond wires shall not be less than 1 1/2 inches from metal braces and all other hardware except the metal pins and dead ends which are bonded; and
Bond wire of separate circuits shall be separated on crossarms and poles by not less than 3 inches.

ITEM 3

. Rule 54.4-A

RATIONALE FOR PROPOSED RULE CHANGE
RULE 54.4-A
CONDUCTOR - CLEARANCES
ABOVE GROUND

Corresponding Rule to Change
Rule 37 - Table 1

Due to increased height changes in agricultural equipment and increased electrical contacts with supply lines, minimum conductor to ground clearance requirements should be increased in rural agricultural areas for public safety.

54.4 Clearances

Allowable variations in clearances due to side swing of suspension insulators, temperature, loading, etc., are given in Rules 37 and 38.

A. ABOVE GROUND

The minimum vertical clearances shall be those specified in Rule 37, Table 1, with the following modifications:

(1) Across Arid or Mountainous Areas: Across arid or mountainous areas supply circuits carrying 22,500-30,000 volts, inclusive, may have a clearance of less than 30 feet (Table 1, Case 4, Column F) but not less than 25 feet above ground subject to a reduction of not more than 10 percent because of temperature and loading as specified in Rule 43. Upon special permission from this Commission, a minimum clearance of 25 feet above ground may be applied in similar areas to circuits in excess of 30,000 volts, however, not including Class E circuits. For circuits in excess of 30,000 volts, no reduction of the 25 feet will be permitted for conditions less than maximum loadings or temperature specified in Rules 43.1 and 43.2.

(2) In Rural Districts, Conductors of 750-20,000 Volts:

(a) Crossing Roads or Driveways: In rural districts the minimum clearance of 25 feet specified in Table 1, Case 3, Column E may be reduced to 22

feet above ground for conductors not exceeding 20,000 volts crossing or overhanging traversable portions of public or private roads or driveways. This modified minimum clearance of 22 feet shall in no case be reduced because of temperature or loading at conditions less than maximum loading or temperature specified in Rules 43.1 and 43.2.

(b) Above Agricultural Areas and Along Roads: In rural districts the minimum clearance of 25 feet specified in Table 1, Case 4, Column E may be reduced to 18 feet above ground for lines not exceeding 20,000 volts across areas capable of being traversed by agricultural equipment and along roads where no part of the line overhangs any traversable portion of a public or private roadway. This modified minimum clearance of 18 feet shall in no case be reduced because of temperature or loading at conditions less than maximum loadings or temperature specified in Rules 43.1 and 43.2. Care should be exercised in using this minimum clearance along roads, above or along ditches where mechanical devices are used for maintenance, near trees in orchards, near trees or structures which can be climbed and in other similar situations.

(3) Lead Wires for Transformers: Transformer lead wires shall have clearances above ground as specified in Table 1 except as modified by the provisions of Rule 58.3-B1a.

(4) Above Swimming Pools: Crossings of conductors above swimming pools shall be avoided where practicable. Unprotected line conductors shall have radial clearances from the top edge of the swimming pool walls and vertical clearances above the highest water level of the pool surface not less than the clearances specified in Table 1, Case 3, Columns D, E, and F.

Basic Minimum Allowable Vertical Clearance of Wires Above Roads, Thoroughfares and Ground; Also Clearances from Poles, Buildings, Structures or Other Objects (nn)

(Letter References Denote Modifications of Minimum Clearances as Referred to in Notes Following this Table)

Line No.	Nature of Clearance	Wire or conductor concerned						
		A Span wires (other than trolley span wires) overhead guys and messengers	B Communication conductors (including open wire, cables and service drops), supply service drops of 0-750 volts	C Trolley contact, feeder and span wires, 0-5,000 volts	D Supply conductors of 0-750 volts, and supply cables treated as in Rule 57.8	E Supply Conductors and supply cables, 750-22,500 volts	F Supply Conductors and supply cables, 22.5-300 kv	G Supply Conductors and supply cables, 300 - 550 kv (mm)
1	Crossing above tracks of railroads which transport or propose to transport freight cars (max. height 15 ft. 6in.) where not operated by overhead contact wires. (a) (b) (c) (d)	25 ft.	25 ft.	22 1/2 ft.	25 ft.	28 ft.	34 ft.	34 ft. (kk)
2	Crossing or paralleling above tracks of railroads operated by overhead trolleys. (b) (c) (d)	26 ft. (e)	26 ft. (e) (f) (g)	19 ft. (h) (i)	27 ft. (e) (g)	30 ft. (g)	34 ft. (g)	34 ft. (g) (kk)
3	Crossing or along thoroughfares in rural districts or crossing thoroughfares in rural districts (c) (d)	26 ft. (j) (k) (ll)	18 ft. (j) (l) (m) (ll)	19 ft. (hh)	20 ft. (ll)	25 ft. (n) (o) (ll)	30 ft. (o) (ll)	30 ft. (o) (ll) (kk)
4	Above ground along thoroughfares in rural districts or across other areas capable of being traversed by vehicles or agricultural equipment.	15 ft. (k)	15 ft. (m) (n) (p)	19 ft.	16 ft.	25 ft. (n) (o)	30 ft. (o) (p)	30 ft. (o) (kk)
5	Above ground in areas accessible to pedestrians only.	7 ft.	10 ft. (m) (q)	19 ft.	12 ft.	17 ft.	25 ft. (o)	25 ft. (o) (kk)
6	Vertical clearance above buildings and bridges (or other structures, which do not ordinarily support conductors and on which men can walk) except generating plants or substations whether attached or unattached.	8 ft. (r)	8 ft. (r)	8 ft.	8 ft.	12 ft.	12 ft.	20 ft. (ll)

7	Horizontal clearance of conductor from buildings (except generating and substations), bridges or other structures (upon which men may work) where such conductor is not attached thereto. (z) (t)	.....	3 ft. (u)	3 ft.	3 ft. (u) (v)	6 ft. (v)	6 ft. (v)	15 ft. (v)	
8	Distance of conductor from center line of pole, whether attached or unattached. (w) (x) (y)	.....	15 in. (z) (aa)	15 in. (aa) (bb) (cc)	15 ft. (o) (aa) (dd)	15 or 18 in. (o) (dd) (ee) (jj)	18 in. (dd) (ee)	Not Applicable	
	Distance of conductor from surface of pole, crossarm or other overhead line structure upon which it is supported, providing it complies with Case 8 above. (x)	.....	3 in. (aa) (ff)	3 in. (aa) (ee) (gg)	3 in. (aa) (dd) (gg)	3 in. (dd) (gg) (jj)	1/4 pin spacing shown in Table 2 Case 15. (dd)	1/2 pin spacing shown in Table 2 Case 15. (dd)	
	Radial centerline clearance of conductor or cable (unattached) from non-climbable street lighting or traffic signal poles or standards, including mastarms, brackets and lighting fixtures.	.....	1 ft. (ee) (u) (rr) (nn)	15 in. (bb) (cc)	3 ft. (ee)	6 ft. (pp)	10 ft. (qq)	10 ft. (ll)	
	Water areas not suitable for sailboating (tt)(uu)(vv)(xx)	15 ft.	15 ft.	.....	15 ft.	17 ft.	25 ft.	25 ft. (kk)	
2	Water areas suitable for sailboating, surface area of: (tt)(vv)(ww)(xx)								
	(a) Less than 20 acres	18 ft.	18 ft.	.....	18 ft.	20 ft.	27 ft.	27 ft. (kk)	
	(b) 20 to 200 acres	26 ft.	26 ft.	.....	26 ft.	28 ft.	35 ft.	35 ft. (kk)	
	(c) Over 200 to 2,000 acres	32 ft.	32 ft.	.....	32 ft.	34 ft.	41 ft.	41 ft. (kk)	
	(d) Over 2,000 acres	38 ft.	38 ft.	.....	38 ft.	40 ft.	47 ft.	47 ft. (kk)	

REFERENCES TO RULES MODIFYING MINIMUM CLEARANCES IN TABLE 1

54.4 Clearances

Allowable variations in clearances due to side swing of suspension insulators, temperature, loading, etc., are given in Rules 37 and 38.

A. ABOVE GROUND

The minimum vertical clearances shall be those specified in Rule 37, Table 1, with the following modifications:

(1) Across Arid or Mountainous Areas: Across arid or mountainous areas supply circuits carrying 22,500-30,000 volts, inclusive, may have a clearance of less than 30 feet (Table 1, Case 4, Column F) but not less than 25 feet above ground subject to a reduction of not more than 10 percent because of temperature and loading as specified in Rule 43. Upon special permission from this Commission, a minimum clearance of 25 feet above ground may be applied in similar areas to circuits in excess of 30,000 volts, however, not including Class E circuits. For circuits in excess of 30,000 volts, no reduction of the 25 feet will be permitted for conditions less than maximum loadings or temperature specified in Rules 43.1 and 43.2.

~~(2) In Rural Districts, Conductors of 750-20,000 Volts:~~

~~(a) Crossing Roads or Driveways: In rural districts the minimum clearance of 25 feet specified in Table 1, Case 3, Column E may be reduced to 22~~

~~feet above ground for conductors not exceeding 20,000 volts crossing or overhanging traversable portions of public or private roads or driveways. This modified minimum clearance of 22 feet shall in no case be reduced because of temperature or loading at conditions less than maximum loading or temperature specified in Rules 43.1 and 43.2.~~

~~(b) Above Agricultural Areas and Along Roads. In rural districts the minimum clearance of 25 feet specified in Table 1, Case 4, Column E may be reduced to 18 feet above ground for lines not exceeding 20,000 volts across areas capable of being traversed by agricultural equipment and along roads where no part of the line overhangs any traversable portion of a public or private roadway. This modified minimum clearance of 18 feet shall in no case be reduced because of temperature or loading at conditions less than maximum loadings or temperature specified in Rules 43.1 and 43.2. Care should be exercised in using this minimum clearance along roads, above or along ditches where mechanical devices are used for maintenance, near trees in orchards, near trees or structures which can be climbed and in other similar situations.~~

(2) ~~(3)~~ Lead Wires for Transformers: Transformer lead wires shall have clearances above ground as specified in Table 1 except as modified by the provisions of Rule 58.3-B1a.

(3) ~~(4)~~ Above Swimming Pools: Note! No change to wording.

PROPOSED

Basic Minimum Allowable Vertical Clearance of Wires Above [illegible], Thoroughfares and Ground; Also Clearances from Poles, Buildings, Struct[illegible] Other Objects (aa)

(Letter References Denote Modifications of Minimum Clearances as Referred to in Notes Following this Table)

Case No.	Nature of Clearance	Wire or conductor concerned						
		A Span wires (other than trolley span wires) overhead guys and messengers	B Communication conductors (including open wire, cables and service drops), supply service drops of 0-750 volts	C Trolley contact, feeder and span wires, 0-5,000 volts	D Supply conductors of 0-750 volts, and supply cables treated as in Rule 57.8	E Supply Conductors and supply cables, 750-22,500 volts	F Supply Conductors and supply cables, 22.5-300 kv	G Supply Conductors and supply cables, 300 - 550 kv (mm)
1	Crossing above tracks of railroads which transport or propose to transport freight cars (max. height 15 ft. 6in.) where not operated by over-contact wires. (a) (b) (c) (d)	25 ft.	25 ft.	22 1/2 ft.	25 ft.	28 ft.	34 ft.	34 ft. (kk)
2	Crossing or paralleling above tracks of railroads operated by overhead trolleys. (b) (c) (d)	26 ft. (e)	26 ft. (e) (f) (g)	19 ft. (h) (i)	27 ft. (e) (g)	30 ft. (g)	34 ft. (g)	34 ft. (g) (kk)
3	Crossing or along thoroughfares in rural districts or crossing thoroughfares in rural districts (c) (d)	26 ft. (j) (k) (ll)	18 ft. (j) (l) (m) (ll)	19 ft. (hh)	20 ft. (ll)	25 ft. ~~(m)~~ (o) (ll)	30 ft. (o) (ll)	30 ft. (o) (ll) (kk)
4	Above ground along thoroughfares in rural districts or across other areas capable of being traversed by vehicles or agricultural equipment.	15 ft. (k)	15 ft. (m) (n) (p)	19 ft.	19 ft. ~~16 ft.~~	25 ft. ~~(m)~~ (o)	30 ft. (o) (p)	30 ft. (o) (kk)
5	Above ground in areas accessible to pedestrians only.	7 ft.	10 ft. (m) (q)	19 ft.	12 ft.	17 ft.	25 ft. (o)	25 ft. (o) (kk)
6	Vertical clearance above buildings and bridges (or other structures, which do not ordinarily support conductors and on which men can walk) except generating plants or substations whether attached or unattached.	8 ft. (r)	8 ft. (r)	8 ft.	8 ft.	12 ft.	12 ft.	20 ft. (ll)

7	Horizontal clearance of conductor from buildings (except generating and substations), bridges or other structures (upon which men may work) where such conductor is not attached thereto. (s) (t)	.....	3 ft. (u)	3 ft.	3 ft. (u) (v)	6 ft. (v)	6 ft. (v)	15 ft. (v)
8	Distance of conductor from center line of pole, whether attached or unattached. (w) (x) (y)	.....	15 in. (s) (aa)	15 in. (aa) (bb) (cc)	15 ft. (o) (aa) (dd)	15 or 18 in. (o) (dd) (ee) (jj)	18 in. (dd) (ee)	Not Applicable
9	Distance of conductor from surface of pole, crossarm or other overhead line structure upon which it is supported, providing it complies with Case 8 above. (x)	.....	3 in. (aa) (ff)	3 in. (aa) (cc) (gg)	3 in. (aa) (dd) (gg)	. 3 in. (dd) (gg) (jj)	1/4 pin spacing shown in Table 2 Case 15. (dd)	1/2 pin spacing shown in Table 2 Case 15. (dd)
10	Radial centerline clearance of conductor or cable (unattached) from non-climbable street lighting or traffic signal poles or standards, including mastarms, brackets and lighting fixtures.	.....	1 ft. (oo) (u) (rr) (ss)	15 in. (bb) (cc)	3 ft. (oo)	6 ft. (pp)	10 ft. (qq)	10 ft. (ll)
11	Water areas not suitable for sailboating (tt)(uu)(ww)(xx)	15 ft.	15 ft.	.....	15 ft.	17 ft.	25 ft.	25 ft. (kk)
12	Water areas suitable for sailboating, surface area of: (tt)(vv)(ww)(xx)							
	(a) Less than 20 acres	18 ft.	18 ft.	.....	18 ft.	20 ft.	27 ft.	27 ft. (kk)
	(b) 20 to 200 acres	26 ft.	26 ft.	.....	26 ft.	28 ft.	35 ft.	35 ft. (kk)
	(c) Over 200 to 2,000 acres	32 ft.	32 ft.	.....	32 ft.	34 ft.	41 ft.	41 ft. (kk)
	(d) Over 2,000 acres	38 ft.	38 ft.	.....	38 ft.	40 ft.	47 ft.	47 ft. (kk)

REFERENCES TO RULES MODIFYING MINIMUM CLEARANCES IN TABLE 1

	RULE	PAGE
a) Shall not be reduced more than 5% because of temperature or loading.	37	47 - 50
1. Supply lines	54.4-B1	109
2. Communications lines	84.4-B1	222
b) Shall be increased for supply conductors on suspension insulators, under certain conditions	37	47 - 50
c) Special clearances are provided for traffic signal equipment	58.1-C	165
d) Special clearances are provided for street lighting equipment	58.2-B	166
e) Based on trolley pole throw of 26 feet. May be reduced where suitably protected.		
1. Supply guys	56.4-B2	154
2. Supply cables and messengers	57.4-B2	162
3. Communication guys	86.4-B2	240
f) May be reduced depending on height of trolley contact conductors.		
1. Supply service drops	54.8-C5	138
2. Communication service drops	84.8-D5	238
g) May be reduced and shall be increased depending on trolley throw.		
1. Supply conductors (except service drops)	54.4-B2	110
2. Communication conductors (except service drops)	84.4-B2	222
h) Shall be increased where freight cars are transported.		
1. Trolley contact and feeder conductors	74.4-B1	199
2. Trolley span wires	77.4-A	203
i) May be reduced for trolley contact and span wires in subways, tunnels and under bridges.		
1. Trolley contact conductors	74.4-E	201
2. Trolley span wires	77.4-B	203
3. Communication cables and messengers	87.4-B2	248

	RULE	PAGE
(j) May be reduced private crossing over private thoroughfares and entrances to private property and over private property.		
1. Supply service drops	54.8-B2	
2. Supply guys	56.4-A	
3. Communication service drops	84.8-C2	
4. Communication guys	86.4-A	
(k) May be reduced along thoroughfares where not normally accessible to vehicles.		
1. Supply guys	56.4-A1	
2. Communication guys	86.4-A1	
(l) May be reduced where within 12 feet of curb line of public thoroughfares.		
1. Supply service drops	54.8-B1	
2. Communication service drops	84.8-C1	
(m) May be reduced for railway signal cables under special conditions...	84.4-A4	
(n) May be reduced in rural districts.		
~~1. Supply conductors, 750-20,000 volts, crossing roads or driveways~~	~~54.4-A2b~~	
~~2. Supply conductors, 750-20,000 volts, above ... and along roads~~	~~54.4-A2b~~	
1. ~~2.~~ Communication conductors along roads	84.4-A2	
(o) May be reduced for transformer regulator or capacitor leads.		
1. Transformer leads	58.3-B	
2. Regulator or capacitor leads	58.4-B	
(p) May be reduced across arid or mountainous areas.		
1. Supply conductors of more than 22,500 volts	54.4-A1	
2. Communication conductors	84.4-A1	

54.4 Clearances

Allowable variations in clearances due to side swing of suspension insulators, temperature, loading, etc., are given in Rules 37 and 38.

A. ABOVE GROUND

The minimum vertical clearances shall be those specified in Rule 37, Table 1, with the following modifications:

(1) **Across Arid or Mountainous Areas:** Across arid or mountainous areas supply circuits carrying 22,500-30,000 volts, inclusive, may have a clearance of less than 30 feet (Table 1, Case 4, Column F) but not less than 25 feet above ground subject to a reduction of not more than 10 percent because of temperature and loading as specified in Rule 43. Upon special permission from this Commission, a minimum clearance of 25 feet above ground may be applied in similar areas to circuits in excess of 30,000 volts, however, not including Class E circuits. For circuits in excess of 30,000 volts, no reduction of the 25 feet will be permitted for conditions less than maximum loadings or temperature specified in Rules 43.1 and 43.2.

(2) **Lead Wires for Transformers:** Transformer lead wires shall have clearances above ground as specified in Table 1 except as modified by the provisions of Rule 58.3-B1a.

(3) **Above Swimming Pools:** Crossings of conductors

above swimming pools shall be avoided where practicable. Unprotected line conductors shall have radial clearances from the top edge of the swimming pool walls and vertical clearances above the highest water level of the pool surface not less than the clearances specified in Table 1, Case 3, Columns D, E, and F.

Basic Minimum Allowable Vertical Clearance of Wires Above Railroads, Thoroughfares and Ground; Also Clearances from Poles, Buildings, Structures and Other Objects (m)

(Letter References Denote Modifications of Minimum Clearances as Referred to in Notes Following this Table)

	Nature of Clearance	Wire or conductor concerned						
		A Span wires (other than trolley span wires) overhead guys and messengers	B Communication conductors (including open wire, cables and service drops), supply service drops of 0-750 volts	C Trolley contact, feeder and span wires, 0-5,000 volts	D Supply conductors of 0-750 volts, and supply cables treated as in Rule 57.8	E Supply Conductors and supply cables, 750-22,500 volts	F Supply Conductors and supply cables, 22.5-300 kv	G Supply Conductors and supply cables, 300 - 550 kv (mm)
1	Crossing above tracks of railroads which transport or propose to transport freight cars (max. height 15 ft. 6in.) where not operated by overhead contact wires. (a) (b) (c) (d)	25 ft.	25 ft.	22 1/2 ft.	25 ft.	28 ft.	34 ft.	34 ft. (kk)
2	Crossing or paralleling above tracks of railroads operated by overhead trolleys. (b) (c) (d)	26 ft. (e)	26 ft. (e) (f) (g)	19 ft. (h) (i)	27 ft. (e) (g)	30 ft. (g)	34 ft. (g)	34 ft. (g) (kk)
3	Crossing or along thoroughfares in rural districts or crossing thoroughfares in rural districts (c) (d)	26 ft. (j) (k) (ll)	18 ft. (j) (l) (m) (ll)	19 ft. (hh)	20 ft. (ll)	25 ft. (o) (ll)	30 ft. (o) (ll)	30 ft. (o) (ll) (kk)
4	Above ground along thoroughfares in rural districts or across other areas capable of being traversed by vehicles or agricultural equipment.	15 ft. (k)	15 ft. (m) (n) (p)	19 ft.	19 ft.	25 ft. (o)	30 ft. (o) (p)	30 ft. (o) (kk)
5	Above ground in areas accessible to pedestrians only.	7 ft.	10 ft. (m) (q)	19 ft.	12 ft.	17 ft.	25 ft. (o)	25 ft. (o) (kk)
6	Vertical clearance above buildings and bridges (or other structures, which do not ordinarily support conductors and on which men can walk) except generating plants or substations whether attached or unattached.	8 ft. (r)	8 ft. (r)	8 ft.	8 ft.	12 ft.	12 ft.	20 ft. (ll)

	Horizontal clearance of conductor from buildings (except generating and substations), bridges or other structures (upon which men may work) where such conductor is not attached thereto. (s) (t)	.....	3 ft. (u)	3 ft.	3 ft. (u) (v)	6 ft. (v)	6 ft. (v)	15 ft. (v)
	Distance of conductor from center line of pole, whether attached or unattached. (w) (x) (y)	.....	15 in. (s) (aa)	15 in. (aa) (bb) (cc)	15 ft. (o) (aa) (dd)	15 or 18 in. (o) (dd) (ee) (jj)	18 in. (dd) (ee)	Not Applicable
	Distance of conductor from surface of pole, crossarm or other overhead line structure upon which it is supported, providing it complies with Case 8 above. (x)	.....	3 in. (aa) (ff)	3 in. (aa) (cc) (gg)	3 in. (aa) (dd) (gg)	.3 in. (dd) (gg) (jj)	1/4 pin spacing shown in Table 2 Case 15. (dd)	1/2 pin spacing shown in Table 2 Case 15. (dd)
	Radial centerline clearance of conductor or cable (unattached) from non-climbable street lighting or traffic signal poles or standards, including mastarms, brackets and lighting fixtures.	.....	1 ft. (oo) (u) (rr) (ss)	15 in. (hh) (cc)	3 ft. (oo)	6 ft. (pp)	10 ft. (qq)	10 ft. (ll)
	Water areas not suitable for sailboating (ll)(uu)(vv)(xx)	15 ft.	15 ft.	.....	15 ft.	17 ft.	25 ft.	25 ft. (kk)
	Water areas suitable for sailboating, surface area of: (ll)(vv)(ww)(xx)							
	(a) Less than 20 acres	18 ft.	18 ft.	.....	18 ft.	20 ft.	27 ft.	27 ft. (kk)
	(b) 20 to 200 acres	26 ft.	26 ft.	.....	26 ft.	28 ft.	35 ft.	35 ft. (kk)
	(c) Over 200 to 2,000 acres	32 ft.	32 ft.	.....	32 ft.	34 ft.	41 ft.	41 ft. (kk)
	(d) Over 2,000 acres	38 ft.	38 ft.	.....	38 ft.	40 ft.	47 ft.	47 ft. (kk)

REFERENCES TO RULES MODIFYING MINIMUM CLEARANCES IN TABLE 1

ITEM 4

- Rule 54.4-C4b
- Rule 54.4-D6b

RATIONALE FOR PROPOSED RULE CHANGE
RULE 54.4-C4b
CONDUCTOR - CLEARANCES
BETWEEN CONDUCTORS - DEAD ENDED ON POLE
IN VERTICAL CONFIGURATION

It appears the purpose of the existing rule was to provide a margin of safety for work being performed in close proximity to unprotected 750-7500 volt conductors.

Present safety requirements necessitate the covering of these unprotected conductors within the working area.

RULE 54.4-C4b

(b) Conductors of More Than 750 Volts Supported on Climbable Poles: Where conductors of more than 750 volts are supported in vertical configuration directly on a climbable pole without the use of crossarms at line terminations, angles or corners, the following requirements apply:

The vertical separation between conductors of the same circuit shall be not less than the clearances specified in Table 2, Cases 15 and 20;

The vertical separation of different circuits shall be not less than the clearances specified in Table 2, Cases 8 to 13, inclusive;

Not more than two conductors of a circuit of 750-5,000 volts shall be supported directly on a pole in vertical configuration without the use of crossarms. The number of conductors of a circuit of more than 5,000 volts so supported on a pole shall be limited to four. Branch circuits may be taken from such construction without the use of crossarms provided a climbing and working space as specified in Rule 54.7 and Rule 54.11 is maintained; and

The clearance of conductors from surface of pole shall be not less than as specified in Rule 54.4-D6b.

See Rule 54.7-A1 and Rule 54.11-F for climbing space requirements for conductors dead ended on poles in vertical configuration.

PROPOSED RULE CHANGE

RULE 54.4-C4b

(b) Conductors of More Than 750 Volts Supported on Climbable Poles: Where conductors of more than 750 volts are supported in vertical configuration directly on a climbable pole without the use of crossarms at line terminations, angles or corners, the following requirements apply:

The vertical separation between conductors of the same circuit shall ##/## not be less than the clearances specified in Table 2, Cases 15 and 20;

The vertical separation of different circuits shall ##/## not be less than the clearances specified in Table 2, Cases 8 to 13, inclusive;

Not more than ### four conductors of a circuit of more than 750##### volts shall be supported directly on a pole in vertical configuration without the use of crossarms. ########## Branch circuits may be taken from such construction without the use of crossarms provided a climbing and working space as specified in Rule 54.7 and Rule 54.11 is maintained; and

The clearance of conductors from surface of pole shall not be ## less than as specified in Rule 54.4-D6b.

See Rule 54.7-A1 and Rule 54.11-F for climbing space requirements for conductors dead ended on poles in vertical configuration.

FINAL *

PROPOSED RULE CHANGE

RULE 54.4-C4b

(b) Conductors of More Than 750 Volts Supported on Climbable Poles: Where conductors of more than 750 volts are supported in vertical configuration directly on a climbable pole without the use of crossarms at line terminations, angles or corners, the following requirements apply:

The vertical separation between conductors of the same circuit shall not be less than the clearances specified in Table 2, Cases 15 and 20;

The vertical separation of different circuits shall not be less than the clearances specified in Table 2, Cases 8 to 13, inclusive;

Not more than four conductors of a circuit of more than 750 volts shall be supported directly on a pole in vertical configuration without the use of crossarms. Branch circuits may be taken from such construction without the use of crossarms provided a climbing and working space as specified in Rule 54.7 and Rule 54.11 is maintained; and

The clearance of conductors from surface of pole shall not be not less than as specified in Rule 54.4-D6b.

See Rule 54.7-A1 and Rule 54.11-F for climbing space requirements for conductors dead ended on poles in vertical configuration.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 54.4-D6b
CONDUCTOR - CLEARANCES
FROM POLES - DEAD ENDED ON POLE

It appears the purpose of the existing rule was to provide a margin of safety for work being performed in close proximity to unprotected 750-7500 volt conductors.

Present safety requirements necessitate the covering of these unprotected conductors within the working area.

EXISTING G.O. 95 RULE (LINE BY LINE)

RULE 54.4-D6b

(b) More Than 750 Volts Supported on Climbable Poles:

Where conductors are supported on a climbable pole in vertical configuration, the energized portions of such conductors shall have clearances of not less than 15 inches from the surface of the pole for voltages between 750 and 7,500 volts and 18 inches from the surface of pole for voltages in excess of 7,500 volts.

Not more than two conductors of a circuit of 750-5,000 volts shall be attached directly to a pole in vertical configuration without the use of crossarms. The number of conductors of a circuit of more than 5,000 volts so supported on a pole shall be limited to four. Branch circuits may be taken from such construction without the use of crossarms provided a climbing and working space as specified in Rules 54.7 and 54.11 is maintained.

PROPOSED RULE CHANGE

RULE 54.4-D6b

(b) More Than 750 Volts Supported on Climbable Poles:

Where conductors are supported on a climbable pole in vertical configuration, the energized portions of such conductors shall have clearances of not less than 15 inches from the surface of the pole for voltages between 750 and 7,500 volts and 18 inches from the surface of pole for voltages in excess of 7,500 volts.

Not more than four conductors of a circuit of more than 750 volts shall be attached directly to a pole in vertical configuration without the use of crossarms. Branch circuits may be taken from such construction without the use of crossarms provided a climbing and working space as specified in Rules 54.7 and 54.11 is maintained.

FINAL *

PROPOSED RULE CHANGE

RULE 54.4-D6b

(b) More Than 750 Volts Supported on Climbable Poles:

Where conductors are supported on a climbable pole in vertical configuration, the energized portions of such conductors shall have clearances of not less than 15 inches from the surface of the pole for voltages between 750 and 7,500 volts and 18 inches from the surface of pole for voltages in excess of 7,500 volts.

Not more than four conductors of a circuit of more than 750 volts shall be attached directly to a pole in vertical configuration without the use of crossarms. Branch circuits may be taken from such construction without the use of crossarms provided a climbing and working space as specified in Rules 54.7 and 54.11 is maintained.

ITEM 5

. Rule 54.8

RATIONALE FOR PROPOSED RULE CHANGE
RULE 54.8
CONDUCTORS
SERVICE DROPS, 0-750 VOLTS

This change simplifies existing language, moves building clearances to Table 10, and puts more emphasis on using Insulated Conductors (particularly when using allowed reduced clearances).

Terminal fittings of risers and runs, and their taps, may extend into the working space provided these fittings are the only obstruction of the working space at their level on the same side of the climbing space.

54.8 Service Drops, 0-750 Volts

A. MATERIAL AND SIZE

Supply service drops of 0-750 volts shall be of material and size as specified in Table 8 and Rule 49.4-C7a and shall have a weather-resistant covering at least equivalent to double-braid weather proofing.

NOTE: Resolution No. E-756 effective May 29, 1951 authorized the use of multiple conductor service drop cable with a bare neutral conductor for service drops of 0-750 volts provided that the attachment of such cable at the pole and building ends shall be by means of an insulator.

B. CLEARANCES ABOVE GROUND, BUILDINGS, ETC.

The vertical clearances of supply service drops above ground, buildings, etc., shall be not less than the minimum clearances specified in Rule 37, Table 1, Column B, with the following modifications:

(1) Above Public Thoroughfares: Service drop conductors shall have a vertical clearance of not less than 18 feet above public thoroughfares, except that this clearance may grade from 18 feet at a position not more than 12 feet horizontally from the curb line to a clearance of not less than 16 feet at the curb line, provided the clearance at the centerline of any public thoroughfare shall in no case be less than 18 feet. Where there are no curbs the foregoing provisions shall apply using the outer limits of possible vehicular movement in lieu of a curb line.

(2) Above Private Thoroughfares and Other Private Property:
(a) Industrial or Commercial Premises: Over private driveways, lanes, or other private property areas accessible to vehicles on premises used for industrial or commercial purposes, service drops shall have a vertical clearance of not less than 16 feet.
(b) Residential Premises: Over private driveways or lanes or other private property areas accessible to vehicles on premise used for residential purposes only, service drops shall have a vertical clearance of not less than 12 feet. If the building served does not permit an attachment which will afford a clearance of at least 12 feet over such areas without the installation of a structure on the building to provide additional height, the vertical clearance of service drops of 0-300 volts only may be less than 12 feet but shall be maintained as great as possible and shall be not less than 10 feet.

(3) Above Ground in Areas Accessible to Pedestrians Only:
(a) Industrial and Commercial Premises: Over areas accessible to pedestrians only on premises used for industrial or commercial purposes, service drops shall be maintained at a vertical clearance of not less than 12 feet.

(b) Residential Premises: Over areas accessible to pedestrians only on residential premises, service drops shall be maintained at a vertical clearance of not less than 10 feet. If the building served does not permit an attachment which will afford at least 10 feet clearance over such areas without the installation of a structure on the building to provide additional height, the vertical clearance of service drops of 0-300 volts only may be less than 10 feet but shall be maintained as great as possible and shall be not less than 8 feet 6 inches. If the building served would require the installation of an attachment structure to provide height sufficient to afford a vertical clearance of at least 8 feet 6 inches, the full clearance of 10 feet shall be maintained.

(4) From Buildings and Structures: Service drops shall be so arranged as to hamper and endanger workmen and firemen as little as possible in the performance of their duties.

(a) Industrial and Commercial Premises: On premises used for industrial and commercial purposes, service drops shall be maintained at a vertical clearance of not less than 8 feet over all or any portions of buildings and structures, except that service drops of 0-750 volts may be less than 8 feet, but not less than 12 inches above the metallic or nonmetallic cornice, decorative appendage, eave, roof, or parapet wall of the building served provided:

The current carrying service conductors are insulated for the voltage being supplied (see Rule 20.8-G), and the point of attachment of the service drops is not more than 18 inches back of the front face of the building wall facing the pole line from which the service drops originate.

Service drops are not required to clear buildings any specific horizontal distance but shall be so installed that they clear fire escapes, exits, windows, doors and other points at which human contact might be expected, a horizontal distance of not less than 3 feet.

Where service drops cross over metallic or non-metallic non-walkable overhang or patio cover the vertical clearance may be less than 8 feet, but not less than 24 inches providing such service drops consist of abrasion-resistant cables having a grounded metallic sheath and are insulated for the voltage being supplied.

NOTE: Revised October 2, 1951 by Resolution No. E-762 and January 6, 1968 by Decision No. 73455.

(b) Residential Premises: On premises used for residential purposes only, service drops of 300-750 volts shall be maintained at a vertical clearance of not less than 8 feet over all buildings and structures.

The clearance above buildings of service drops of 0-300 volts shall be not less than the distance specified in Table 10.

TABLE 10
Minimum Allowable Clearance of Service Drops of
0-300 Volts Above Buildings

Type of Roof	Minimum Clearance Above Building Served	Other Buildings on Premises Served	Buildings on Other Premises
Metal roof, 3/8 pitch or less(a)	8 ft (c)	8 ft	8 ft
Metal roof, more than 3/8 pitch	2 ft (c)	2 ft	8 ft
Nonmetallic roof, 3/8 pitch or less	(b)	2 ft	8 ft
Nonmetallic roof, more than 3/8 pitch	(b)	2 ft	2 ft

(a) 3/8 pitch is approximately 37 degrees from the horizontal.
(b) No limit specified but the greatest practicable clearance should be obtained.
(c) Where insulated abrasion-resistant conductors are used may be reduced to 12 inches.

On premises used for residential purposes only the clearance above building of service drops of 0-300 volts may be less than the distance specified in Table 10 but not less than 12 inches over the building served nor less than 24 inches above other buildings on the premises served, provided:

The current-carrying conductors consist of abrasion-resistant cable having a grounded metallic sheath or neutral-supported service drop cable manufactured in accordance with Standard No. WC-5-1961 or Standard No. WC-3-1959 of the National Electric Manufacturers Association and are insulated for the voltage being supplied and the roof is metallic or non-metallic, non-walkable overhang or patio cover.

Service drops are not required to clear buildings on residential premises any specified horizontal distance, but shall be so installed that they clear fire escapes, exits, windows, doors and other points at which human contact might be expected, a horizontal distance of not less than 3 feet. Service drops above a horizontal plane through the top extremity of an opening should maintain the maximum practical radial clearance, which in no event shall be less than 1 foot.

NOTE: Revised September 18, 1967 by Decision No. 72984; January 6, 1968 by Decision No. 73455 and July 22, 1968 by Decision No. 74342.

(5) **Above Swimming Pools:** Installations of service drops above public and private swimming pools shall be avoided where practicable. Where service drop conductors are installed above a swimming pool, the conductors shall have a radial clearance of not less than 20 feet from the top edge of the pool walls and shall have a vertical clearance of not less than 18 feet above the highest water level of the pool surface. Service drops having coverings of materials specially approved by the Commission for installation above swimming pools may have vertical clearances above the pool and radial clearances from the top edge of the pool wall of not less than 16 feet for public and commercially operated pools and not less than 12 feet for residential pools.

PROPOSED RULE CHANGE

Requirements for Supply Lines

54.8 Service Drops, 0-750 Volts

A. MATERIAL AND SIZE

Supply service drops of 0-750 volts shall be of material and size as specified in Table 8 and Rule 49.4-C7a/[illegible].

B. CLEARANCES ABOVE GROUND, BUILDINGS, ETC.

The vertical clearances of supply service drops above ground, buildings, etc., shall be not less than the minimum clearances specified in Rule 37, Table 1, Column B, with the following modifications:

(1) Above Public Thoroughfares: Service drop conductors shall have a vertical clearance of not less than 18 feet above public thoroughfares, except that this clearance may grade from 18 feet at a position not more than 12 feet horizontally from the curb line to a clearance of not less than 16 feet at the curb line, provided the clearance at the centerline of any public thoroughfare shall in no case be less than 18 feet. Where there are no curbs the foregoing provisions shall apply using the outer limits of possible vehicular movement in lieu of a curb line.

(2) Above Private Thoroughfares and Other Private Property:
(a) Industrial or Commercial Premises: Over private driveways, lanes, or other private property areas accessible to vehicles on premises used for industrial or commercial purposes, service drops shall have a vertical clearance of not less than 16 feet.
(b) Residential Premises: Over private driveways or lanes or other private property areas accessible to vehicles on premise used for residential purposes only, service drops shall have a vertical clearance [illegible] not less than [illegible] 12 feet. EXCEPTION: This clearance may be reduced for insulated services that conform with rule 20.8G to not less than 10 feet.

(3) Above Ground in Areas Accessible to Pedestrians Only: [illegible] Over areas accessible to pedestrians only [illegible] service drops shall be maintained at a vertical clearance of not less than 12 feet. EXCEPTION: This clearance may be reduced for insulated services that conform with rule 20.8G. to

Requirements for Supply Lines

(3) From Trees: Service drops should be so arranged so as not to hamper or damage endanger workers and firefighters as while performing of their duties. Service drop vertical clearances shall be maintained over all portions of buildings and structures as required by Table 10. not less than 8 feet 6 inches.

(4) From Buildings and Structures: Service drops should be so arranged so as not to hamper or damage endanger workers and firefighters as while performing of their duties.

(a) Vertical Clearances: Service drop vertical clearances shall be maintained over all portions of buildings and structures as required by Table 10.

(b) Horizontal Clearances: Service drops are not required to clear buildings by any specific horizontal distance. EXCEPTION: A horizontal distance of not less than 3 feet should be maintained around fire escapes, exits, windows or doors.

NOTE: Revised October 2, 1951 by Resolution No. E-762 and January 6, 1968 by Decision No. 73455.

~~TABLE 19~~
~~MINIMUM VERTICAL CLEARANCES OF SERVICE DROPS OF 0-750 VOLTS ABOVE BUILDINGS~~

~~Type of Roof~~	~~Minimum Clearance Above Building Served~~	~~Minimum Clearance Above Other Buildings on Premises Served~~	~~Minimum Clearance Above Buildings on Other Premises~~
~~Metal roof, 3/8 pitch or less(a)~~	~~8 ft (c)~~	~~8 ft~~	~~8 ft~~
~~Metal roof, more than 3/8 pitch~~	~~2 ft (c)~~	~~2 ft~~	~~8 ft~~
~~Nonmetallic roof, 3/8 pitch or less~~	~~(b)~~	~~2 ft~~	~~8 ft~~
~~Nonmetallic roof, more than 3/8 pitch~~	~~(b)~~	~~2 ft~~	~~2 ft~~

~~(a) 3/8 pitch is approximately 37 degrees from the horizontal.~~

~~(b) No limit specified but the greatest practicable clearance should be obtained.~~

~~(c) Where insulated abrasion-resistant conductors are used may be reduced to 12 inches.~~

~~On premises used for residential purposes only the clearance above building of service drops of 0-750 volts may be less than the distance specified in Table 19 but not less than 12 inches over the building served nor less than 24 inches above other buildings on the premises served, provided:~~

~~The current-carrying conductors consist of abrasion-resistant cable having a grounded metallic sheath or neutral supported service drop cable manufactured in accordance with Standard No. WC-3-1961 or Standard No. WC-3-1959 of the National Electrical Manufacturers Association and are insulated for the voltage being supplied and the roof is metallic or non-metallic non-walkable overhang or patio cover.~~

~~Services drops are not required to clear buildings on residential premises any specified horizontal distance but shall be so installed that they clear fire escapes, exits, windows, doors and other points at which human contact might be expected, a horizontal distance of not less than 3 feet. Service drops above a horizontal plane through the top extremity of an opening should maintain the maximum practical radial clearance which in no event shall be less than 1 foot.~~

NOTE: Revised September 18, 1967 by Decision No. 72984; January 6, 1968 by Decision No. 73455 and July 22, 1968 by Decision No. 74342.

(5) **Above Swimming Pools:** Installations of service drops above public and private swimming pools shall be avoided where practicable. Where service drop conductors are installed above a swimming pool, the conductors shall have a radial clearance of not less than 20 feet from the top edge of the pool walls and shall have a vertical clearance of not less than 18 feet above the highest water level of the pool surface. Service drops having coverings of materials specially approved by the Commission for installation above swimming pools may have vertical clearances above the pool and radial clearances from the top edge of the pool wall of not less than 16 feet for public and commercially operated pools and not less than 12 feet for residential pools.

PROPOSED NEW TABLE

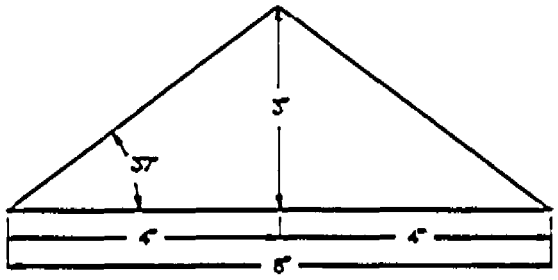
TABLE 10
Minimum Allowable Clearance of Service Drops of
0-750 Volts From Buildings

	Minimum Clearance From Buildings	
	Weather-Resistant Covered Conductors	Insulated Conductors (Rule 20.8-C)
	0-750 V	0-750 V
Vertical Clearances Above:		
1) All portions of buildings including metallic or non-metallic cornice, decorative appendage, eaves, roof or parapet wall of the building served.	8'	(a)(b)
2) Metallic or non-metallic non-walkable overhang or patio cover.	8'	(a)(b)
3) Other buildings on the same premises.	8'	2'
4) Buildings on other premises.	8'	8' (c)
Horizontal & Radial Clearances:		
1) From fire escapes, exits, windows, and doors.	3'	3'

(a) No limit specified but the greatest practicable clearance should be obtained.

(b) The point of attachment of the service drop for industrial and commercial premises is not to be more than 18 inches back of the front face of the building wall facing the pole line from which the service drop originates.

(c) Reduce to 2 feet for non-metallic roof, more than 3/8 pitch (approximately 37 degrees from the horizontal, see sketch)



54.8 Service Drops, 0-750 Volts

A. MATERIAL AND SIZE

Supply service drops of 0-750 volts shall be of material and size as specified in Table 8 and Rule 49.4-C7a.

B. CLEARANCES ABOVE GROUND, BUILDINGS, ETC.

The vertical clearances of supply service drops above ground, buildings, etc., shall be not less than the minimum clearances specified in Rule 37, Table 1, Column B, with the following modifications:

(1) Above Public Thoroughfares: Service drop conductors shall have a vertical clearance of not less than 18 feet above public thoroughfares, except that this clearance may grade from 18 feet at a position not more than 12 feet horizontally from the curb line to a clearance of not less than 16 feet at the curb line, provided the clearance at the centerline of any public thoroughfare shall in no case be less than 18 feet. Where there are no curbs the foregoing provisions shall apply using the outer limits of possible vehicular movement in lieu of a curb line.

(2) Above Private Thoroughfares and Other Private Property:
(a) Industrial or Commercial Premises: Over private driveways, lanes, or other private property areas accessible to vehicles on premises used for industrial or commercial purposes, service drops shall have a vertical clearance of not less than 16 feet.
(b) Residential Premises: Over private driveways or lanes or other private property areas accessible to vehicles on premise used for residential purposes only, service drops shall have a vertical clearance of not less than 12 feet. EXCEPTION: This clearance may be reduced for insulated services that conform with rule 20.8G to not less than 10 feet.

(3) Above Ground in Areas Accessible to Pedestrians Only:
Over areas accessible to pedestrians only service drops shall be maintained at a vertical clearance of not less than 12 feet. EXCEPTION: This clearance may be reduced for insulated services that conform with rule 20.8G, to not less than 8 feet 6 inches.

(4) From Buildings and Structures: Service drops should be arranged so as not to hamper or endanger workers and firefighters while performing their duties.
(a) Vertical Clearances: Service drop vertical clearances shall be maintained over all portions of buildings and structures as required by Table 10.
(b) Horizontal Clearances: Service drops are not required to clear buildings by any specific horizontal distance. EXCEPTION: A horizontal distance of not less than 3 feet should be maintained around fire escapes, exits, windows, or doors.

NOTE: Revised October 2, 1951 by Resolution No. E-762, January 6, 1958 by Decision No. 73455, September 18, 1967 by Decision No. 72984; and July 22, 1968 by July 22, 1968 by Decision No. 74342.

(5) [NO CHANGE]

PROPOSED NEW TABLE

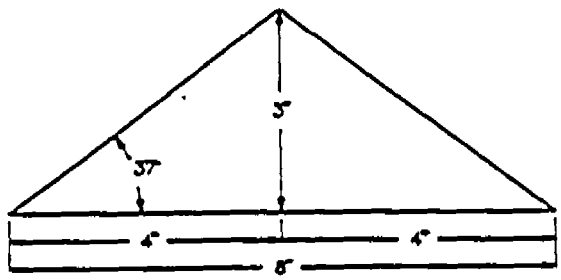
TABLE 10
Minimum Allowable Clearance of Service Drops of
0-750 Volts From Buildings

	Minimum Clearance From Buildings	
	Weather-Resistant Covered Conductors	Insulated Conductors (Rule 20.8-G)
	0-750 V	0-750 V
Vertical Clearances Above:		
1) All portions of buildings including metallic or non-metallic cornice, decorative appendage, eaves, roof or parapet wall of the building served.	8'	(a)(b)
2) Metallic or non-metallic non-walkable overhang or patio cover.	8'	(a)(b)
3) Other buildings on the same premises.	8'	2'
4) Buildings on other premises.	8'	8' (c)
Horizontal & Radial Clearances:		
1) From fire escapes, exits, windows, and doors.	3'	3'

(a) No limit specified but the greatest practicable clearance should be obtained.

(b) The point of attachment of the service drop for industrial and commercial premises is not to be more than 18 inches back of the front face of the building wall facing the pole line from which the service drop originates.

(c) Reduce to 2 feet for non-metallic roof, more than 3/8 pitch (approximately 37 degrees from the horizontal, see sketch)



ITEM 6

. Rule 54.10-D

RATIONALE FOR PROPOSED RULE CHANGE
RULE 54.10-D
LOW VOLTAGE MULTICONDUCTOR CABLE WITH BARE NEUTRAL
0-750 VOLTS
CONDUCTOR SPACING

Rule 38, Table 2, Case No. 17, Item D established a 3 inch radial separation for incidental pole wiring for 0-750 volt conductors. This radial separation applies to all types of conductors including bare. It is not necessary to increase this requirement to 6 inches for "Low Voltage Multiconductor Cable with Bare Neutral, 0-750 Volts". Rule 54.10-C1 requires that "the phase conductors including jumper connections shall be covered with an insulation suitable for the voltage..." providing even a greater safety margin than the 3 inch requirements of Table 2 by itself.

EXISTING RULE
RULE 54.10-D
CONDUCTOR SPACING

54.10-D

D. CONDUCTOR SPACING
A vertical separation between individual conductors when supported in individual clevises or a multiconductor rack shall be not less than 6 inches.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 54.10-D
CONDUCTOR SPACING

54-10-D

~~D. CONDUCTOR SPACING~~
~~A vertical separation between individual conductors when supported in individual clevises or a multiconductor rack shall be not less than 6 inches.~~

PROPOSED RULE CHANGE
(FINAL) *
RULE 54-10-D
CONDUCTOR SPACING

(Eliminate existing Rule 54.10-D)

ITEM 7

. Rule 54.12

RATIONALE FOR PROPOSED RULE CHANGE
RULE 54.12 (NEW RULE)
LOW VOLTAGE EXTENDED RACKS, 0-750 VOLTS

Deviations from General Order 95 which permit the use of extended rack construction were granted in Resolution No. E-1013 on February 9, 1959 and revised by Decision 82-03-020 in 1982. These deviations were granted solely to Pacific Gas and Electric Company. It is proposed to make this type of construction available to all utilities in the State of California. A new Rule 54.12 titled "Low Voltage Extended Racks, 0-750 Volts" will be added to General Order 95, Section V. Also, a new drawing Fig. 54-9 showing climbing space will be added.

Related rules to change are: Rule 54.9 "Low Voltage Rack, 0-750 Volts", by adding a reference to new rule 54.12 and inserting a more detailed title; and Rule 54.4-C5, which currently refers to Rule 54.9, will also refer to the new Rule 54.12.

PROPOSED NEW RULE
(FINAL) *

Rule 54.12 (new rule)

Rule 54.12 Low Voltage Extended Racks, 0-750 Volts (Conductors 15 Inches Or More From Centerline Of Pole, But Not Less Than 3 Inches From The Surface Of Pole)

A. GENERAL

Conductors of 0-750 volts may be attached to poles by means of vertical extended racks of insulators or individual extended supports in vertical rack configuration. Such construction is hereinafter termed "extended rack construction." Where extended rack construction is employed, the following rules shall apply.

Note: For Low Voltage Rack Construction (Conductors Less Than 15 Inches From Centerline Of Pole, But Not Less Than 2-1/2 Inches From The Surface Of Pole) See Rule 54.9.

B. POLE ARRANGEMENT AND CLEARANCE

(1) **Clearance From Poles:** Conductors in extended rack construction shall have minimum clearances of 15 inches from center line of pole and 3 inches from the surface of pole as specified in Table 1, Column D, Cases 8 and 9, respectively.

(2) **Conductor Arrangement:** Where conductors, both line and service drop, are supported by extended racks, such extended racks may be attached to three sides of a pole (there being 4 sides) at the levels of any extended rack group. Climbing space in conjunction with such attachments shall be maintained as specified in Rule 54.12-F.

C. CONDUCTOR MATERIAL

All conductors of a rack group in the same vertical plane shall be of the same material.

D. CONDUCTOR SPACING AND SPREADER BRACKETS

(1) **Vertical Separation:** The vertical separation between conductors, supported as a group in extended rack construction, shall not be less than 8 inches, such separation to be maintained in a span by suitably insulating spreader brackets attached to such line conductors within the span.

(2) **Spreader Brackets:** Spreaders shall be used at points in spans where one or more midspan service drops are attached to and supported by the line conductors. Also, spreaders shall be so spaced as to limit spans between spreaders or between spreaders and poles to not over 135 feet.

E. VERTICAL CLEARANCE BETWEEN CONDUCTOR LEVELS

A vertical clearance shall be maintained between the top conductor supported in the extended rack group at one level and conductors supported on the same pole at the next level above as provided in Table 2, Cases 9 to 13 and for lead wires Rule 54.4-C6.

Related Extended Rack Construction and Other Types of Construction: Where conductors supported in extended rack construction are connected to conductors supported on other types of construction (crossarm etc.) climbing space shall be maintained in the same quadrant or on the same side of pole in accordance with climbing space requirements in Rules 54.7, 54.9, 54.10 or 54.12-F whichever is related to the climbing space selected.

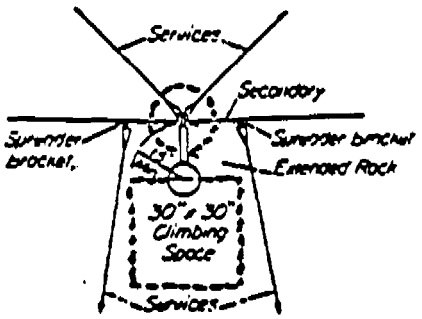
F. CLIMBING SPACE IN EXTENDED RACK CONSTRUCTION

The climbing space in extended rack construction shall be maintained through the level of conductors supported in extended rack construction and for a vertical distance of not less than 4 feet above and below such conductors. The position of the climbing space through the level of conductors in extended rack construction shall be related to climbing space for conductor levels above and below such extended rack construction in accordance with Rules 54.7, 54.10, 54.11 and 93. The depth of the climbing space shall be measured from the center line of the pole.

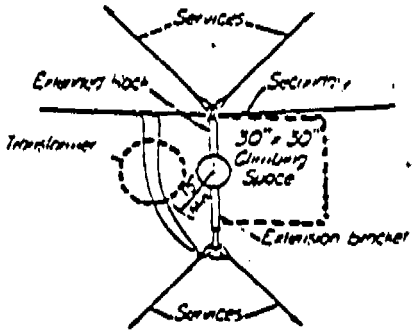
(1) **Dimensions:** The dimensions of the climbing space shall be 30 inches square, and shall be provided on one side of the pole with the extremities of such width equidistant from the center line of pole. On poles on which transformers are pole-bolted in line with primary conductors, a 30 inch square climbing space shall be provided in one quadrant or one one side of the pole (see Fig. 54-9).

(2) **With Conductors Dead-ended and on Corner Poles:** On poles with the extended rack conductors dead-ended and on corner poles, a 30 inch climbing space shall be provided in one quadrant or on one side of the pole (see Fig. 54-9).

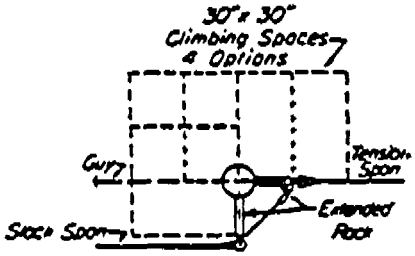
(3) **Allowable Climbing Space Obstructions:** Suitably protected vertical runs or risers and ground wires attached to the surface of the poles, and guys, are allowed in climbing spaces provided that no more than two guys (provided they are separated at the pole by a vertical distance of not more than 18 inches) or one vertical riser, run, or ground wire is installed in any 4-foot vertical section of climbing space. The terminals or terminal fittings of risers or runs shall not be installed within climbing spaces.



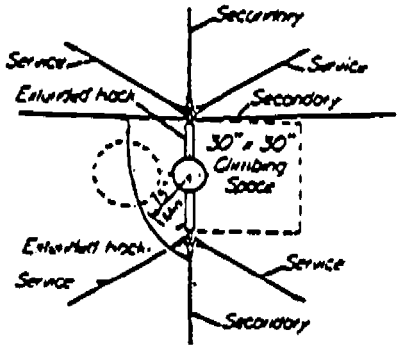
TANGENT OR ANGLE



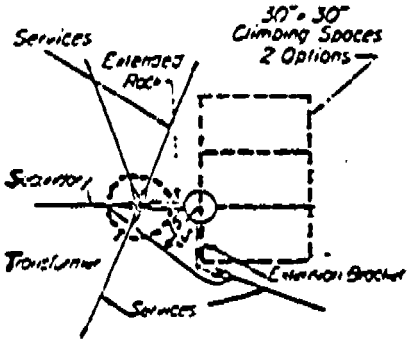
TANGENT OR ANGLE



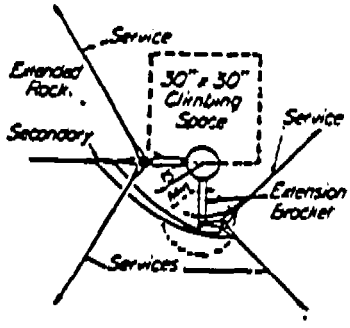
SLACK SPAN



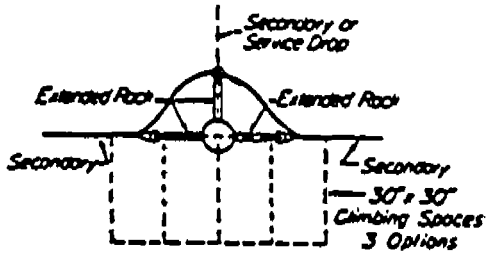
JUNCTION



DEADEND



DEADEND



3-WAY DEADEND

Rule 54.12-F

Fig. 54-9

RELATED RULE CHANGE

(EXISTING RULE)

Rule 54.4-C5

(5) Rack Construction (see Rule 54.9)

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

Rule 54.4-C5

(5) Rack Construction (see Rule 54.9)
<u>Extended Rack Construction (see Rule 54.12)</u>

PROPOSED RULE CHANGE
(FINAL) *

Rule 54.4-C5

(5) Rack Construction (see Rule 54.9)
Extended Rack Construction (see Rule 54.12)

RELATED RULE CHANGE

(EXISTING RULE)

54.9 Low Voltage Racks, 0-750 Volts

A. GENERAL
Conductors of not more than 750 volts may be attached to poles by means of vertical racks of insulators or individual supports in rack configuration and, where so attached, the following rules shall apply.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

54.9 Low Voltage Racks, 0-750 Volts <u>(Conductors Less Than 15 Inches From Centerline Of Pole, But Not Less Than 2-1/2 Inches From The Surface Of Pole)</u>

A. GENERAL
Conductors of ~~not-more-than-750~~ <u>0-750</u> volts may be attached to poles by means of vertical racks of insulators or individual supports in <u>vertical</u> rack configuration. ~~and,-where-so attached,~~ <u>Such construction is hereinafter termed "rack construction." Where rack construction is employed,</u> the following rules shall apply
<u>Note: For Low Voltage Extended Rack Construction (Conductors 15 Inches Or More From Centerline Of Pole, But Not Less Than 3 Inches From The Surface Of Pole) See Rule 54.12.</u>

PROPOSED RULE CHANGE
(FINAL) *

54.9 Low Voltage Racks, 0-750 Volts (Conductors Less Than 15 Inches From Centerline Of Pole, But Not Less Than 2-1/2 Inches From The Surface Of Pole)

A. GENERAL
Conductors of 0-750 volts may be attached to poles by means of vertical racks of insulators or individual supports in vertical rack configuration. Such construction is hereinafter termed "rack construction." Where rack construction is employed, the following rules shall apply.
Note: For Low Voltage Extended Rack Construction (Conductors 15 Inches Or More From Centerline Of Pole, But Not Less Than 3 Inches From The Surface Of Pole) See Rule 54.12.

ITEM 8

- Rule 56.4-A1
- Rule 56.4-C2, C3
- Rule 56.4-C4
- Rule 56.4-D
- Rule 56.4-F

RULE 56.4-A1
GUY CLEARANCES
ABOVE GROUND

The proposed rule change is to simplify and clarify the present language. Changes include re-structuring, re-formatting and minor changes in syntax.

EXISTING RULE
RULE 56.4-A1
GUY CLEARANCES

56.4 Clearances

A. ABOVE GROUND

(1) **Across or Along Public Thoroughfares:** Guys over or across public thoroughfares in urban districts shall have a clearance of not less than 18 feet above ground (Table 1, Case 3, Column A) except that a clearance of not less than 16 feet is permitted for the portions of guys over that part of the public thoroughfare which is an entrance to or exit from industrial or commercial premises; and not less than 14 feet in cases where private residential premises are involved. Overhead guys along public thoroughfares may have clearances, above ground which is not normally accessible to vehicles, less than as specified in Table 1, Column A, Cases 3 and 4 (18 feet and 15 feet respectively) but sections of such guys between insulators shall have a clearance of not less that 8 feet above the ground, and sections of guys between insulators and poles shall have a clearance of not less than 7 feet above ground, and such guys without insulators shall be not less than 7 feet above ground.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 56.4-A1
GUY CLEARANCES

56.4 Clearances

A. ABOVE GROUND

(1) Over, Across or Along Public Thoroughfares:

(a) Guys over or across public thoroughfares in urban districts shall have a clearance of not less than 18 feet above ground (Table 1, Case 3, Column A), except EXCEPTIONS:

1) that A clearance of not less than 16 feet is permitted for the portions of guys over that part of the public thoroughfare which is an entrance to or exit from industrial or commercial premises;

2) and A clearance of not less than 14 feet is permitted for the portions of guys over that part of the public thoroughfare which is an entrance to or exit from ~~in cases where~~ private residential premises ~~are involved~~.

(b) Overhead guys along public thoroughfares may have clearances, above ground which is not normally accessible to vehicles, less than as specified in Table 1, Column A, Cases 3 and 4 (18 feet and 15 feet respectively):

1) but Sections of such guys between insulators shall have a clearance of not less than 8 feet above the ground;

2) and Sections of such guys between insulators and poles shall have a clearance of not less than 7 feet above the ground;

3) and Such guys without insulators shall ~~be~~ not be less than 7 feet above the ground.

PROPOSED RULE CHANGE
(FINAL) *
RULE 56.4-A1
GUY CLEARANCES

56.4 Clearances

A. ABOVE GROUND

(1) **Over, Across or Along Public Thoroughfares:**

(a) Guys over or across public thoroughfares in urban districts shall have a clearance of not less than 18 feet above ground (Table 1, Case 3, Column A).
EXCEPTIONS:

1) A clearance of not less than 16 feet is permitted for the portions of guys over that part of the public thoroughfare which is an entrance to or exit from industrial or commercial premises.

2) A clearance of not less than 14 feet is permitted for the portions of guys over that part of the public thoroughfare which is an entrance to or exit from private residential premises.

(b) Overhead guys along public thoroughfares may have clearances, above ground which is not normally accessible to vehicles, less than as specified in Table 1, Column A, Cases 3 and 4 (18 feet and 15 feet respectively).

1) Sections of such guys between insulators shall have a clearance of not less than 8 feet above the ground.

2) Sections of such guys between insulators and poles shall have a clearance of not less than 7 feet above the ground.

3) Such guys without insulators shall not be less than 7 feet above the ground.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 56.4-C2 and 56.4-C3
GUY CLEARANCES
56.4-C2 - ON COLINEAR LINES
56.4-C3 - PARRALLEL ON SAME POLES

The proposed rule change is to simplify and clarify the present language. Also, add a new drawing (Fig. 56-1) opposite the text for illustration of Rule 56.4-C3.

EXISTING RULES
RULES 56.4-C2 AND 56.4-C3
GUY CLEARANCES

Rule 56.4-C

C. FROM CONDUCTORS

(2) **On Colinear Lines:** The radial clearances between guys on a line and conductors on a colinear line shall be not less than as specified in Table 2, Case 18. Vertical clearances not less than as specified in Table 2, Case 1, shall also be maintained at points of crossing between guys on a line and conductors supported on other poles of a colinear line.

(3) **Parallel on Same Poles:** The radial clearances between guys and conductors which are approximately parallel and supported by the same poles shall be not less than as specified in Table 2, Case 18.

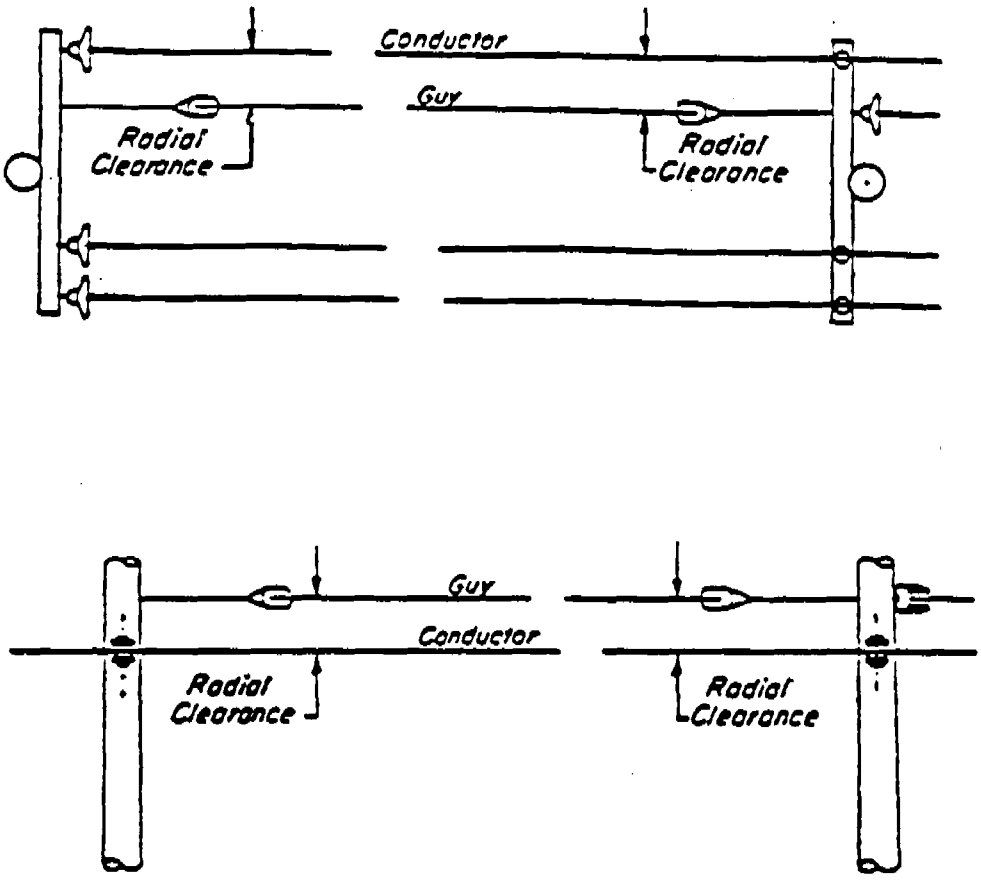
PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULES 56.4-C2 AND RULE 56.4-C3
GUY CLEARANCES

Rule 56.4-C

C. FROM CONDUCTORS

(2) **On Colinear Lines:** The radial clearances between guys on a line and conductors on a colinear line shall -be- not <u>be</u> less than as specified in Table 2, Case 18. Vertical clearances not less than as specified in Table 2, Case 1, shall also be maintained at points of crossing between guys on a line and conductors supported on other poles of a colinear line.

(3) **Parallel on Same Poles:** The radial clearances between guys and conductors which are approximately parallel and supported by the same poles shall -be- not <u>be</u> less than as specified in Table 2, Case 18. <u>(see Fig. 56-1).</u>



Overhead guys, which are approximately parallel to conductors supported on the same poles the guys are attached to, shall clear such conductors by the following radial distances:

Communication Conductors_____3"	*750-20000 Volt Conductors_____18"*
0-750 Volt Conductors_____12"	*20000-35000 Volt Conductors_____30"*

Rule 56.4-C3

Fig. 56-1

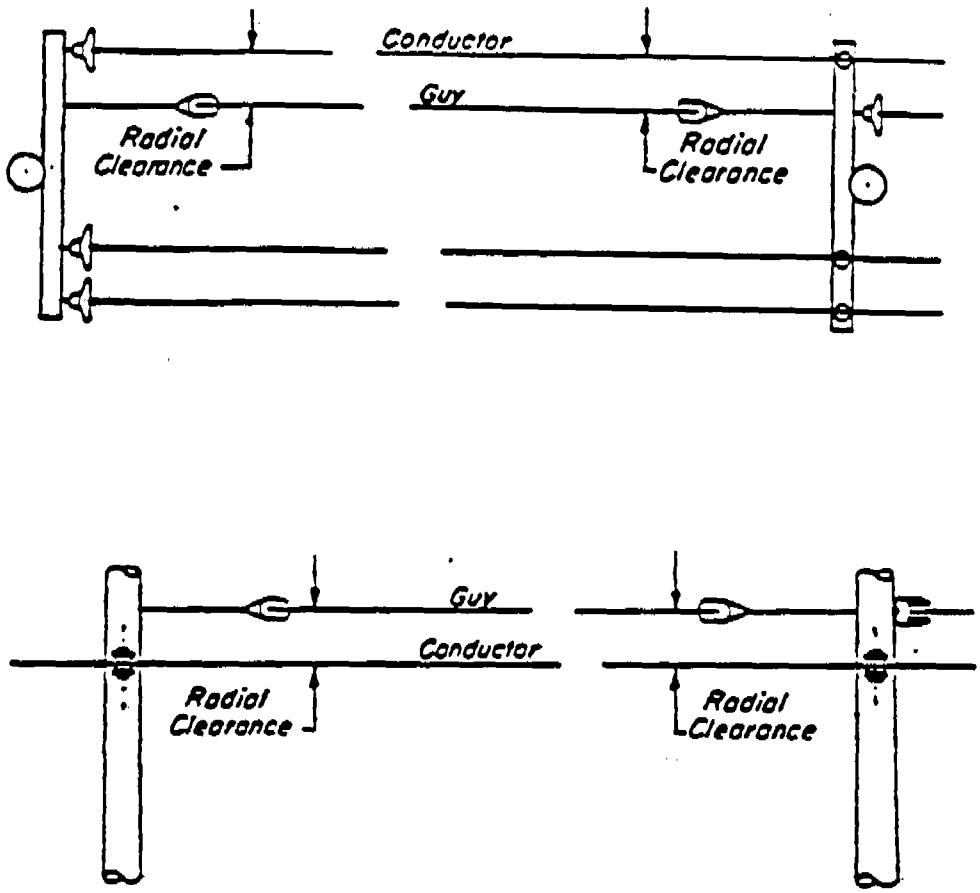
PROPOSED RULE CHANGES
(FINAL) *
RULE 56.4-C2 AND 56.4-C3
GUY CLEARANCES

Rule 56.4-C

C. FROM CONDUCTORS

(2) **On Colinear Lines:** The radial clearances between guys on a line and conductors on a colinear line shall not be less than as specified in Table 2, Case 18. Vertical clearances not less than as specified in Table 2, Case 1, shall also be maintained at points of crossing between guys on a line and conductors supported on other poles of a colinear line.

(3) **Parallel on Same Poles:** The radial clearances between guys and conductors which are approximately parallel and supported by the same poles shall not be less than as specified in Table 2, Case 18. (see Fig. 56-1)



Overhead guys, which are approximately parallel to conductors supported on the same poles the guys ar attached to, shall clear such conductors by the following radial distances:

Communication Conductors_____3"	*750-20000 Volt Conductors_____18"*
0-750 Volt Conductors_____12"	*20000-35000 Volt Conductors_____30"*

Rule 56.4-C3

Fig. 56-1

RATIONALE FOR PROPOSED RULE CHANGE
RULE 56.4-C4
GUY CLEARANCES
PASSING ON SAME POLES

The proposed rule change is to simplify and clarify the present language. Changes include re-structuring, re-formatting and minor changes in syntax. Also, a drawing is being added oppisite the text for reference and ease of application (Fig. 56-2). The requirement for a suitable guard in the exceptions has been broadened to be included in all of the applications.

EXISTING RULE
RULE 56.4-C4
GUY CLEARANCES

(4) **Passing on Same Poles:** The radial clearances between guys and conductors supported by or attached to the same poles or crossarms shall be not less than as specified in Table 2, Case 19 except that the clearance between guys and communication messenger and/or cable attached directly to surface of pole may be less than the 3 inches specified in Table 2, Case 19, Column C provided: the guy is not a guy in proximity, or all parts of the guy are not less than 6 feet below 0-750-volt supply conductors supported on same pole, and a wood guard or equivalent is placed on the messenger and/or cable; also, a guy attached to a pole which supports supply conductors at a distance of not less than 6 feet above communication messenger and/or cable shall (1) have an insulator placed in the guy above the communication messenger and/or cable at a distance of not less than 6 feet horizontally from the pole, or (2) have an insulator placed in the guy not less than 3 inches nor more than 6 inches above the messenger and/or cable, and a wood guard or equivalent placed on the messenger and/or cable.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 56.4-C4
GUY CLEARANCES

(4) **Passing on Same Poles:** The radial clearances between guys and conductors supported by or attached to the same poles or crossarms shall -be- not be less than as specified in Table 2, Case 19.

~~except-that-the-clearance-between-guys-and-communi-cation messenger-and/or-cable-attached-directly-to-surface-of-pole may-be-less-than-the-3-inches-specified-in-Table-2,-Case-19, Column-C-provided,-the-guy-is-not-a-guy-in-proximity,-or-all parts-of-the-guy-are-not-less-than-6-feet-below-0-750-volt supply-conductors-supported-on-same-pole,-and-a-wood-guard-or equivalent-is-placed-on-the-messenger-and/or-cable,-also,-a guy-attached-to-a-pole-which-supports-supply-conductors-at-a distance-of-not-less-than-6-feet-above-communication messen-ger-and/or-cable-shall-(1)-have-an-insulator-placed-in the-guy-above-the-communication-messenger-and/or-cable-at-a dis-tance-of-not-less-than-6-feet-horizontally-from-the-pole, or-(2)-have-an-insulator-placed-in-the-guy-not-less-than-3 inches-nor-more-than-6-inches-above-the-messenger-and/or cable,-and-a-wood-guard-or-equivalent-placed-on-the-messenger and/or-cable.~~

EXCEPTION: The clearance between guys and communication messenger and/or cable attached directly to the surface of a pole may be less than the 3 inches specified in Table 2, Case 19, Column C provided:

(a) A suitable guard is placed on the messenger and/or cable or guy wire to prevent physical contact and resultant mechanical damage; and

(b) The guy is not a guy in proximity; or

(c) An insulator is placed in the guy above the communication messenger and/or cable at a vertical distance of not less than 8 feet below the supply conductor level. (see Fig. 56-2 A); or

(d) All parts of the guy within a radial distance of 6 feet from the face of pole are 6 feet or more below the 0-750 volt supply conductors supported on the same pole. (see Fig. 56-2 B); or

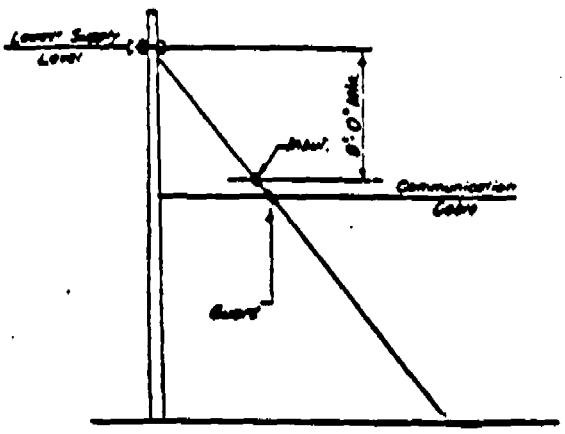
(e) The guy is attached to a pole which supports supply conductors that are 6 feet or more above the communication messenger and/or cable, provided:

Rule 56.4-C4 (continued)

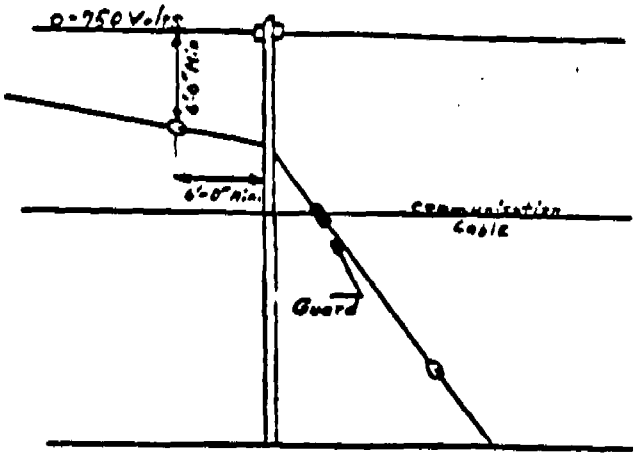
1) An insulator is placed in the guy above the communication messenger and/or cable at a distance of 6 feet or more horizontally from the pole and not less than one foot below the level of the lowest supply conductor. (see Fig. 56-2 C); or

2) An insulator is placed in the guy 3 to 6 inches above the messenger and/or cable.

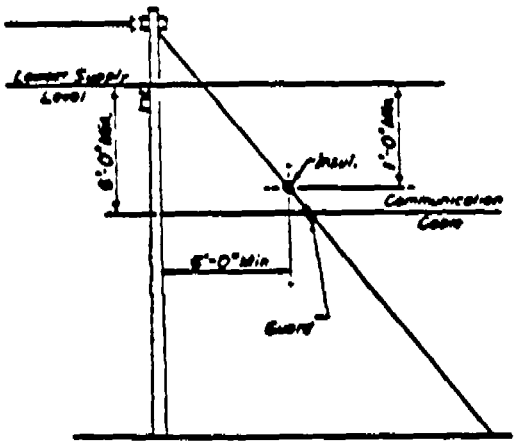
In lieu of a porcelain insulator a suitable fiberglass insulating rod or equivalent that meets the requirements of Rule 56.8 and extends 6 inches or more above and below the communication messenger and/or cable may be used. (see Fig. 56-2 D).



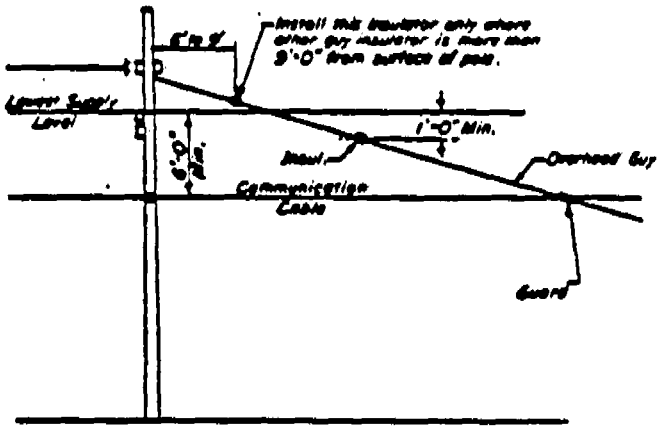
A



B

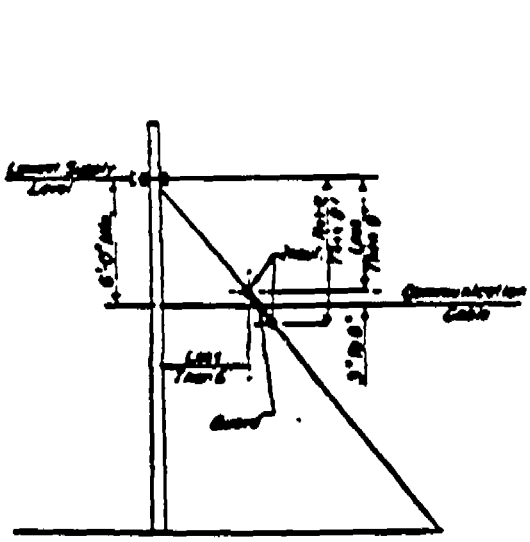


Anchor Guy

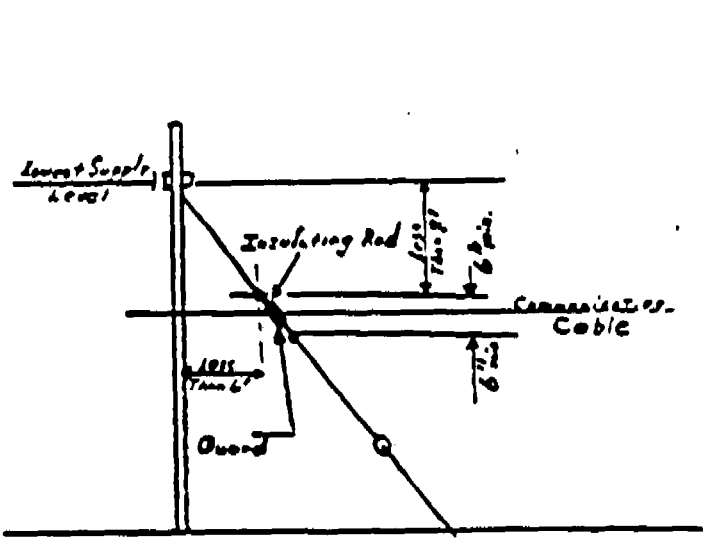


Overhead Guy

C



Porcelain (Glass)



Insulating Rod

D

Rule 56.4-C4
Fig. 56-2

PROPOSED RULE CHANGE
(FINAL) *
RULE 56.4-C4
GUY CLEARANCES

(4) **Passing on Same Poles:** The radial clearances between guys and conductors supported by or attached to the same poles or crossarms shall not be less than as specified in Table 2, Case 19.

EXCEPTION: The clearance between guys and communication messenger and/or cable attached directly to the surface of a pole may be less than the 3 inches specified in Table 2, Case 19, Column C provided:

(a) A suitable guard is placed on the messenger and/or cable or guy wire to prevent physical contact and resultant mechanical damage; and

(b) The guy is not a guy in proximity; or

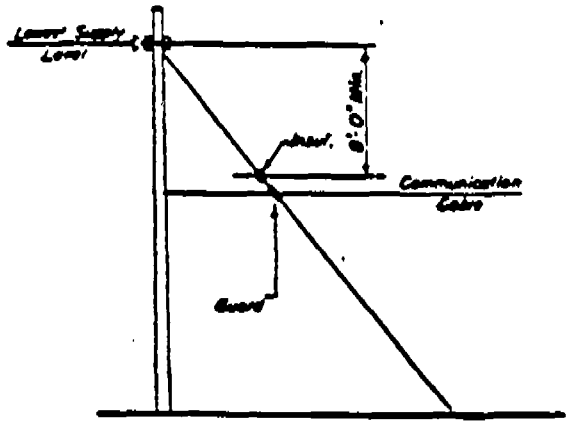
(c) An insulator is placed in the guy above the communication messenger and/or cable at a vertical distance of not less than 8 feet below the supply conductor level, (see Fig. 56-2 A); or

(d) All parts of the guy within a radial distance of 6 feet from the face of pole are 6 feet or more below the 0-750 volt supply conductors supported on the same pole, (see Fig. 56-2 B); or

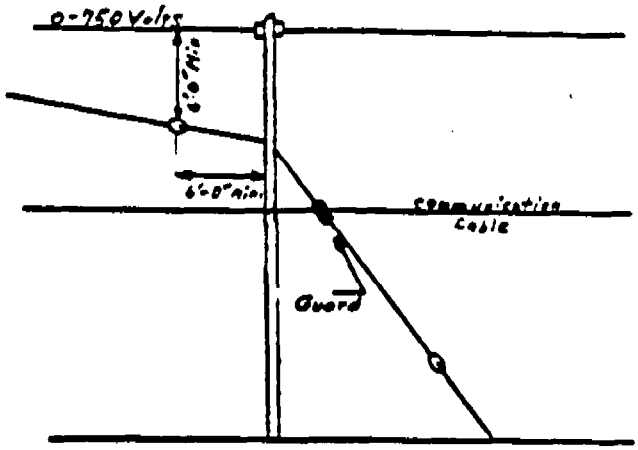
(e) The guy is attached to a pole which supports supply conductors that are 6 feet or more above the communication messenger and/or cable, provided:

1) An insulator is placed in the guy above the communication messenger and/or cable at a distance of 6 feet or more horizontally from the pole and not less than one foot below the level of the lowest supply conductor (see Fig. 56-2 C); or

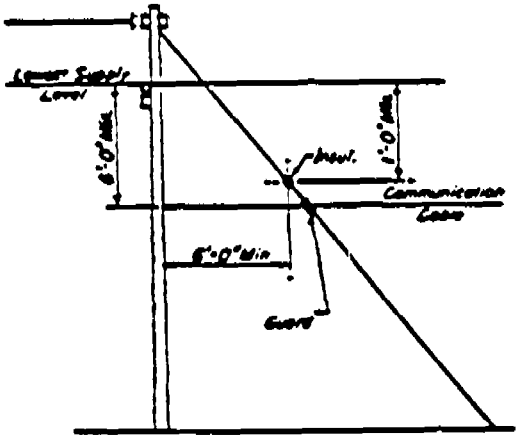
2) An insulator is placed in the guy 3 to 6 inches above the messenger and/or cable. In lieu of a porcelain insulator a suitable fiberglass insulating rod or equivalent that meets the requirements of Rule 56.8 and extends 6 inches or more above and below the communication messenger and/or cable may be used (see Fig. 56-2 D).



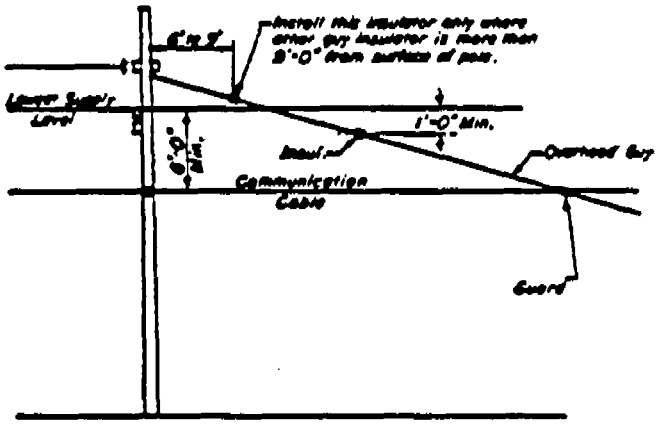
A



B

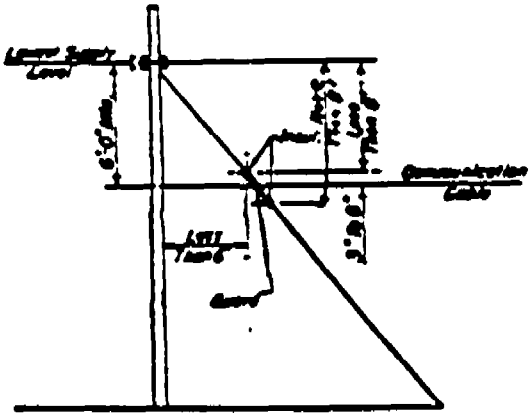


Anchor Guy

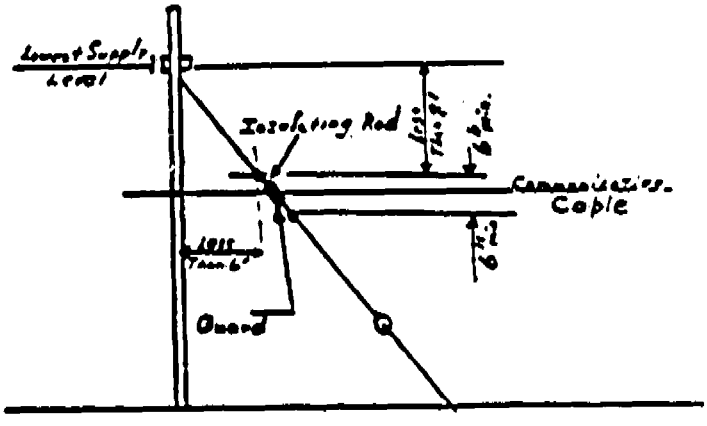


Overhead Guy

C



Porcelain (Glass)



Insulating Rod

D

Rule 56.4-C4
Fig. 56-2

RATIONALE FOR PROPOSED RULE CHANGE
RULE 56.4-D
GUY CLEARANCES
FROM GUYS OR SPAN WIRES

The proposed rule change is to simplify and clarify the present language. Changes include re-structuring, re-formatting and minor changes in syntax. Also, add reference to Rule 54.7-A3 when two guys are installed in climbing space.

EXISTING RULE
RULE 56.4-D
GUY CLEARANCES

D. FROM GUYS OR SPAN WIRES

(1) **Crossing in Spans:** Vertical clearances at points of crossing not less than 18 inches as specified in Table 2, Case 1, Column A and radial clearances of not less than 12 inches shall be maintained between guys or span wires and other guys or span wires which are not attached to the same poles.

(2) **Passing and Attached to Same Pole:** The radial clearance between different guys, different span wires, or different guys and span wires, attached to the same pole shall be not less than 3 inches.

(3) **Approximately Parallel and Attached to Same Poles:**
(a) Overhead guys or Span Wires: Where two or more overhead guys or two or more span wires are approximately parallel and attached to the same poles, either or both of which poles support supply conductors, such guys or span wires shall have a vertical separation of at least 1 foot between the points of attachment on the pole, or poles, which support the supply conductors. In cases where such separation is not practicable, other means to insure the effectiveness of the guy or span wire insulators shall be employed, but in no case shall the distance between any guy or span wire and the surface of the insulator in any other guy or span wire be less than 3 inches, measured perpendicularly at the insulator. This rule shall not prohibit the contact of such guys or span wires to the same shims and shall not apply to guys or span wires acting in different directions nor to guys or span wires in which insulators are not required.
(b) Anchor Guys: Where two or more guys attached to a pole supporting supply conductors are attached to the same grounded anchor, either directly or through the medium of a stub, they shall be separated at the pole by a vertical distance of at least 1 foot, provided any guy wire shall be not less than 3 inches from the surface of the insulator in any other guy. In lieu of securing this 3-inch minimum separation by means of the 1-foot minimum separation of guy attachments at the pole, it shall be afforded by separation of the grounded anchors or by other practicable means which shall insure the minimum clearance of 3 inches. The provisions of this rule do not apply to guys which act in different directions from the pole or to guys attached to grounded metal structures or to guys which do not require insulators.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 56.4-D
GUY CLEARANCES

D. FROM GUYS OR SPAN WIRES

(1) **Crossing in Spans:** Vertical clearances at points of crossing not less than 18 inches ~~as specified in~~ (Table 2, Case 1, Column A) and radial clearances of not less than 12 inches shall be maintained between guys or span wires and other guys or span wires which are not attached to the same poles.

(2) **Passing and Attached to Same Pole:** The radial clearance between different guys, different span wires, or different guys and span wires, attached to the same pole shall ~~be~~ not be less than 3 inches.

(3) **Approximately Parallel and Attached to Same Poles:**

(a) **Overhead guys or Span Wires:** Where two or more overhead guys or two or more span wires are approximately parallel and attached to the same poles, and either or both ~~of which~~ poles support supply conductors:

(1) Such guys or span wires shall have a vertical separation of at least 1 foot between the points of attachment on the pole, or poles, which support the supply conductors.

(2) In cases where such separation is not practicable, other means to insure the effectiveness of the guy or span wire insulators shall be employed, but in no case shall the distance between any guy or span wire and the surface of the insulator in any other guy or span wire be less than 3 inches, measured perpendicularly at the insulator.

(3) This rule shall not prohibit the contact of such guys or span wires to the same shims and shall not apply to guys or span wires acting in different directions nor to guys or span wires in which insulators are not required.

(4) Where two guys are installed in climbing space, also see Rule 54.7-A3.

(b) **Anchor Guys:** Where two or more guys attached to a pole supporting supply conductors are attached to the same grounded anchor, either directly or through the medium of a stub:

Rule 56.4-D (continued)

(1) They shall be separated at the pole by a vertical distance of at least 1 foot, provided any guy wire shall -be- not be less than 3 inches from the surface of the insulator in any other guy.
(2) In lieu of securing this 3-inch minimum separation by means of the 1-foot minimum separation of guy attachments at the pole, it shall be afforded by separation of the grounded anchors or by other practicable means which shall insure the minimum clearance of 3 inches.
(3) The provisions of this rule do not apply to guys which act in different directions from the pole or to guys attached to grounded metal structures or to guys which do not require insulators.
(4) Where two guys are installed in climbing space, also see Rule 54.7-A3.

PROPOSED RULE CHANGE
(FINAL) *
RULE 56.4-D
GUY CLEARANCES

D. FROM GUYS OR SPAN WIRES

(1) **Crossing in Spans:** Vertical clearances at points of crossing not less than 18 inches (Table 2, Case 1, Column A) and radial clearances of not less than 12 inches shall be maintained between guys or span wires and other guys or span wires which are not attached to the same poles.

(2) **Passing and Attached to Same Pole:** The radial clearance between different guys, different span wires, or different guys and span wires, attached to the same pole shall not be less than 3 inches.

(3) **Approximately Parallel and Attached to Same Poles:**

(a) **Overhead guys or Span Wires:** Where two or more overhead guys or two or more span wires are approximately parallel and attached to the same poles, and either or both poles support supply conductors:

(1) Such guys or span wires shall have a vertical separation of at least 1 foot between the points of attachment on the pole, or poles, which support the supply conductors.

(2) In cases where such separation is not practicable, other means to insure the effectiveness of the guy or span wire insulators shall be employed, but in no case shall the distance between any guy or span wire and the surface of the insulator in any other guy or span wire be less than 3 inches, measured perpendicularly at the insulator.

(3) This rule shall not prohibit the contact of such guys or span wires to the same shims and shall not apply to guys or span wires acting in different directions nor to guys or span wires in which insulators are not required.

(4) Where two guys are installed in climbing space, also see Rule 54.7-A4.

(b) **Anchor Guys:** Where two or more guys attached to a pole supporting supply conductors are attached to the same grounded anchor, either directly or through the medium of a stub:

(1) They shall be separated at the pole by a vertical distance of at least 1 foot, provided any guy wire shall not be less than 3 inches from the surface of the insulator in any other guy.
(2) In lieu of securing this 3-inch minimum separation by means of the 1-foot minimum separation of guy attachments at the pole, it shall be afforded by separation of the grounded anchors or by other practicable means which shall insure the minimum clearance of 3 inches.
(3) The provisions of this rule do not apply to guys which act in different directions from the pole or to guys attached to grounded metal structures or to guys which do not require insulators.
(4) Where two guys are installed in climbing space, also see Rule 54.7-AS.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 56.4-F
GUY CLEARANCES
FROM TRANSFORMER CASES

This proposed rule change simplifies and clarifies the present language.

EXISTING RULE
RULE 56.4-F
GUY CLEARANCES

F. FROM TRANSFORMER CASES

All portions of guys 6 inches or more from the surface of poles or crossarms, at the guy attachment, shall be not less than 4 inches from transformer cases and hangers. Portions of guys within 6 inches of the surface of poles or crossarms to which they are attached shall be not less than 1 1/2 inches from transformer cases and hangers.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 56.4-F
GUY CLEARANCES

F. FROM TRANSFORMER CASES

All portions of guys 6 inches or more from the surface of poles or crossarms, at the guy's point of attachment, shall -be- not be less than 4 inches from transformer cases and hangers. Portions of guys within 6 inches of the surface of poles or crossarms to which they are attached shall -be- not be less than 1 1/2 inches from transformer cases and hangers.

PROPOSED RULE CHANGE
(FINAL) *
RULE 56.4-F
GUY CLEARANCES

F. FROM TRANSFORMER CASES

All portions of guys 6 inches or more from the surface of poles or crossarms, at the guy's point of attachment, shall not be less than 4 inches from transformer cases and hangers. Portions of guys within 6 inches of the surface of poles or crossarms to which they are attached shall not be less than 1 1/2 inches from transformer cases and hangers.

ITEM 9

. Rule 56.5

RATIONALE FOR PROPOSED RULE CHANGE
RULE 56.5
GUY FASTENINGS

Delete last paragraph. Wrapped guys are no longer used by the industry thus making this portion of the rule obsolete and unnecessary.

EXISTING RULE
RULE 56.5
GUY FASTENINGS

56.5 Fastenings

Guy wires shall be protected by the use of guy thimbles or their equivalent where attached to anchor rods or through bolts.

Cedar and other soft wood poles, around which any guy having an ultimate strength of 5,000 pounds or more is wrapped, shall be protected by suitable guy shims. Hooks, lag screws or other equivalent means shall be used where necessary to prevent the guy from slipping along the pole.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 56.5
GUY FASTENINGS

56.5 Fastenings

Guy wires shall be protected by the use of guy thimbles or their equivalent where attached to anchor rods or through bolts.

~~Cedar and other soft wood poles, around which any guy having an ultimate strength of 5,000 pounds or more is wrapped, shall be protected by suitable guy shims. Hooks, lag screws or other equivalent means shall be used where necessary to prevent the guy from slipping along the pole.~~

PROPOSED RULE CHANGE
(FINAL) *
RULE 56.5
GUY FASTENINGS

56.5 Fastenings

Guy wires shall be protected by the use of guy thimbles or their equivalent where attached to anchor rods or through bolts.

ITEM 10

- Rule 56.6-A
- Rule 56.6-D

RATIONALE FOR PROPOSED RULE CHANGE
RULES 56.6-A AND 56.6-D
REQUIREMENTS FOR SECTIONALIZING WITH INSULATORS
56.6-A - GUYS IN PROXIMITY
56.6-D - GUYS EXPOSED

This proposed rule change simplifies the rules format. Also, it is proposed to add related figures from Appendix G to the text opposite the rule numbers and change to current numbering sequence (Fig. 56-3 and Fig. 56-4).

At this time it will also be necessary to leave the current App. G, Fig. 45 and Fig. 52 in the appendix because other rules in the order refer to these figures.

EXISTING RULES
RULE 56.6-A AND 56.6-D
REQUIREMENTS FOR SECTIONALIZING WITH INSULATORS

A. GUYS IN PROXIMITY TO SUPPLY CONDUCTORS OF LESS THAN 35,500 VOLTS (see Rule 21.3-D for definition of proximity and App. G, Fig. 45)

All portions of guys within both a vertical distance of 8 feet from the level of supply conductors of less than 35,500 volts and a radial distance of 6 feet from the surface of wood poles or structures shall not be grounded, through anchors or otherwise. Where necessary to avoid the grounding of such portions, guys shall be sectionalized by means of insulators installed at locations as specified in Rule 56.7.

NOTE: Revised March 29, 1966 by Decision No. 70489; August 9, 1966 by Decision No. 71094 and November 20, 1979 by Decision No. 91030.

D. GUYS EXPOSED TO 22,500 VOLTS OR MORE

Guys exposed to conductors of 22,500 volts or more shall not be sectionalized and shall be securely grounded (by means of ground wires, anchor guys, or attachments to securely grounded metal poles or structures). Excepted from the above requirements are:

Guys, all or any portions thereof, which are required to be sectionalized in accordance with Rule 56.6-A because of proximity of wood poles and supply conductors of less than 22,500 volts or in accordance with Rule 56.6-B; and

Guys which are sectionalized by wood strain insulators equipped with arcing horns and designed to provide impulse insulation for lightning conditions or, glass fiber noninterlocking strain insulators which are designed to provide impulse insulation for lightning conditions.

NOTE: Revised June 8, 1959 by Resolution No. E-1030; March 29, 1966 by Decision No. 70489; August 9, 1966 by Decision No. 71094 and January 6, 1968 by Decision No. 73455.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULES 56.6-A AND 56.6-D
REQUIREMENTS FOR SECTIONALIZING WITH INSULATORS

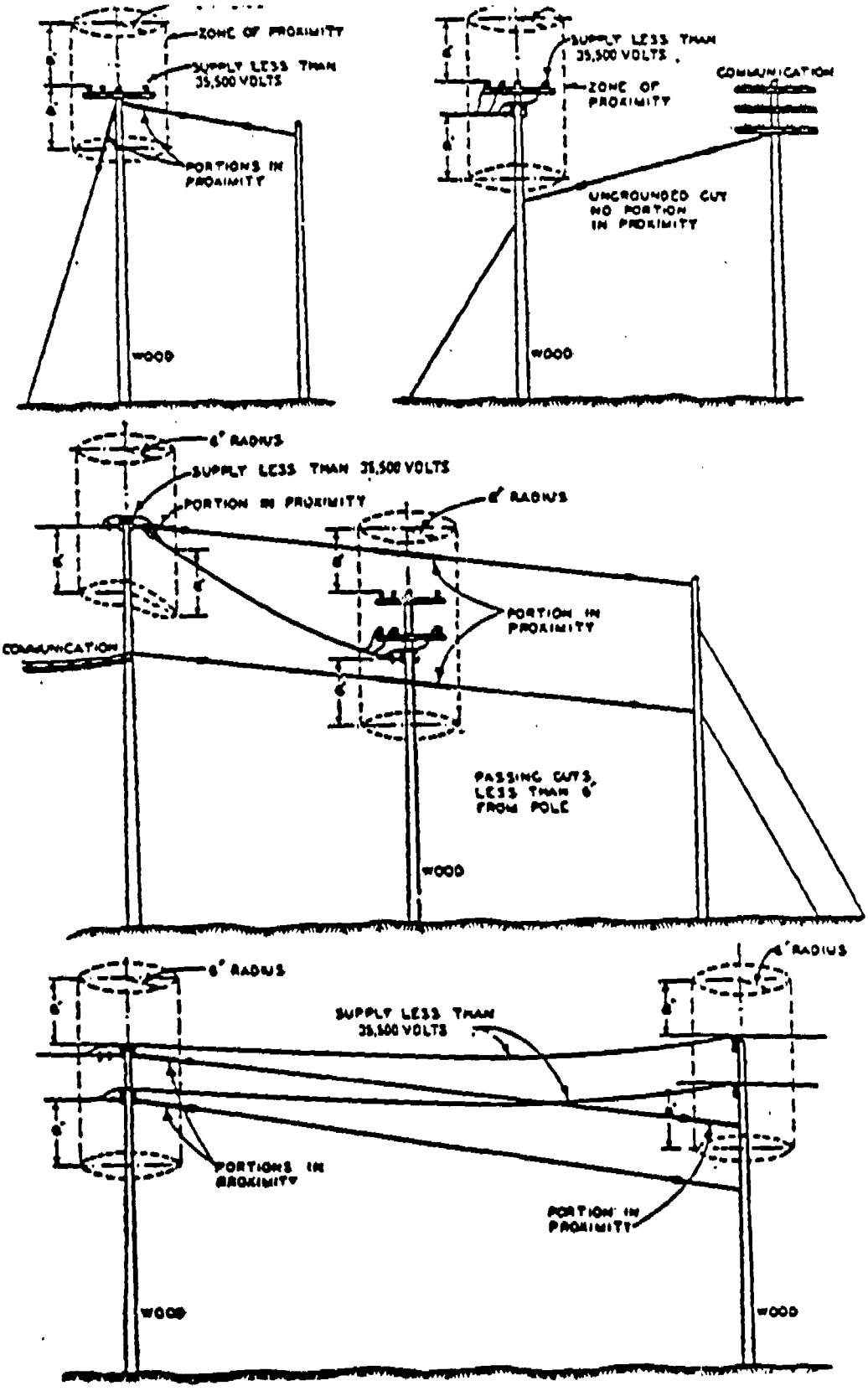
A. GUYS IN PROXIMITY TO SUPPLY CONDUCTORS OF LESS THAN 35,500 VOLTS (see Rule 21.3-D for definition of "proximity" and ~~App.--6,-Fig.-45~~ Fig. 56-3)

All portions of guys within both a vertical distance of 8 feet from the level of supply conductors of less than 35,500 volts and a radial distance of 6 feet from the surface of wood poles or structures shall not be grounded, through anchors or otherwise. Where necessary to avoid the grounding of such portions, guys shall be sectionalized by means of insulators installed at locations as specified in Rule 56.7.
NOTE: Revised March 29, 1966 by Decision No. 70489; August 9, 1966 by Decision No. 71094 and November 20, 1979 by Decision No. 91030.

D. GUYS EXPOSED TO 22,500 VOLTS OR MORE (see Rule 21.3-C for definition of "exposed" and Fig. 56-4)

Guys exposed to conductors of 22,500 volts or more shall not be sectionalized and shall be securely grounded (by means of ground wires, anchor guys, or attachments to securely grounded metal poles or structures).
Excepted EXCEPTED from the above requirements are:
(1) Guys, all or any portions thereof, which are required to be sectionalized in accordance with Rule 56.6-A because of proximity of wood poles and supply conductors of less than 22,500 volts or in accordance with Rule 56.6-B; and
(2) Guys which are sectionalized by wood strain insulators equipped with arcing horns and designed to provide impulse insulation for lightning conditions or, glass fiber noninterlocking strain insulators which are designed to provide impulse insulation for lightning conditions.

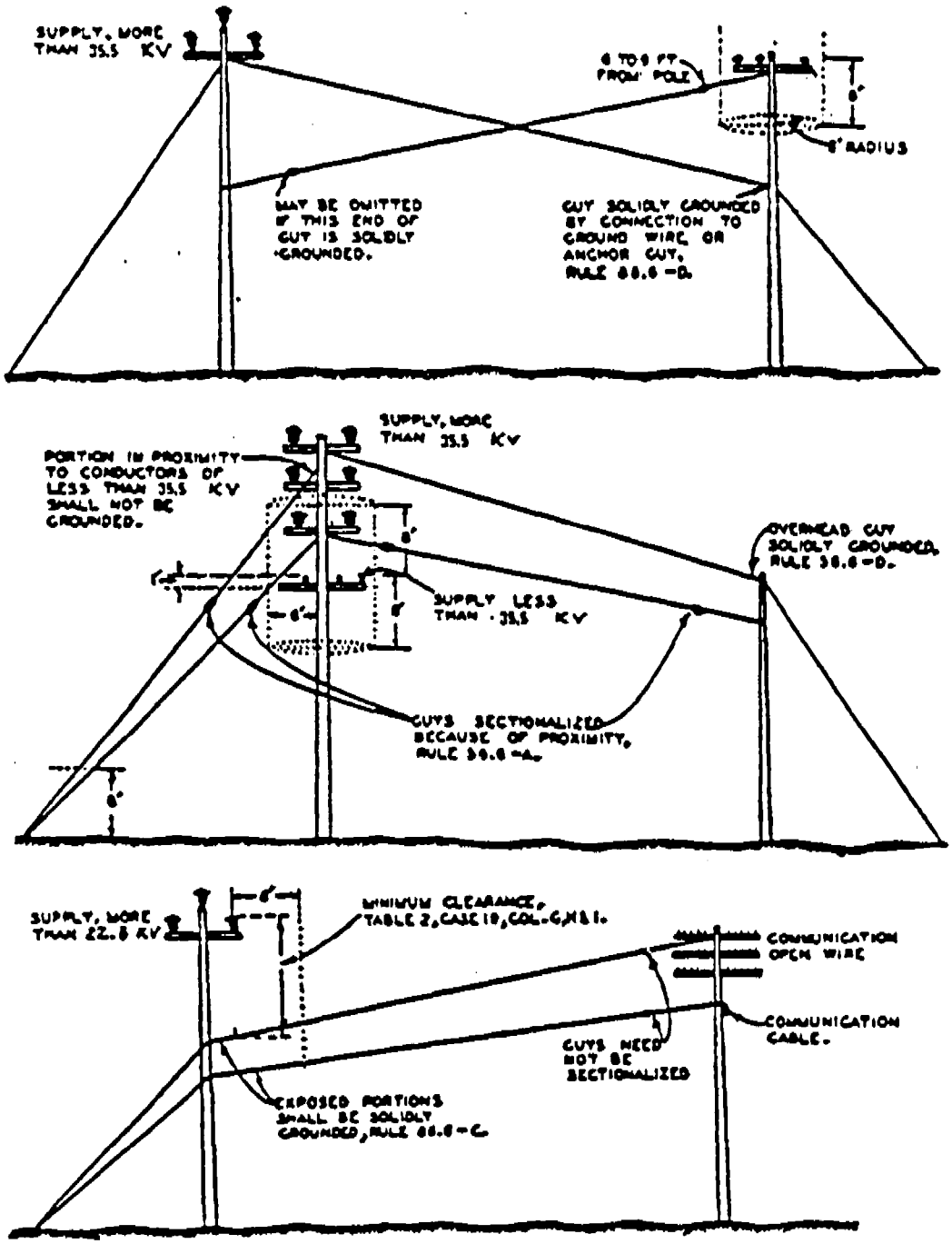
NOTE: Revised June 8, 1959 by Resolution No. E-1030; March 29, 1966 by Decision No. 70489; August 9, 1966 by Decision No. 71094 and January 6, 1968 by Decision No. 73455.



GUYS IN PROXIMITY TO WOOD POLES AND SUPPLY CONDUCTORS OF 35,000 VOLTS OR LESS

Rules 21.3-D, 56.6-A and 86.6

Fig. 56-3



GUYS EXPOSED TO SUPPLY CONDUCTORS OF MORE THAN 22,500 VOLTS OR IN PROXIMITY OF SUPPLY CONDUCTORS MORE THAN 35,000 VOLTS

Rules 21.3-C, 56.5-D and 56.6-C

Fig. 56-4

PROPOSED RULE CHANGE
(FINAL) *
RULE 56.6-A AND 56.6-D
REQUIREMENTS FOR SECTIONALIZING WITH INSULATORS

A. GUYS IN PROXIMITY TO SUPPLY CONDUCTORS OF LESS THAN 35,500 VOLTS (see Rule 21.3-D for definition of "proximity" and Fig. 56-3)

All portions of guys within both a vertical distance of 8 feet from the level of supply conductors of less than 35,500 volts and a radial distance of 6 feet from the surface of wood poles or structures shall not be grounded, through anchors or otherwise. Where necessary to avoid the grounding of such portions, guys shall be sectionalized by means of insulators installed at locations as specified in Rule 56.7.

NOTE: Revised March 29, 1966 by Decision No. 70489; August 9, 1966 by Decision No. 71094 and November 20, 1979 by Decision No. 91030.

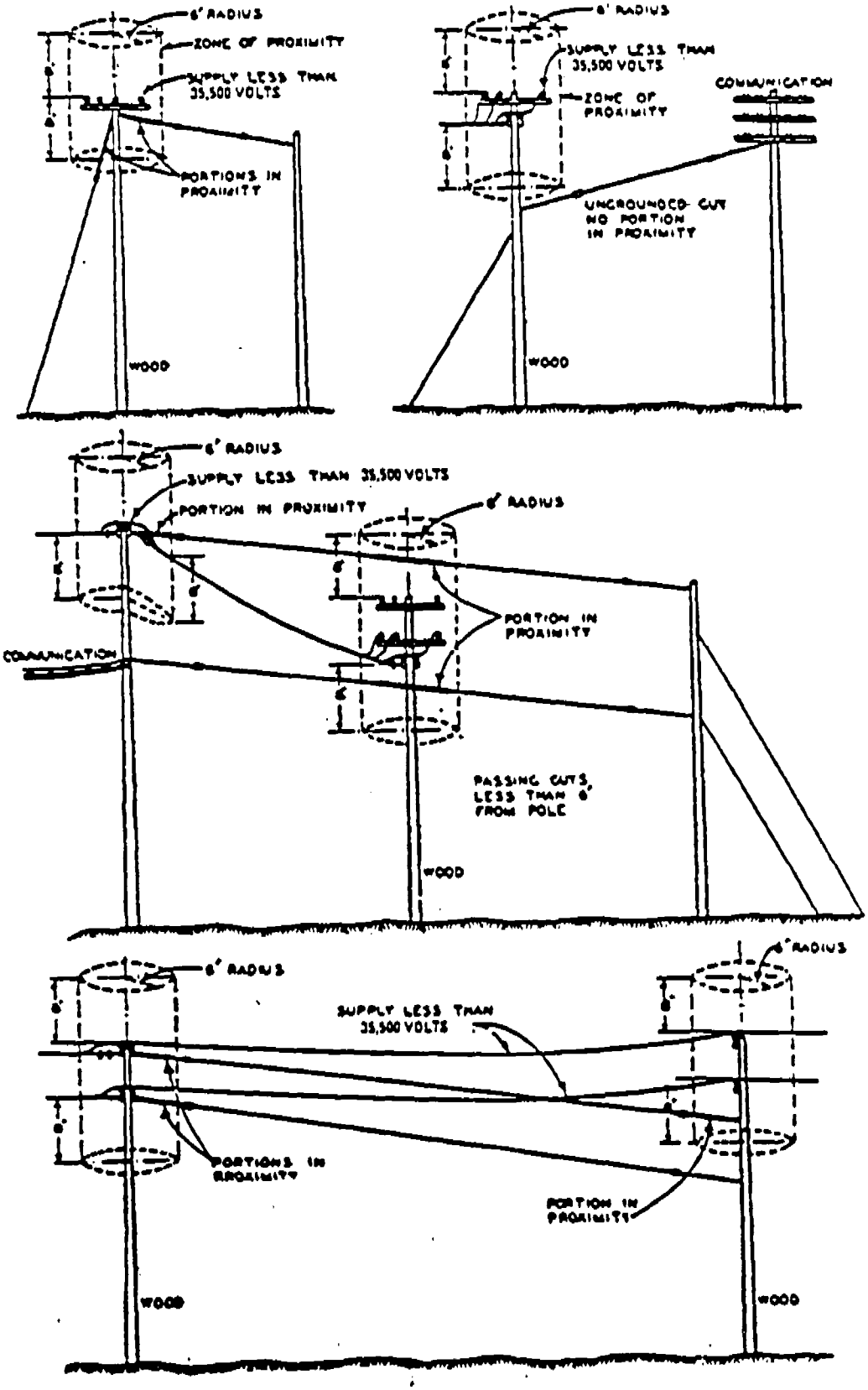
D. GUYS EXPOSED TO 22,500 VOLTS OR MORE (see Rule 21.3-C for definition of "exposed" and Fig. 56-4)

Guys exposed to conductors of 22,500 volts or more shall not be sectionalized and shall be securely grounded (by means of ground wires, anchor guys, or attachments to securely grounded metal poles or structures).
EXCEPTED from the above requirements are:

(1) Guys, all or any portions thereof, which are required to be sectionalized in accordance with Rule 56.6-A because of proximity of wood poles and supply conductors of less than 22,500 volts or in accordance with Rule 56.6-B; and

(2) Guys which are sectionalized by wood strain insulators equipped with arcing horns and designed to provide impulse insulation for lightning conditions or, glass fiber noninterlocking strain insulators which are designed to provide impulse insulation for lightning conditions.

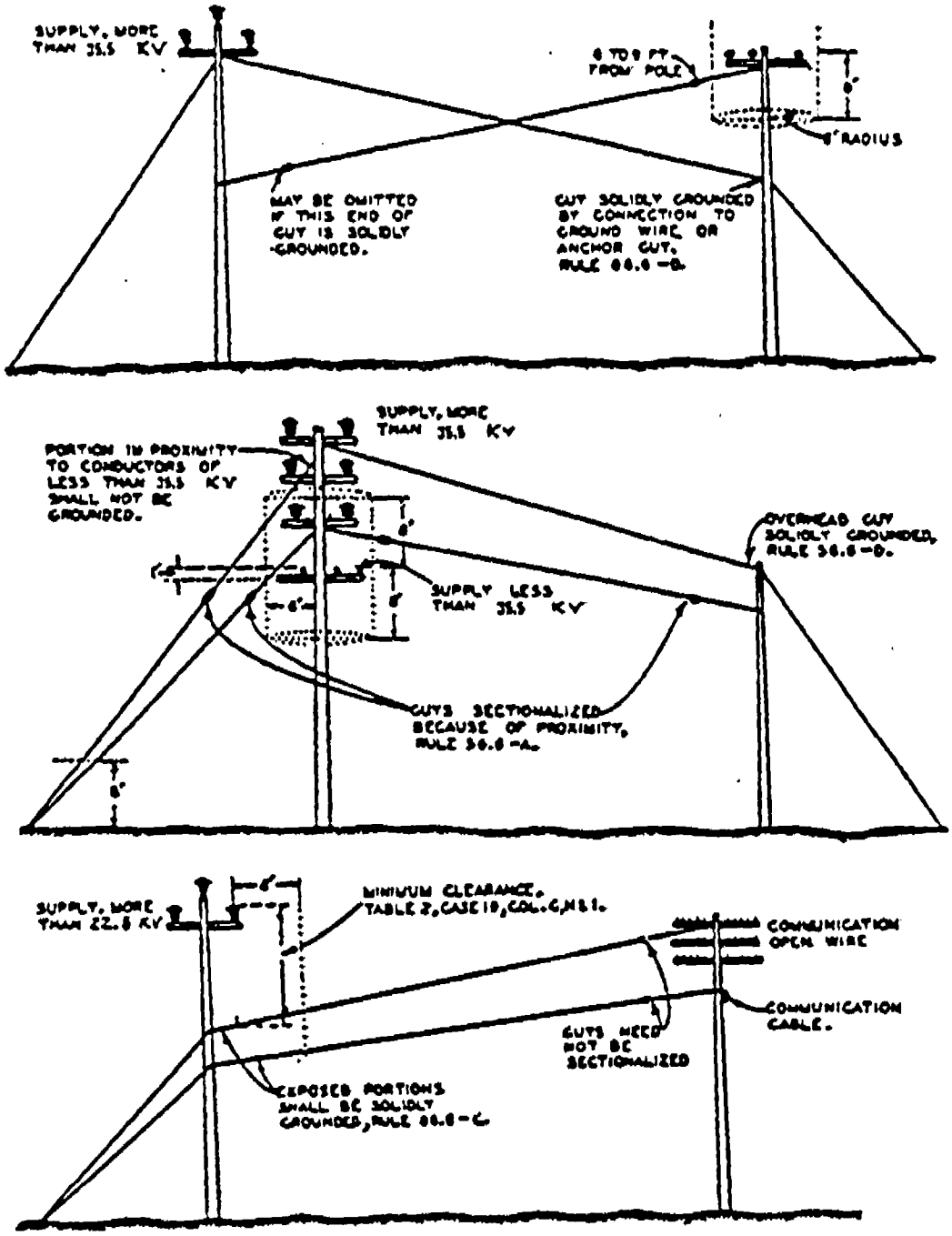
NOTE: Revised June 8, 1959 by Resolution No. E-1030; March 29, 1966 by Decision No. 70489; August 9, 1966 by Decision No. 71094 and January 6, 1968 by Decision No. 73455.



GUYS IN PROXIMITY TO WOOD POLES AND SUPPLY CONDUCTORS OF 35,000 VOLTS OR LESS

Rules 21.3-D, 56.6-A and 86.6

Fig. 56-3



GUYS EXPOSED TO SUPPLY CONDUCTORS OF MORE THAN 22,500 VOLTS OR IN PROXIMITY OF SUPPLY CONDUCTORS MORE THAN 35,000 VOLTS

Rules 21.3-C, 56.5-D and 86.6-C

Fig. 56-4

ITEM 11

- Rule 56.7-A
- Rule 56.7-B
- Rule 56.7-C

RATIONALE FOR PROPOSED RULE CHANGE
RULE 56.7-A
GUYS
LOCATION OF SECTIONALIZING INSULATORS
OVERHEAD GUYS

The proposed rule change is to simplify and clarify the present language. Also, relocate related figures from Appendix G to the text opposite the rule number and change to current numbering sequence (Fig. 56-5, Fig. 56-6 and Fig. 56-7).

EXISTING RULE
RULE 56.7-A
LOCATION OF SECTIONALIZING INSULATORS

A. OVERHEAD GUYS

Insulators installed in overhead guys to sectionalize such guys as required by any portion of Rule 56.6 shall be located at a distance of not less than 6 feet and not more than 9 feet, measured along the guys, from the points of attachment of the guys to poles, crossarms or structures (see App. G, Fig. 46). In such overhead guys which are less than 17 feet in length with no section grounded, insulation at one location, approximately equidistant from each support will be sufficient.

Overhead guys attached to wood poles, crossarms or structures and to grounded anchor guys or metal poles shall be sectionalized at not less than one location, 6 to 9 feet (measured along the guys) from the attachment at the wood pole, crossarm or structure (see App. G, Fig. 46).

Branched guys sometimes referred to as bridle guys which are attached at two or more positions to the same crossarm or pole line structure, and which are required under the provisions of Rule 56.6 to be sectionalized, shall be sectionalized by means of insulators in the main guy and all branches except one, so that no two branches of such a guy constitute a continuous metallic path between separate points of attachment to crossarms or structures (see App. G, Fig. 50). In conforming with these requirements, insulators in branches of guys should be placed as far as practicable from attachments at pole or crossarm but not more than 9 feet there-from.

All insulators in overhead guys shall be not less than 8 feet vertically above the ground.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 56.7-A
LOCATION OF SECTIONALIZING INSULATORS

A. OVERHEAD GUYS

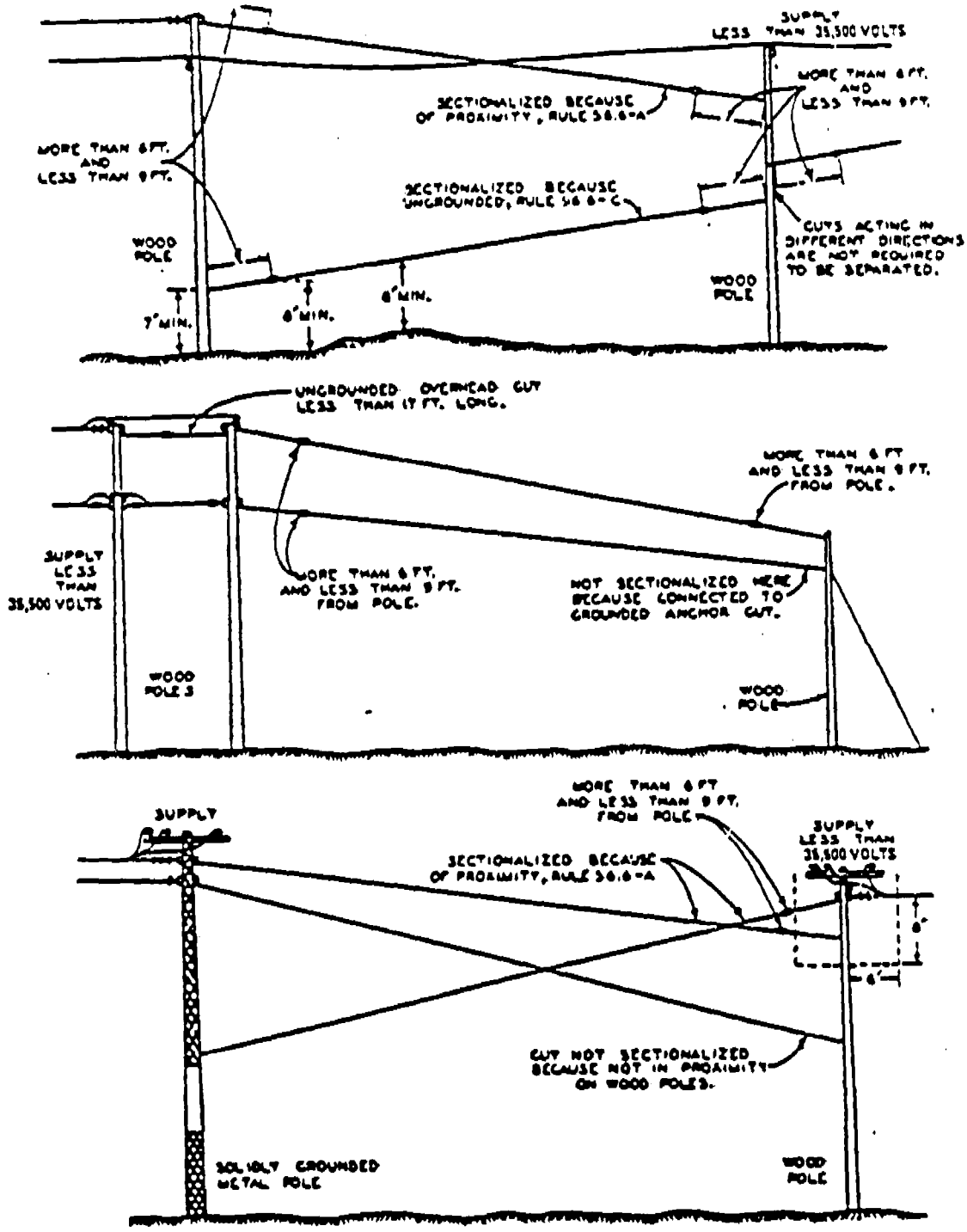
Insulators installed in overhead guys to sectionalize such guys as required by any portion of Rule 56.6 shall be located at a distance of not less than 6 feet and not more than 9 feet, measured along the guys, from the points of attachment of the guys to poles, crossarms or structures (see ~~App.-6,-Fig.-46~~ Fig. 56-5 and Fig. 56-6).

In such overhead guys which are less than 17 feet in length with no section grounded, insulation at one location, approximately equidistant from each support will be sufficient.

Overhead guys attached to wood poles, crossarms or structures and to grounded anchor guys or metal poles shall be sectionalized at not less than one location, 6 to 9 feet (measured along the guys) from the attachment at the wood pole, crossarm or structure (see ~~App.-6,-Fig.--46~~ Fig. 56-5 and Fig. 56-6).

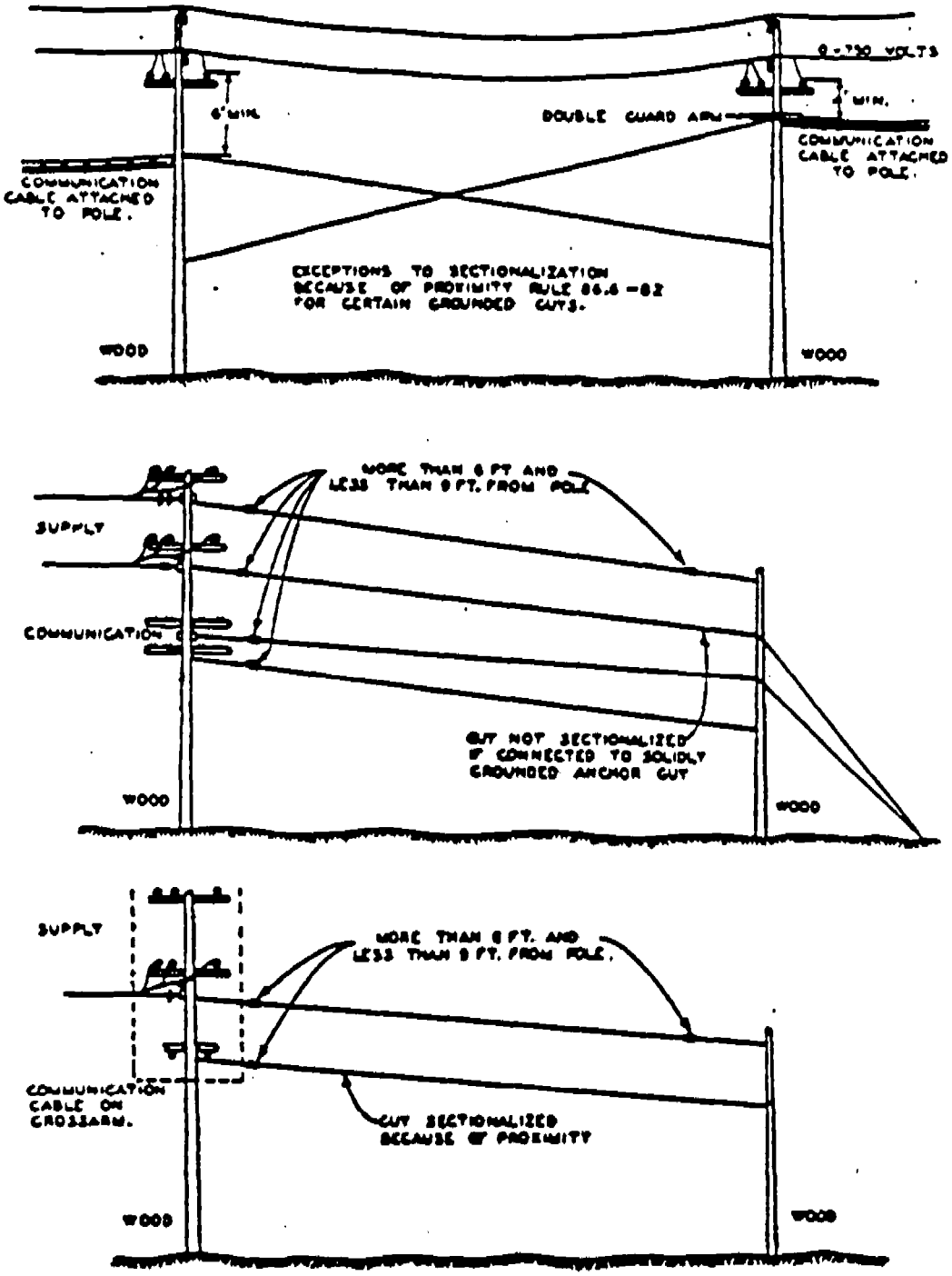
Branched guys ~~sometimes-referred-to-as~~ (bridle guys) which are attached at two or more positions to the same crossarm or pole line structure, and which are required under the provisions of Rule 56.6 to be sectionalized, shall be sectionalized by means of insulators in the main guy and all branches except one, so that no two branches of such a guy constitute a continuous metallic path between separate points of attachment to crossarms or structures (see ~~App.-6,-Fig.-50~~ Fig. 56-7). In conforming with these requirements, insulators in branches of guys should be placed as far as practicable from attachments at pole or crossarm but not more than 9 feet ~~there-from~~.

All insulators in overhead guys shall be ~~not-less-than~~ 8 feet or more vertically above the ground.



SECTIONALIZATION OF OVERHEAD GUYS
ON SUPPLY LINES
RULE 56.7-A

Fig. 56-5

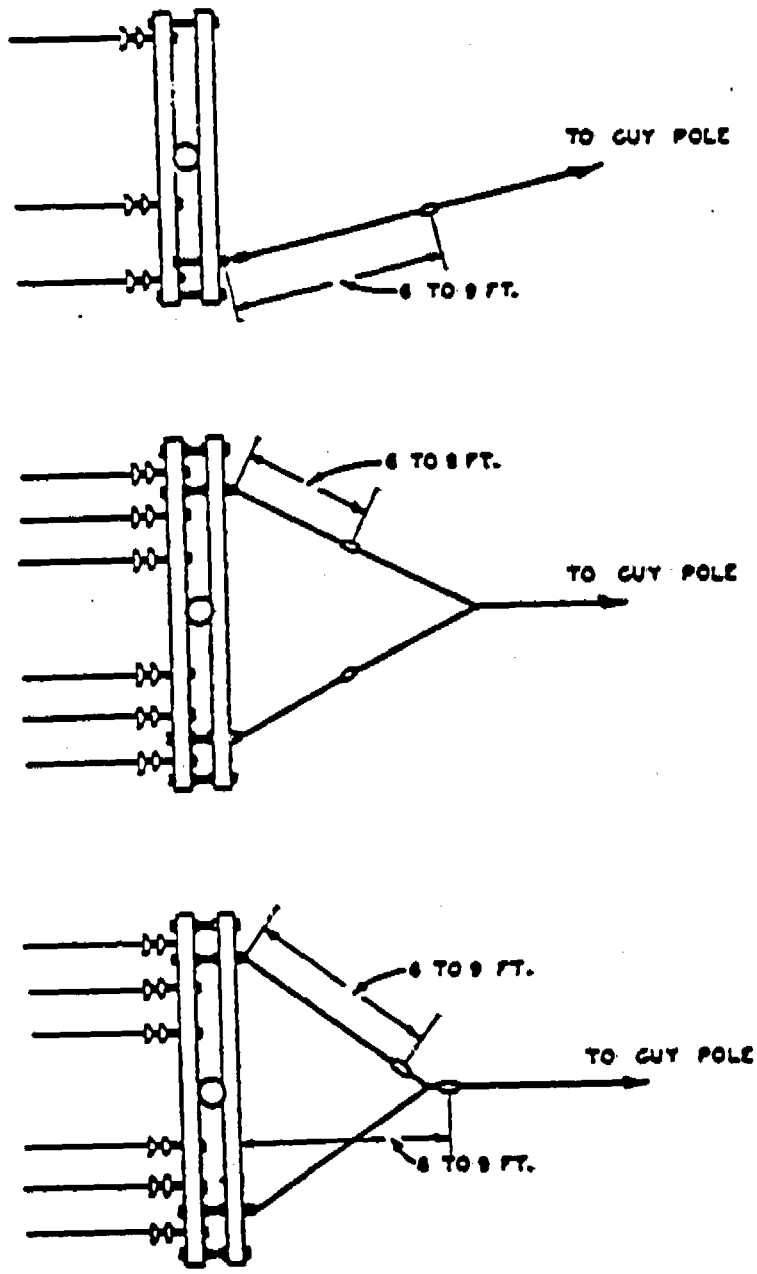


SECTIONALIZATION OF OVERHEAD GUYS

ON JOINTLY USED POLES

RULES 56.7-A AND 56.7-A

Fig. 56-6



SECTIONALIZATION OF
ARM GUYS AND BRANCHED GUYS

RULE 56.7-A

Fig. 56-7

PROPOSED RULE CHANGE
(FINAL) *
RULE 56.7-A
LOCATION OF SECTIONALIZING INSULATORS

A. OVERHEAD GUYS

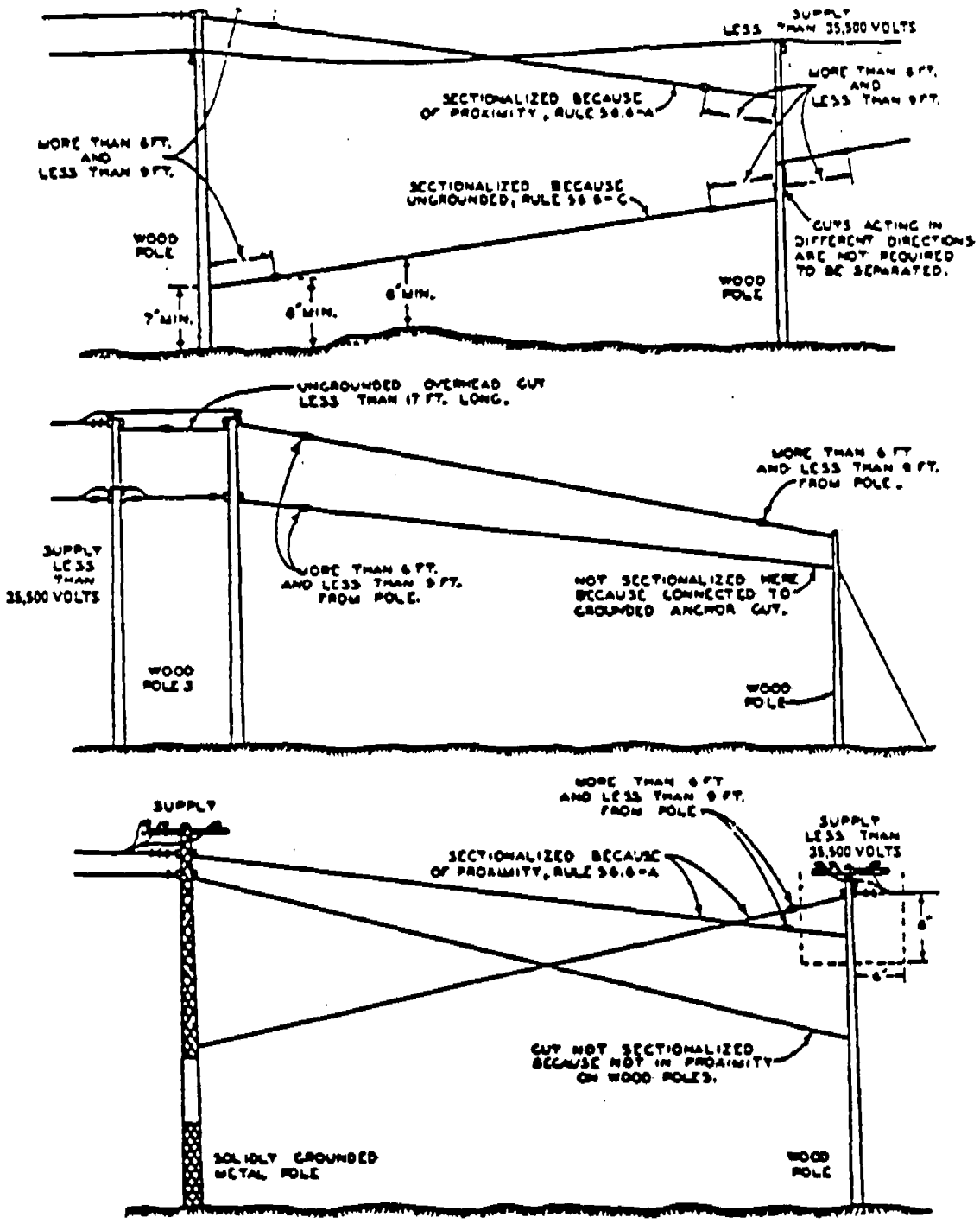
Insulators installed in overhead guys to sectionalize such guys as required by any portion of Rule 56.6 shall be located at a distance of not less than 6 feet and not more than 9 feet, measured along the guys, from the points of attachment of the guys to poles, crossarms or structures (see Fig. 56-5 and Fig. 56-6).

In such overhead guys which are less than 17 feet in length with no section grounded, insulation at one location, approximately equidistant from each support will be sufficient.

Overhead guys attached to wood poles, crossarms or structures and to grounded anchor guys or metal poles shall be sectionalized at not less than one location, 6 to 9 feet (measured along the guys) from the attachment at the wood pole, crossarm or structure (see Fig. 56-5 and Fig. 56-6).

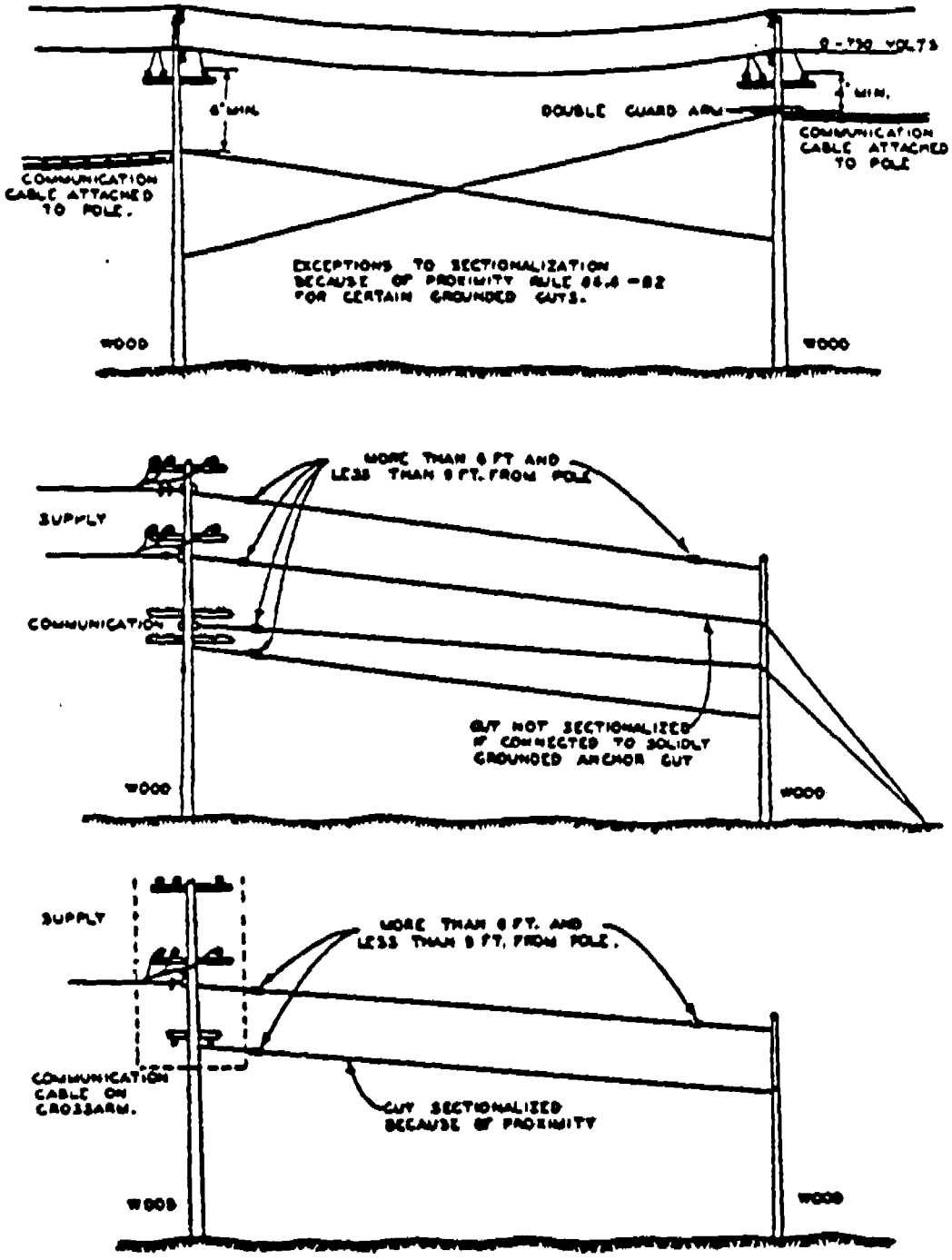
Branched guys (bridle guys) which are attached at two or more positions to the same crossarm or pole line structure, and which are required under the provisions of Rule 56.6 to be sectionalized, shall be sectionalized by means of insulators in the main guy and all branches except one, so that no two branches of such a guy constitute a continuous metallic path between separate points of attachment to crossarms or structures (see Fig. 56-7). In conforming with these requirements, insulators in branches of guys should be placed as far as practicable from attachments at pole or crossarm but not more than 9 feet there-from.

All insulators in overhead guys shall be 8 feet or more vertically above the ground.



SECTIONALIZATION OF OVERHEAD GUYS
ON SUPPLY LINES
RULE 56.7-A

Fig. 56-5

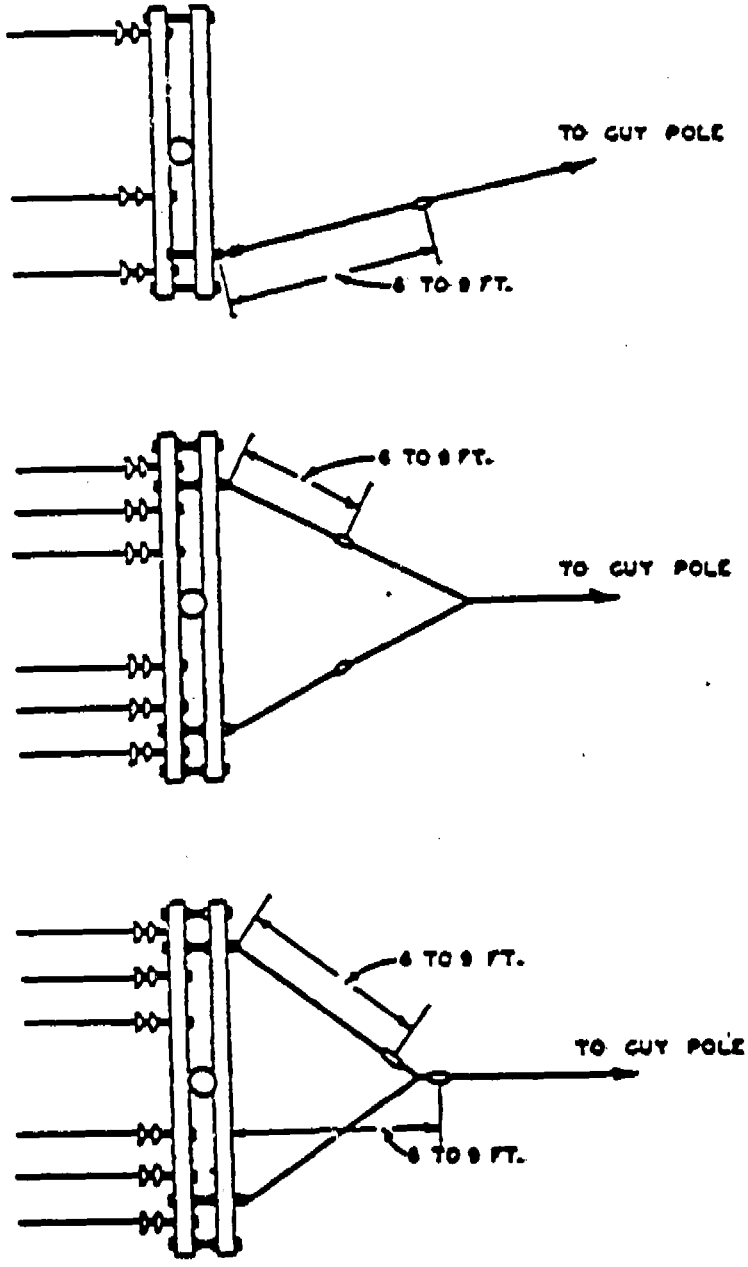


SECTIONALIZATION OF OVERHEAD GUYS

ON JOINTLY USED POLES

RULES 56.7-A AND 56.7-A

Fig. 56-6



SECTIONALIZATION OF
ARM GUYS AND BRANCHED GUYS

RULE 56.7-A

Fig. 56-7

RATIONALE FOR PROPOSED RULE CHANGE
RULE 56.7-B
GUYS
LOCATION OF SECTIONALIZING INSULATORS
ANCHOR GUYS

This proposed rule change simplifies and clarifies the present language. Changes include re-structuring, re-formatting and minor changes in syntax. Also, it is proposed to add related figures from Appendix G to the text opposite the rule number and change to current numbering sequence (Fig. 56-8 and Fig. 56-9). At this time it will also be necessary to leave the current App. G, Fig. 49 and Fig. 51 in the appendix because other rules in the order refer to these figures.

EXISTING RULE
RULE 56.7-B
LOCATION OF SECTIONALIZING INSULATORS

B. ANCHOR GUYS

An insulator shall be installed in each anchor guy which is required to be sectionalized by Rule 56.6-A or 56.6-B, so that such insulator is located not less than 8 feet above the ground and either 8 feet below the level of the lowest supply conductor or not less than 6 feet from surface of pole and not less than one foot below the level of the lowest supply conductor (see App. G, Fig. 49). These sectionalizing requirements for anchor guys can normally be met by insulation at one location; however, short guys or other conditions may require insulation at two locations, one location being not less than 8 feet above the ground and the other location either not less than 8 feet below the lowest supply conductor or not less than 6 feet horizontally from pole and not less than one foot below the level of the lowest supply conductor. In order to prevent trees, buildings, messengers, metal-sheathed cables or other similar objects from grounding portions of guys above guy insulators, it is suggested that anchor guys be sectionalized, where practicable, near the highest level permitted by this rule.

Ungrounded portions of anchor guys which pass through a level of communication conductors at positions other than between pole pin positions or outside of the outer pin position shall be sectionalized by insulators placed neither less than 6 inches nor more than 18 inches above the level of the communication conductors (see App. G, Fig. 49b).

Any anchor guy which enters the ground less than 8 feet below the lowest level of supply conductors on the pole or structure shall be treated as an overhead guy which is grounded by means of a grounded anchor guy or metal pole.

A grounded horizontal brace of a "sidewalk" guy shall in no case be less than 8 feet below the level of the lowest unprotected supply conductor on the same pole (see App. G, Fig. 51b).

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 56.7-B
LOCATION OF SECTIONALIZING INSULATORS

B. ANCHOR GUYS

An insulator shall be installed in each anchor guy which is required to be sectionalized by Rule 56.6-A or 56.6-B, so that such insulator is located ~~not less than 8 feet above the ground and either 8 feet below the level of the lowest supply conductor or not less than 6 feet from surface of pole and not less than one foot below the level of the lowest supply conductor (see App. 6, Fig. 49)~~ :

(1) 8 feet or more above the ground; and

(2) 8 feet or more below the level of the lowest supply conductor; or 6 feet or more from surface of pole and one foot or more below the level of the lowest supply conductor.

(see Fig. 56-8).

These sectionalizing requirements for anchor guys can normally be met by insulation at one location; however, short guys or other conditions may require insulation at two locations~~;~~:

(a) One location being ~~not less than~~ 8 feet or more above the ground; and

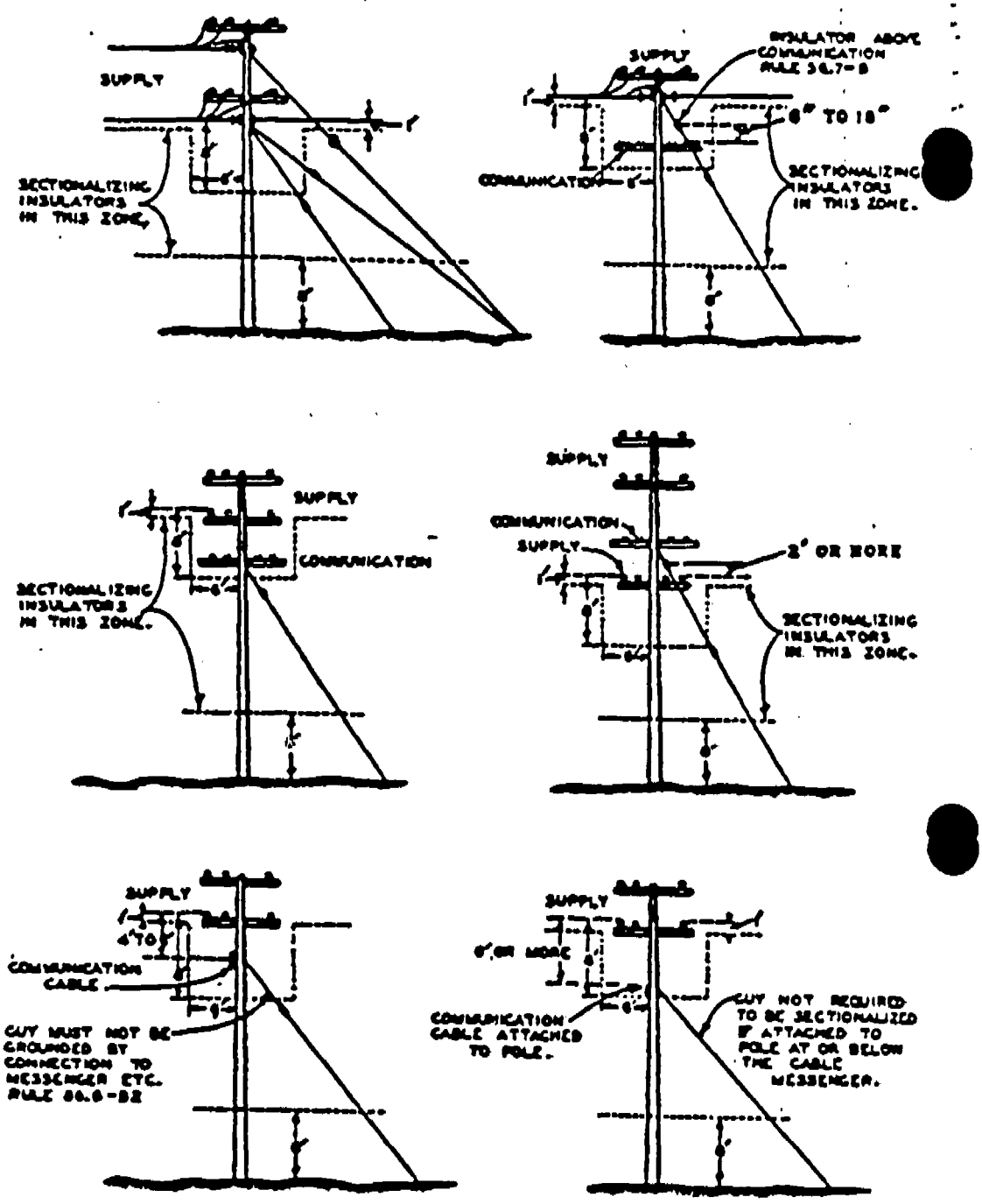
(b) The other location either ~~not less than~~ 8 feet or more below the lowest supply conductor; or ~~not less~~ than 6 feet or more horizontally from surface of pole and ~~not less than~~ one foot or more below the level of the lowest supply conductor.

In order to prevent trees, buildings, messengers, metal-sheathed cables or other similar objects from grounding portions of guys above guy insulators, it is suggested that anchor guys be sectionalized, where practicable, near the highest level permitted by this rule.

Ungrounded portions of anchor guys which pass through a level of communication conductors at positions other than between the pole and pole pin positions or outside of the outer pin position shall be sectionalized by insulators placed ~~neither less than 6 inches nor more than~~ between 6 and 18 inches above the level of the communication conductors (see ~~App. 6, Fig. 49b~~ Fig. 56-9).

Any anchor guy which enters the ground less than 8 feet below the lowest level of supply conductors on the pole or structure shall be treated as an overhead guy which is grounded by means of a grounded anchor guy or metal pole.

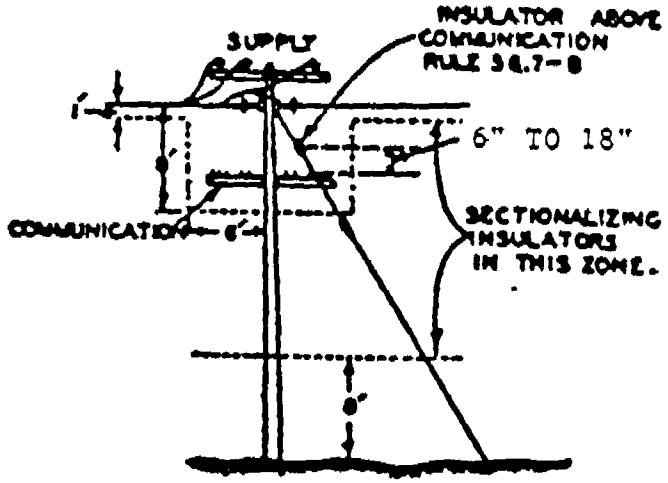
A grounded horizontal brace of a "sidewalk" guy shall in no case be less than 8 feet below the level of the lowest unprotected supply conductor on the same pole (see ~~App. 6, Fig. 51b~~ Fig 56-9).



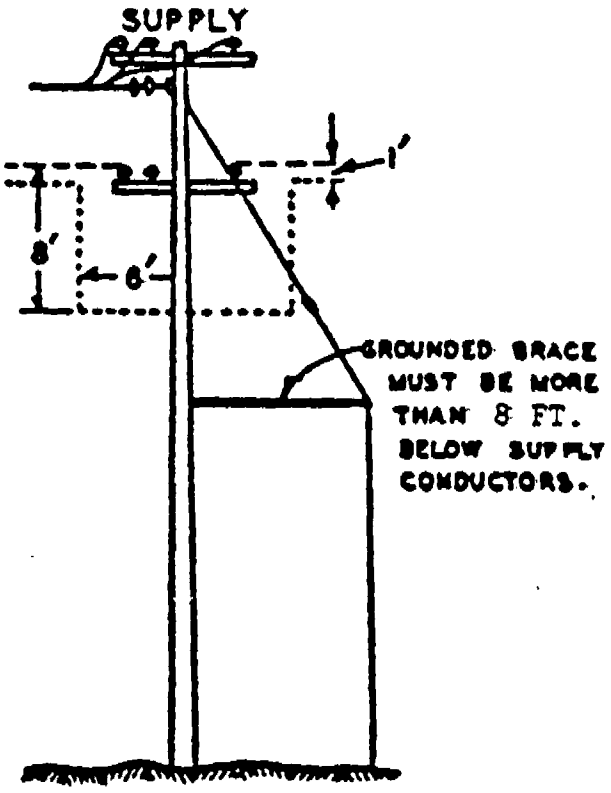
SECTIONALIZATION OF ANCHOR GUYS

Rule 56.7-B

Fig. 56-8



Rule 56.7-B



Rule 56.7-B

Fig. 56-9

PROPOSED RULE CHANGE
(FINAL) *
RULE 56.7-B
LOCATION OF SECTIONALIZING INSULATORS

B. ANCHOR GUYS

An insulator shall be installed in each anchor guy which is required to be sectionalized by Rule 56.6-A or 56.6-B, so that such insulator is located:

(1) 8 feet or more above the ground; and
(2) 8 feet or more below the level of the lowest supply conductor; or 6 feet or more from surface of pole and one foot or more below the level of the lowest supply conductor.

(see Fig. 56-8)

These sectionalizing requirements for anchor guys can normally be met by insulation at one location; however, short guys or other conditions may require insulation at two locations:

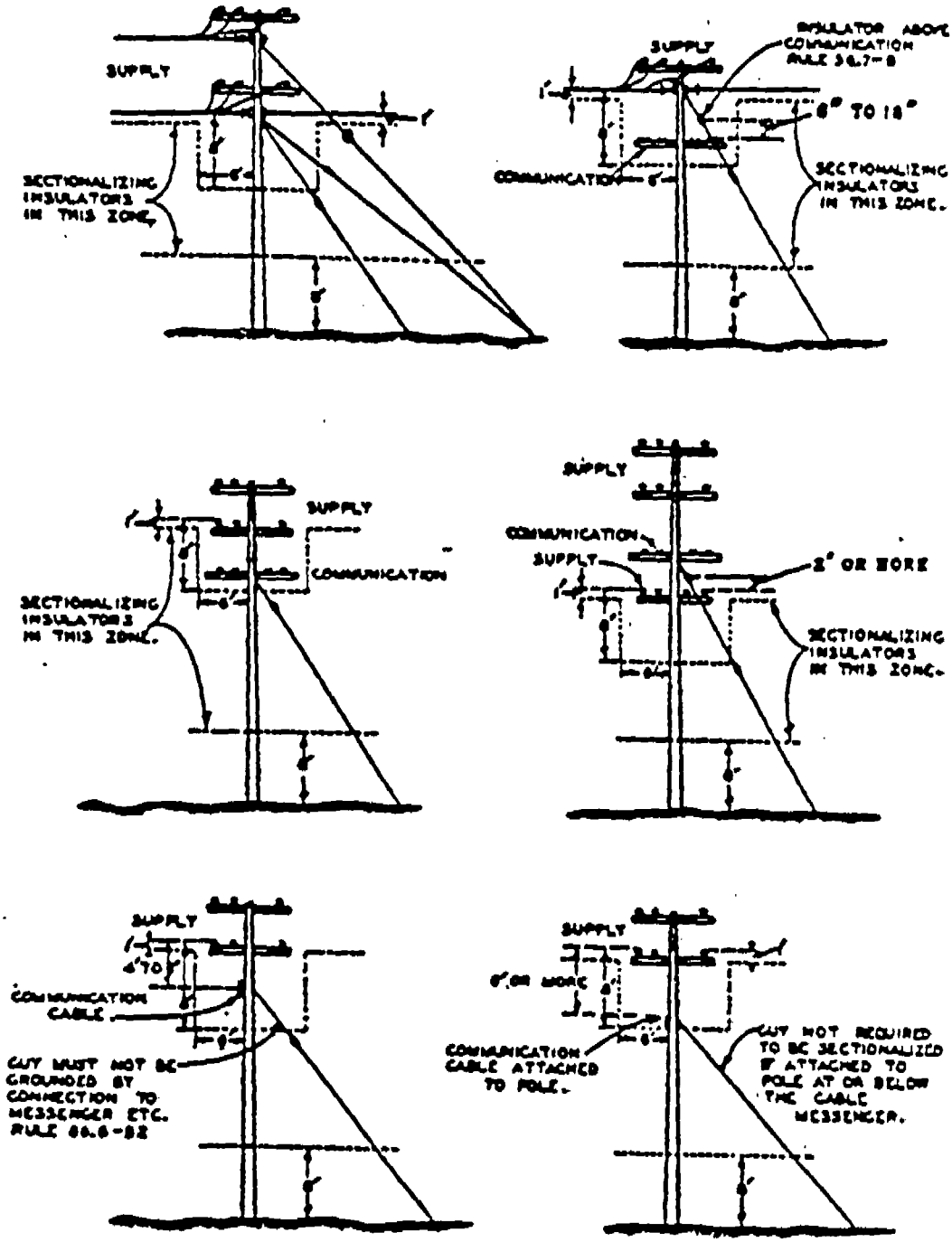
(a) One location being 8 feet or more above the ground; and
(b) The other location either 8 feet or more below the lowest supply conductor; or 6 feet or more horizontally from surface of pole and one foot or more below the level of the lowest supply conductor.

In order to prevent trees, buildings, messengers, metal-sheathed cables or other similar objects from grounding portions of guys above guy insulators, it is suggested that anchor guys be sectionalized, where practicable, near the highest level permitted by this rule.

Ungrounded portions of anchor guys which pass through a level of communication conductors at positions other than between the pole and pole pin positions or outside of the outer pin position shall be sectionalized by insulators placed between 6 and 18 inches above the level of the communication conductors (see Fig. 56-9).

Any anchor guy which enters the ground less than 8 feet below the lowest level of supply conductors on the pole or structure shall be treated as an overhead guy which is grounded by means of a grounded anchor guy or metal pole.

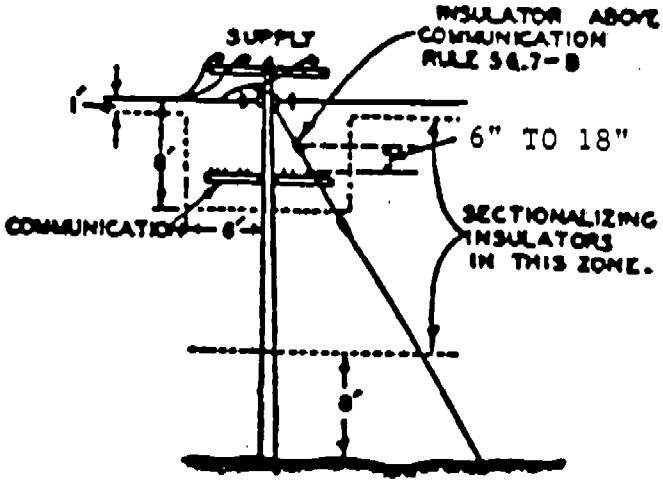
A grounded horizontal brace of a "sidewalk" guy shall in no case be less than 8 feet below the level of the lowest unprotected supply conductor on the same pole (see Fig 56-9).



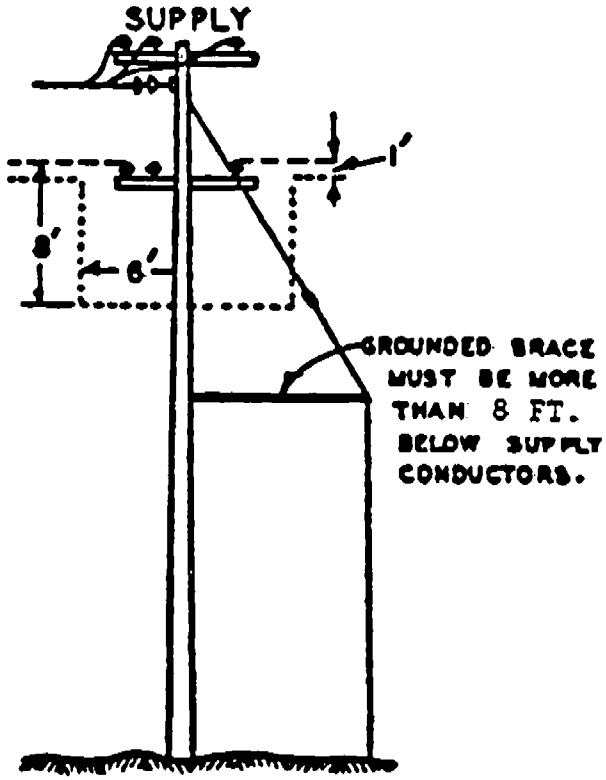
SECTIONALIZATION OF ANCHOR GUYS

Rule 56.7-B

Fig. 56-8



Rule 56.7-B



Rule 56.7-B

Fig. 56-9

RATIONALE FOR PROPOSED RULE CHANGE
RULE 56.7-C
GUYS
LOCATION OF SECTIONALIZING INSULATORS
TRUSS GUYS

The proposed rule change is to simplify and clarify the present language with minor changes in syntax. Also, relocate related figure for Appendix G to the text opposite the rule number and change to current numbering sequence (Fig. 56-10).

EXISTING RULE
RULE 56.7-C
LOCATION OF SECTIONALIZING INSULATORS

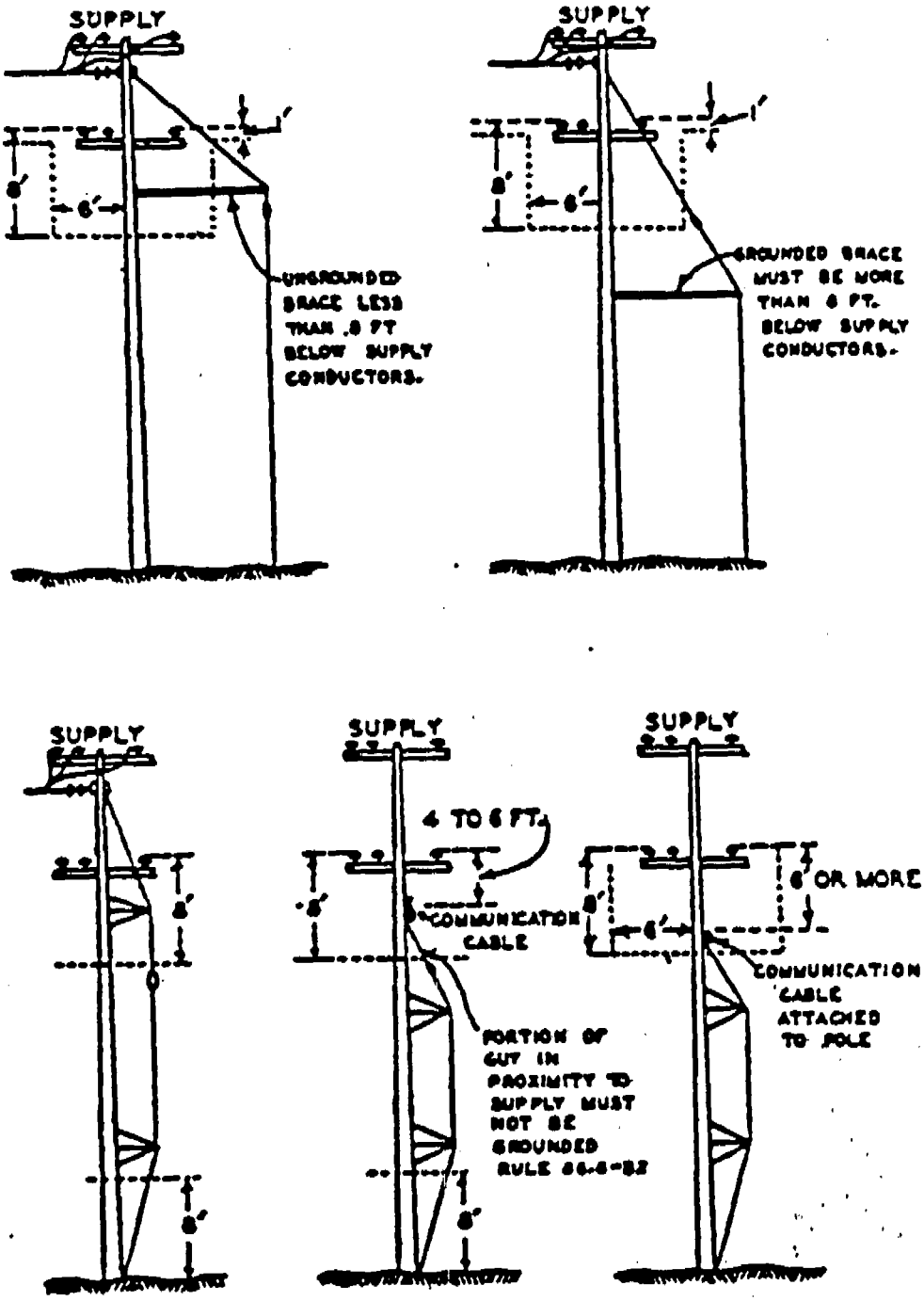
C. TRUSS GUYS

An insulator shall be installed in each truss guy which is required to be sectionalized by Rule 56.6-A, so that such insulator is located not less than 8 feet above the ground and not less than 8 feet below the level of the lowest supply conductor passing within 8 feet of the guy (see App. G, Fig. 51). These requirements can normally be met by insulation at one position; however, in certain unusual conditions the two 8-foot distances may overlap, in which case insulation will be necessary at two positions.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 56.7-C
LOCATION OF SECTIONALIZING INSULATORS

C. TRUSS GUYS

An insulator shall be installed in each truss guy which is required to be sectionalized by Rule 56.6-A, so that such insulator is located ~~not less than 8 feet above the ground and not less than 8 feet below~~ 8 feet or more above the ground and 8 feet or more below the level of the lowest supply conductor passing within 8 feet of the guy (~~see App. 6, Fig. 51~~ Fig. 56-10). These requirements can normally be met by insulation at one position; however, in certain unusual conditions the two 8-foot distances may overlap, in which case insulation will be necessary at two positions.



SECTIONALIZATION OF SIDEWALK GUYS AND TRUSS GUYS

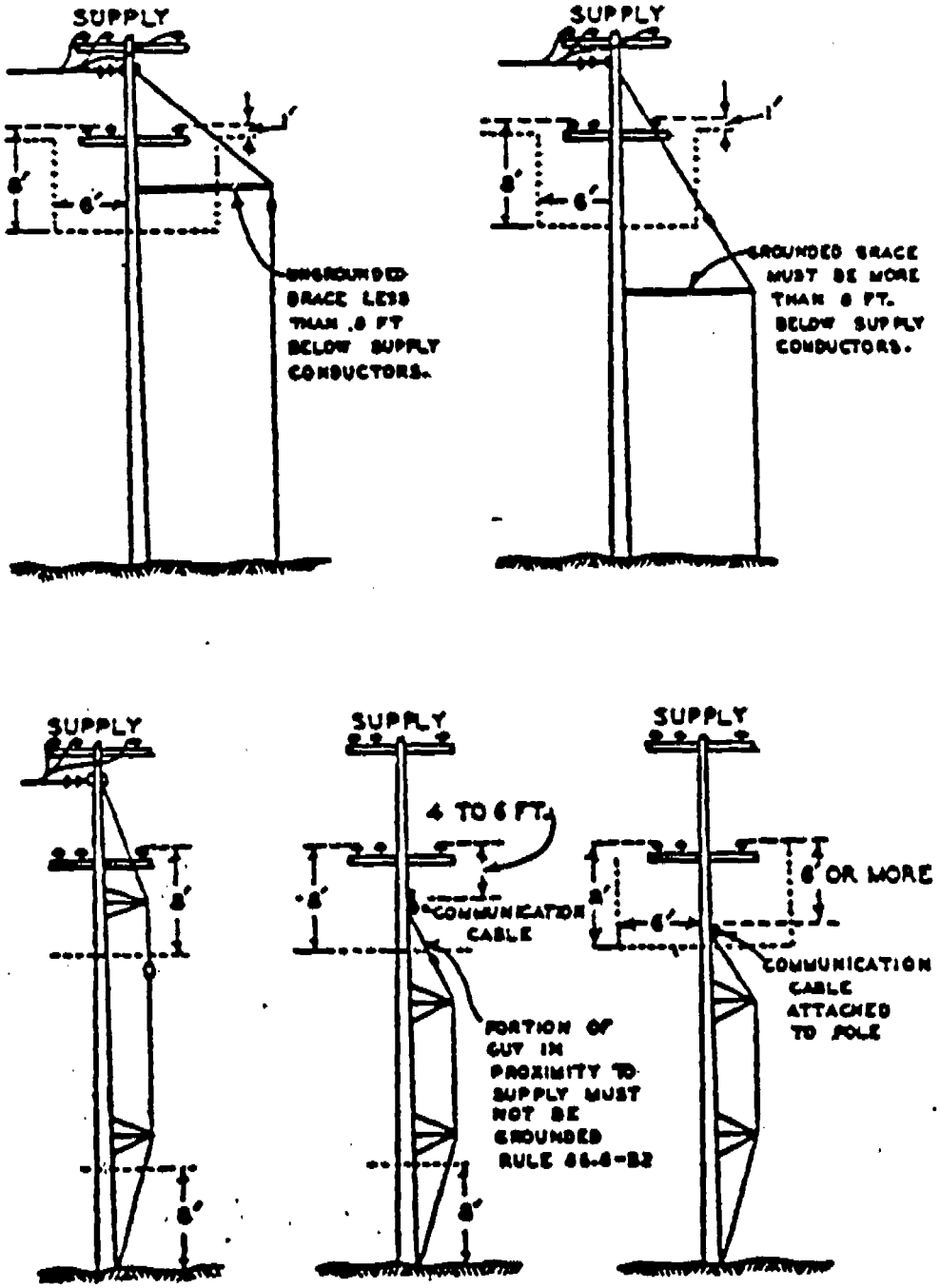
Rules 56.7-B and 56.7-C

Fig. 56-10

PROPOSED RULE CHANGE
(FINAL) *
RULE 56.7-C
LOCATION OF SECTIONALIZING INSULATORS

C. TRUSS GUYS

An insulator shall be installed in each truss guy which is required to be sectionalized by Rule 56.6-A, so that such insulator is located 8 feet or more above the ground and 8 feet or more below the level of the lowest supply conductor passing within 8 feet of the guy (see Fig. 56-10). These requirements can normally be met by insulation at one position; however, in certain unusual conditions the two 8-foot distances may overlap, in which case insulation will be necessary at two positions.



SECTIONALIZATION OF SIDEWALK GUYS AND TRUSS GUYS

Rules 56.7-B and 56.7-C

Fig. 56-10

ITEM 12

- Rule 56.8-A
- Rule 56.8-C

RATIONALE FOR PROPOSED RULE CHANGE
RULE 56.8-A
GUYS
MATERIAL

The proposed rule change will update authorized guy insulator material to include fiberglass (guy strain polymer insulators).

EXISTING RULE
RULE 56.8-A
GUYS

A. MATERIAL

Insulators used in guys on supply lines shall be porcelain, glass or other suitable material.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 56.8-A
GUYS

A. MATERIAL

Insulators used in guys on supply lines shall be porcelain, glass, <u>fiberglass</u> or other suitable material.

PROPOSED RULE CHANGE
(FINAL) *
RULE 56.8-A
GUYS

A. MATERIAL

Insulators used in guys on supply lines shall be porcelain, glass, fiberglass or other suitable material.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 56.8-C
GUY INSULATORS
VOLTAGE REQUIREMENTS

This proposed rule change will bring references to testing standards up to date by referring to the current American National Standard Test Methods for Electrical Power Insulators (ANSI C29.1).

EXISTING RULE
RULE 56.8-C
GUY INSULATORS

C. VOLTAGE REQUIREMENTS

Insulators used in guys on supply lines shall be so designed that their dry flashover voltage is not more than 75% of the puncture voltage at operating frequencies.

Insulators used in guys on supply lines shall have a dry flashover voltage not less than as specified in Table 13 when tested in accordance with the Standards (No. 41, March 1930) of the American Institute of Electrical Engineers under the maximum mechanical loadings specified by this Order for the guy construction involved.

(STRIKE OUT AND UNDERLINED)

RULE 56-8-C

GUY INSULATORS

C. VOLTAGE REQUIREMENTS

Insulators used in guys on supply lines shall be so designed that their dry flashover voltage is not more than 75% of the puncture voltage at operating frequencies.

Insulators used in guys on supply lines shall have a dry flashover voltage not less than as specified in Table 13 when tested in accordance with the ~~Standards No. 41 March 1930 of the American Institute of Electrical Engineers~~ <u>American National Standard (ANSI C29.1-1982)</u> under the maximum mechanical loadings specified by this Order for the guy construction involved.

C. VOLTAGE REQUIREMENTS

Insulators used in guys on supply lines shall be so designed that their dry flashover voltage is not more than 75% of the puncture voltage at operating frequencies.

Insulators used in guys on supply lines shall have a dry flashover voltage not less than as specified in Table 13 when tested in accordance with the American National Standard (ANSI C.29.1-1982) under the maximum mechanical loadings specified by this Order for the guy construction involved.

CORRESPONDING RULE TO CHANGE
GUYS
PROPOSED RULE CHANGE

RULE 38

TABLE 2 (Page 52 - 55)

Case No. 18, Column C - Delete (bb)

Case No. 19, Column C - Add (bb)

(Page 55)
References to Rules Modifying Minimum Clearances in Table 2

Existing Reference (bb):

(bb) May be reduced for guys and communication conductors supported on the same pole:

1. Supply	56.4-C	154
2. Communication	86.4-C	240

Proposed Change to Reference (bb):

(bb) May be reduced for guys and communication conductors supported on the same pole:

1. Supply	56.4-C4	155
2. Communication	86.4-C	240

RATIONALE FOR CHANGE

RULE 38

There are no exceptions to Table 2, Case 18, Column C in Rule 56.4-C Page 154, as referenced in (bb).

There are exceptions to Table 2, Case 19, Column C in Rule 56.4-C4 Page 155 as referenced in (bb).

ITEM 13

- Rule 57.4-A
- Rule 57.4-B2
- Rule 57.4-F
- Rule 57.4-G

RATIONALE FOR PROPOSED RULE CHANGE
RULE 57.4-A
MESSENGERS AND INSULATED CABLES
CLEARANCES - ABOVE GROUND

The proposed rule change provides specific related rules to reference for applicable clearance requirements and clarifies the intent of the existing rule.

EXISTING RULE

Rule 57, MESSENGERS AND INSULATED CABLES
Rule 57.4, Clearances

Rule 57.4-A

A. ABOVE GROUND (see Rule 54.4-A)

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

Rule 57.4-A

A. ABOVE GROUND ~~(see Rule 54.4-A)~~

(1) Messengers and Insulated Cables: The basic clearances specified in Rule 37, Table 1 for conductors, as modified by provisions of Rule 54.4-A, are applicable to messengers and insulated cables (see Rule 57.8).

(2) Grounded and Bonded Messengers and Insulated Cables: The basic clearances specified in Rule 37, Table 1, Column D, are applicable to grounded cables having metallic sheaths, and to effectively grounded messengers (see Rule 57.8).

PROPOSED RULE CHANGE
(FINAL)

Rule 57.4-A

A. ABOVE GROUND

(1) **Messengers and Insulated Cables:** The basic clearances specified in Rule 37, Table 1 for conductors, as modified by provisions of Rule 54.4-A, are applicable to messengers and insulated cables (see Rule 57.8).

(2) **Grounded and Bonded Messengers and Insulated Cables:** The basic clearances specified in Rule 37, Table 1, Column D, are applicable to grounded cables having metallic sheaths, and to effectively grounded messengers (see Rule 57.8).

RATIONALE FOR PROPOSED RULE CHANGE
RULE 57.4-B2
MESSENGERS AND INSULATED CABLES
CLEARANCES - ABOVE RAILWAYS AND TROLLEY LINES

The proposed rule change is to simplify and clarify the present language. The addition of a statement that will permit the use of modern suitable material in place of wood. The suitable material must meet the same electrical and mechanical requirements of the existing rule.

EXISTING RULE

Rule 57.4-B Clearances, ABOVE RAILWAYS AND TROLLEY LINES

Rule 57.4-B2

(2) Operated by Overhead Trolley: The clearances specified in Table 1, Case 2, Columns A and D are based upon a maximum trolley pole throw of 26 feet.

Messengers, and cables, which are bonded and grounded as specified in Rule 57.8, may have clearances above the rails or running surfaces used by trolley cars or coaches less than the distance specified in Table 1, Case 2, Columns A and D for trolley-throw clearance, provided the messengers and cables are not less than 4 feet above the trolley contact conductor and are encased in wood boxing or moulding 7/8 inch or more in thickness for distances of at least 2 feet horizontally from the vertical plane through each trolley contact conductor.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

Rule 57.4-B2

(2) Operated by Overhead Trolley: The clearances specified in Table 1, Case 2, Columns A and D, 26 feet and 27 feet respectively, are based upon a maximum trolley pole throw of 26 feet, the usual maximum height of a free trolley pole above the top of rails or surface of streets used by trolley cars or coaches.

EXCEPTION: Messengers, and cables, which are bonded and grounded as specified in Rule 57.8, may have clearances above the rails or running surfaces of streets used by trolley cars or coaches less than the distance specified in Table 1, Case 2, Columns A and D for trolley-throw clearance, provided the messengers and cables are not less than 4 feet above the trolley contact conductor and are encased in wood boxing or moulding with a minimum thickness of 7/8 inch ~~or more in thickness~~ (or other suitable material having the same minimum electrical insulating qualities and mechanical strength) for distances of at least 2 feet horizontally from the vertical plane through each trolley contact conductor.

PROPOSED RULE CHANGE
(FINAL) *

Rule 57.4-B2

(2) **Operated by Overhead Trolley:** The clearances specified in Table 1, Case 2, Columns A and D, 26 feet and 27 feet respectively, are based upon a maximum trolley pole throw of 26 feet, the usual maximum height of a free trolley pole above the top of rails or surface of streets used by trolley cars or coaches.

EXCEPTION: Messengers, and cables, which are bonded and grounded as specified in Rule 57.8, may have clearances above the rails or surface of streets used by trolley cars or coaches less than the distance specified in Table 1, Case 2, Columns A and D for trolley-throw clearance, provided the messengers and cables are not less than 4 feet above the trolley contact conductor and are encased in wood boxing or moulding with a minimum thickness of 7/8 inch (or other suitable material having the same minimum electrical insulating qualities and mechanical strength) for distances of at least 2 feet horizontally from the vertical plane through each trolley contact conductor.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 57.4-F
MESSENGERS AND INSULATED CABLES
CLEARANCES - FROM POLES, CROSSARMS AND OTHER CONDUCTORS

The proposed rule change is to simplify and clarify the present language. Changes include re-structuring, re-formatting and minor changes in syntax. Also, appropriate Figures from Appendix "G" will be brought forward and inserted into the text of the rule.

EXISTING RULE

Rule 57.4 Clearances

Rule 57.4-F

F. FROM POLES, CROSSARMS AND OTHER CONDUCTORS

Messengers, and metal sheathed cables, which are bonded and grounded as specified in Rule 57.8 shall have clearances not less than the minimum clearances required for conductors of 0-750 volts with all of the following provisions being applicable:

Such grounded messengers and cables may be attached to the surfaces of poles or wood crossarms at less than the clearance specified in Table 1, Column D, Cases 8 and 9. When attached to pole or wood crossarm at less than 15 inches from center line of pole such grounded messenger or cable shall be not less than 4 feet vertically above or 6 feet vertically below any unprotected supply conductor except that where a guard arm (or arms) is placed above messenger and cable as specified in Rule 57.7, the clearance of 6 feet may be reduced to not less than 4 feet below unprotected conductors of 0-750 volts (see App. G, Fig. 53);

Such grounded messenger and cable when supported on the same crossarm with unprotected conductors in excess of 750 volts shall be placed on the side of pole opposite the unprotected conductors (see App. G, Fig. 54);

Such grounded messenger and cable when supported on the same arm with unprotected conductors of 0-750 volts, shall be placed at not less than pin spacing (Table 2, Case 15, Column D) beyond the outermost unprotected conductor on the same side of pole (see App. G, Fig. 54);

The clearances required in this Rule 57.4-F between a cable and unprotected conductors shall not be held to apply between a grounded cable (and its messenger) and unprotected conductors of the same circuit on poles where unprotected conductors enter (or leave) a cable. On such poles no grounded section of messenger or cable shall be less than 15 inches from surface of pole; and

Where two or more cables are attached to the surface of the same wood pole in accordance with the provisions of this Rule 57.4-F, they shall be placed on the same side of pole when their vertical separation is less than 8 feet but in no case shall the vertical separation be less than 1 foot.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

Rule 57.4-F

F. FROM POLES, CROSSARMS AND OTHER CONDUCTORS

Messengers, and metal sheathed cables, which are bonded and grounded as specified in Rule 57.8 shall have clearances not less than the minimum clearances required for conductors of 0-750 volts with all of the following provisions being applicable:

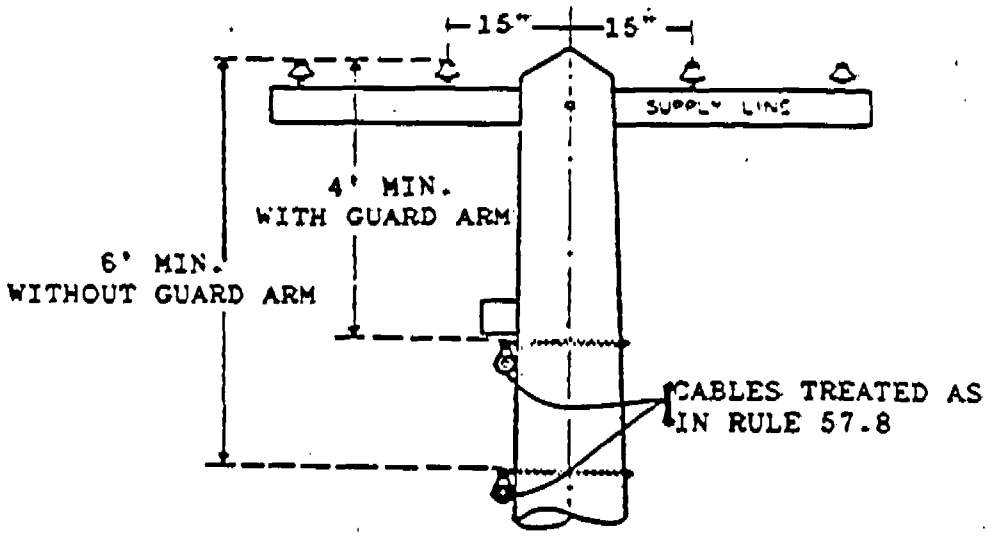
(1) Attached to Surfaces of Poles and Crossarms: Such grounded messengers and cables may be attached to the surfaces of poles or wood crossarms at less than the clearance specified in Table 1, Column D, Cases 8 and 9. When attached to pole or wood crossarm at less than 15 inches from center line of pole such grounded messenger or cable shall ~~be not~~ not be less than 4 feet vertically above or 6 feet vertically below any unprotected supply conductor except that where a guard arm (or arms) is placed above messenger and cable as specified in Rule 57.7, the clearance of 6 feet may be reduced to not less than 4 feet below unprotected conductors of 0-750 volts ~~(see App. 6, Fig. 53)~~ (see Fig. 57-1 A).

(2) Supported on Same Crossarm Above 750 Volts: Such grounded messenger and cable when supported on the same crossarm with unprotected conductors in excess of 750 volts shall be placed on the side of pole opposite the unprotected conductors ~~(see App. 6, Fig. 54)~~ (see Fig. 57-1 B).

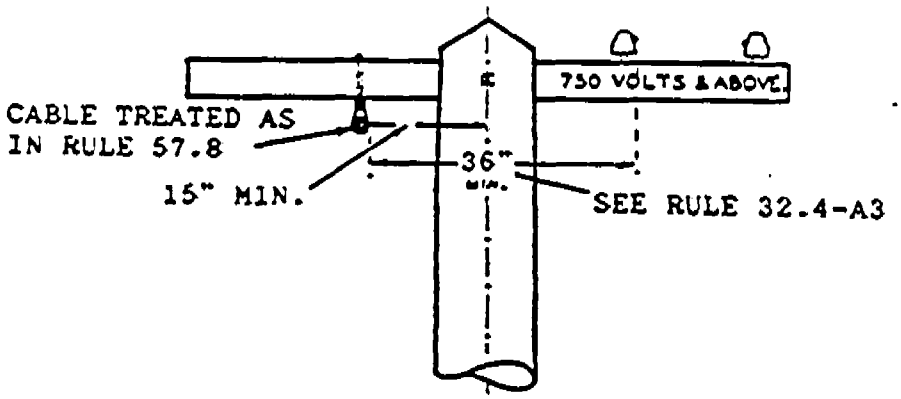
(3) Supported on Same Crossarm 0-750 Volts: Such grounded messenger and cable when supported on the same ~~arm~~ crossarm with unprotected conductors of 0-750 volts, shall be placed at not less than pin spacing (Table 2, Case 15, Column D) beyond the outermost unprotected conductor on the same side of pole ~~(see App. 6, Fig. 54)~~ (see Fig. 57-1 C).

(4) Between Cable and Unprotected Conductors: The clearances ~~required in this Rule 57.4-F~~ between a cable and unprotected conductors shall not be held to apply between a grounded cable (and its messenger) and unprotected conductors of the same circuit on poles where unprotected conductors enter (or leave) a cable. On such poles no grounded section of messenger or cable shall be less than 15 inches from surface of pole, ~~; and~~

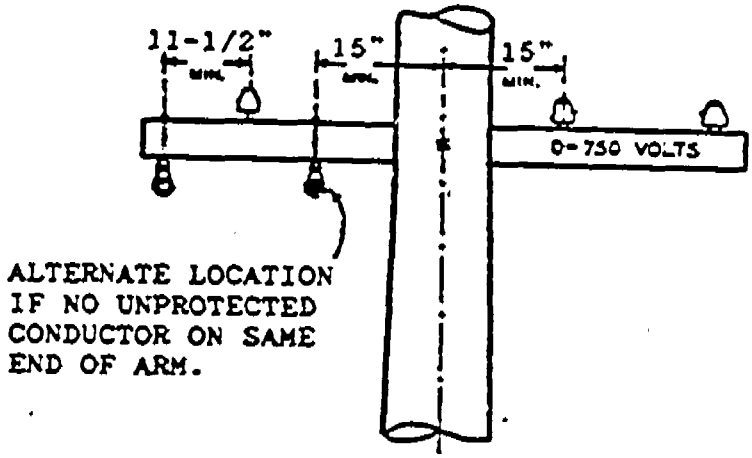
(5) Two or More Cables Attached to the Surface of Pole : Where two or more cables are attached to the surface of the same wood pole ~~in accordance with the provisions of this Rule 57.4-F,~~ they shall be placed on the same side of pole when their vertical separation is less than 8 feet but in no case shall the vertical separation be less than 1 foot.



A



B



C

Rule 57.4-F

Fig. 57-1

PROPOSED RULE CHANGE
(FINAL) *

Rule 57.4-F

F. FROM POLES, CROSSARMS AND OTHER CONDUCTORS

Messengers, and metal sheathed cables, which are bonded and grounded as specified in Rule 57.8 shall have clearances not less than the minimum clearances required for conductors of 0-750 volts with all of the following provisions being applicable:

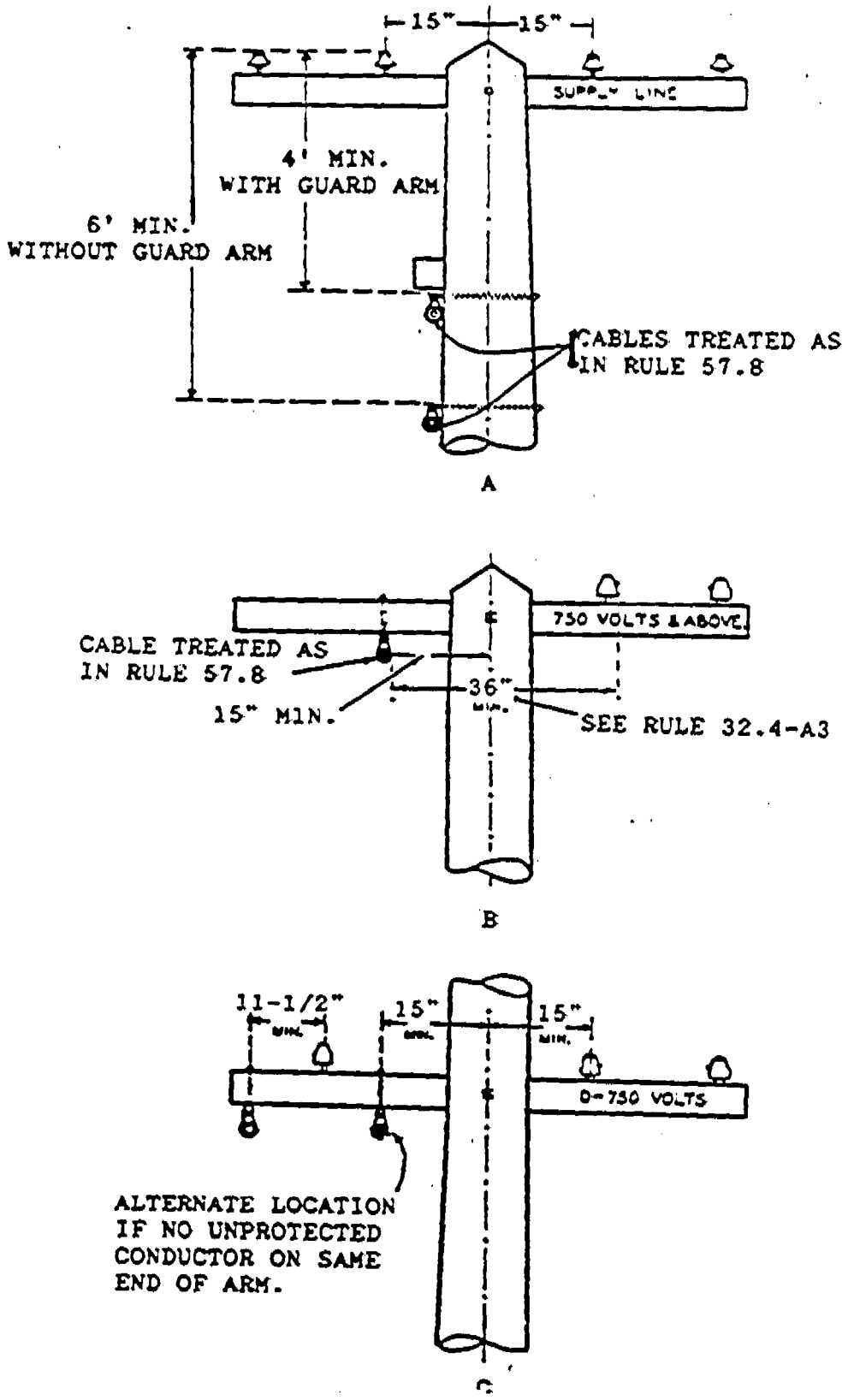
(1) **Attached to Surfaces of Poles and Crossarms:** Such grounded messengers and cables may be attached to the surfaces of poles or crossarms at less than the clearance specified in Table 1, Column D, Cases 8 and 9. When attached to pole or crossarm at less than 15 inches from center line of pole such grounded messenger or cable shall not be less than 4 feet vertically above or 6 feet vertically below any unprotected supply conductor except that where a guard arm (or arms) is placed above messenger and cable as specified in Rule 57.7, the clearance of 6 feet may be reduced to not less than 4 feet below unprotected conductors of 0-750 volts (see Fig. 57-1 A).

(2) **Supported on Same Crossarm Above 750 Volts:** Such grounded messenger and cable when supported on the same crossarm with unprotected conductors in excess of 750 volts shall be placed on the side of pole opposite the unprotected conductors (see Fig. 57-1 B).

(3) **Supported on Same Crossarm 0-750 Volts:** Such grounded messenger and cable when supported on the same crossarm with unprotected conductors of 0-750 volts, shall be placed at not less than pin spacing (Table 2, Case 15, Column D) beyond the outermost unprotected conductor on the same side of pole (see Fig. 57-1 C).

(4) **Between Cable and Unprotected Conductors:** The clearances between a cable and unprotected conductors shall not be held to apply between a grounded cable (and its messenger) and unprotected conductors of the same circuit on poles where unprotected conductors enter (or leave) a cable. On such poles no grounded section of messenger or cable shall be less than 15 inches from surface of pole.

(5) **Two or More Cables Attached to the Surface of Pole:** Where two or more cables are attached to the surface of the same wood pole they shall be placed on the same side of pole when their vertical separation is less than 8 feet but in no case shall the vertical separation be less than 1 foot.



Rule 57.4-F

Fig. 57-1

RATIONALE FOR PROPOSED RULE CHANGE
RULE 57.4-G
MESSENGERS AND INSULATED CABLES
CLEARANCES - FROM BUILDINGS AND OTHER STRUCTURES

The proposed rule change is to simplify and clarify the present language.

EXISTING RULE

Rule 57.4 Clearances

Rule 57.4-G, FROM BUILDINGS AND OTHER STRUCTURES

G. FROM BUILDINGS AND OTHER STRUCTURES
Messengers, and metal sheathed cables, which are bonded and grounded as specified in Rule 57.8 are not required to clear buildings and other structures any specified horizontal distance and the clearance specified in Table 1, Case 7, Column D does not apply in such instances. Such cables, and messengers, shall be installed so that they do not interfere with the free use of fire escapes, exits, etc., and shall be so arranged as to hamper and endanger workmen and firemen as little as possible in the performance of their duties.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

Rule 57.4 Clearances

Rule 57.4-G, FROM BUILDINGS AND OTHER STRUCTURES

G. FROM BUILDINGS AND OTHER STRUCTURES
Messengers, and metal sheathed cables, which are bonded and grounded as specified in Rule 57.8 are not required to clear buildings and other structures any specified horizontal distance and the clearance specified in Table 1, Case 7, Column D does not apply in such instances. Such cables, and messengers, shall be installed so that they do not interfere with the free use of fire escapes, exits, etc., and ~~shall be so arranged as to hamper and endanger workmen and firemen as little as possible in the performance of their duties.~~ <u>should be arranged so as not to hamper or endanger workers and firefighters while performing their duties.</u>

PROPOSED RULE CHANGE
(FINAL) *

Rule 57.4 Clearances

Rule 57.4-G, FROM BUILDINGS AND OTHER STRUCTURES

G. FROM BUILDINGS AND OTHER STRUCTURES

Messengers, and metal sheathed cables, which are bonded and grounded as specified in Rule 57.8 are not required to clear buildings and other structures any specified horizontal distance and the clearance specified in Table 1, Case 7, Column D does not apply in such instances. Such cables, and messengers, shall be installed so that they do not interfere with the free use of fire escapes, exits, etc., and should be arranged so as not to hamper or endanger workers and firefighters while performing their duties.

ITEM 14

- Rule 57.5
- Rule 57.7

RATIONALE FOR PROPOSED RULE CHANGE
RULE 57.5
MESSENGERS AND INSULATED CABLES
FASTENINGS

Delete the last paragraph. Wrapped guys are no longer used by the industry thus making this portion of the rule obsolete and unnecessary.

EXISTING RULE

Rule 57.5 Fastenings

Hardware used in connection with messengers shall meet the strength requirements of Rule 49.7-C. Dead-end attachments used on messengers or reinforced cables shall have a strength not less than that of the messenger or reinforced cable.

Cedar and other soft-wood poles around which any messenger having an ultimate strength of 5,000 pounds or more is wrapped shall be protected by suitable shims. Hooks, lag screws, or other equivalent means to prevent the messenger from slipping along the pole shall be provided where necessary.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

Rule 57.5 Fastenings

Hardware used in connection with messengers shall meet the strength requirements of Rule 49.7-C. Dead-end attachments used on messengers or reinforced cables shall have a strength not less than that of the messenger or reinforced cable.

~~Cedar and other soft-wood poles around which any messenger having an ultimate strength of 5,000 pounds or more is wrapped shall be protected by suitable shims. Hooks, lag screws, or other equivalent means to prevent the messenger from slipping along the pole shall be provided where necessary.~~

PROPOSED RULE CHANGE
(FINAL) *

Rule 57.5 Fastenings

Hardware used in connection with messengers shall meet the strength requirements of Rule 49.7-C. Dead-end attachments used on messengers or reinforced cables shall have a strength not less than that of the messenger or reinforced cable.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 57.7
MESSENGERS AND INSULATED CABLES
USE OF GUARD ARMS AND COVERINGS

Delete the the reference to "of wood" under the requirements for suitable protective covering. Insert a reference to Rule 22.2 which contains the definition and requirements for suitable protective covering.

EXISTING RULE

Rule 57.7 Use of Guard Arms and Coverings

Any guard arm which is required to be installed by the provisions of Rule 57.4-F shall be at least 4 feet in length (Rule 20.9-D) and parallel to and not more than 4 inches above the top of the cable or messenger. In lieu of the guard arm, suitable protective covering of wood at least 4 feet in length may be placed around the cable and messenger.

Double guard arms shall be used where such a messenger or cable is deadended on or wrapped around a wood pole, at a vertical separation of less than 6 feet below unprotected supply conductors of other circuits of 750 volts or less. Portions of cables which take the form of a riser or a grounded lateral or vertical run shall be covered as specified in Rule 54.6-E for risers.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

Rule 57.7 Use of Guard Arms and Coverings

Any guard arm which is required to be installed by the provisions of Rule 57.4-F shall be at least 4 feet in length (Rule 20.9-D) and parallel to and not more than 4 inches above the top of the cable or messenger. In lieu of the guard arm, suitable protective covering ~~of wood~~ (Rule 22.2) at least 4 feet in length may be placed around the cable and messenger.

Double guard arms shall be used where such a messenger or cable is deadended on or wrapped around a wood pole, at a vertical separation of less than 6 feet below unprotected supply conductors of other circuits of 750 volts or less. Portions of cables which take the form of a riser or a grounded lateral or vertical run shall be covered as specified in Rule 54.6-E for risers.

PROPOSED RULE CHANGE
(FINAL)*

Rule 57.7 Use of Guard Arms and Coverings

Any guard arm which is required to be installed by the provisions of Rule 57.4-F shall be at least 4 feet in length (Rule 20.9-D) and parallel to and not more than 4 inches above the top of the cable or messenger. In lieu of the guard arm, suitable protective covering (Rule 22.2) at least 4 feet in length may be placed around the cable and messenger.

Double guard arms shall be used where such a messenger or cable is deadended on or wrapped around a wood pole, at a vertical separation of less than 6 feet below unprotected supply conductors of other circuits of 750 volts or less. Portions of cables which take the form of a riser or a grounded lateral or vertical run shall be covered as specified in Rule 54.6-E for risers.

ITEM 15

- Rule 59.3-A
- Rule 59.3-F

RATIONALE FOR PROPOSED RULE CHANGE
RULE 59.3-A
COMMON PRIMARY AND SECONDARY GROUNDED NEUTRAL SYSTEMS
CONDUCTORS - MATERIAL

The proposed rule change deletes the requirement that "Related phase and neutral line conductors shall be of the same material, except that the neutral conductor may be of copper". This requirement mandates expensive and unnecessary conductor changes and modifications during re-construction projects (such as a major cut-over from 12kv to 21kv with a common neutral). Accepted and sound engineering practices throughout the industry dictate the most efficient and economical use of specific conductor types. This proposed rule change will not diminish safety to the workmen and general public, or service reliability, but will significantly reduce unnecessary costs to the rate payer.

EXISTING RULE

Rule 59, Common Primary and Secondary Grounded Neutral Systems

Rule 59.3 Conductors

59.3 Conductors

A. MATERIAL

Conductors of common neutral systems shall be of copper, copper-covered steel, bronze, stranded composites of any of the foregoing, aluminum, aluminum cable steel reinforced, or of other corrosion-resisting metal, but shall not be of galvanized iron or steel.

Related phase and neutral line conductors shall be of the same material, except that the neutral conductor may be of copper.

PROPOSED RULE CHANGE (STRIKE OUT AND UNDERLINED)

59.3 Conductors

A. MATERIAL

Conductors of common neutral systems shall be of copper, copper-covered steel, bronze, stranded composites of any of the foregoing, aluminum, aluminum cable steel reinforced, or of other corrosion-resisting metal, but shall not be of galvanized iron or steel.

~~Related phase and neutral line conductors shall be of the same material, except that the neutral conductor may be of copper.~~

PROPOSED RULE CHANGE (FINAL) *

59.3 Conductors

A. MATERIAL

Conductors of common neutral systems shall be of copper, copper-covered steel, bronze, stranded composites of any of the foregoing, aluminum, aluminum cable steel reinforced, or of other corrosion-resisting metal, but shall not be of galvanized iron or steel.

RATIONALE

RULE 59.3-F - DESIGNATION OF COMMON NEUTRAL

The present rule requires the placement of a metal tag on any common neutral conductor that is located in the primary pin position as the only means of marking said conductor.

The proposed rule change will allow marking of the common neutral with any weather- and corrosion-resisting material if specific conditions are met. Also, optional marking locations on the crossarm or surface of pole are proposed.

EXISTING RULE

RULE 59.3-F

F. DESIGNATION OF COMMON NEUTRAL
In common neutral systems, where the common neutral line conductor is installed in a primary pin position, it shall be designated by an approved noncorrosive metal tag having a minimum diameter of not less than 1 inch upon which shall be permanently imprinted the letters "CN" not less than 5/16 inch in height. Said tag shall be attached securely to and maintained on the common neutral conductor at each pin position of line arm and buck arm at a distance not more than 12 inches from the face of the crossarm on the climbing side of each pole and so installed as to be clearly visible at all times.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

RULE 59.3-F

F. DESIGNATION OF COMMON NEUTRAL

In common neutral systems, where the common neutral line conductor is installed in a primary pin position, it shall be designated ~~by an approved noncorrosive~~ at each pin position with the letters "CN". A weather- and corrosion-resisting material shall be used and the letters shall be clearly legible.

Optional marking methods are:

1. A ~~metal~~ tag having a minimum diameter of not less than 1 inch upon which shall be permanently imprinted the letters "CN" not less than 5/16 inch in height. Said tag shall be attached securely to and maintained on the common neutral conductor at ~~each pin position of line arm and buck arm at~~ a distance not more than 12 inches from ~~the face of the crossarm on the climbing side of each pole and so installed as to be clearly visible at all times.~~ surface of the conductor support.

2. Solid letters not less than 3 inches in height or a sign showing the letters "CN" not less than 3 inches in height, solid or with letters cut out therefrom. Said letters or signs shall be placed on the face of a crossarm, suitable for attaching the letters or signs, directly beneath the common neutral support, or said letters or signs shall be placed on the surface of the pole beneath the common neutral support.

PROPOSED RULE CHANGE
(FINAL) *

RULE 59.3-F

F. DESIGNATION OF COMMON NEUTRAL
In common neutral systems, where the common neutral line conductor is installed in a primary pin position, it shall be designated at each pin position with the letters "CN". A weather- and corrosion-resisting material shall be used and the letters shall be clearly legible.

Optional marking methods are:

1. A tag having a minimum diameter of not less than 1 inch upon which shall be permanently imprinted the letters "CN" not less than 5/16 inch in height. Said tag shall be attached securely to and maintained on the common neutral conductor at a distance not more than 12 inches from the surface of the conductor support.

2. Solid letters not less than 3 inches in height or a sign showing the letters "CN" not less than 3 inches in height, solid or with letters cut out therefrom. Said letters or signs shall be placed on the face of a crossarm, suitable for attaching the letters or signs, directly beneath the common neutral support, or said letters or signs shall be placed on the surface of the pole beneath the common neutral support.

ITEM 16

. Rule 74.4-E
. Rule 77.4-B

RATIONALE FOR PROPOSED RULE CHANGE
RULE 74.4-E
REQUIREMENTS FOR TROLLEY LINES
CONDUCTOR - CLEARANCES - UNDER BRIDGES, ETC.

This proposed rule change adds language to include overhead clearance reduction for light rail systems operating within exclusive and semi-exclusive rights-of-way as defined by General Order 143-A, Safety Rules and Regulations Governing Light-Rail Transit.

EXISTING RULE

RULE 74.4-E

E. UNDER BRIDGES, ETC.

A reduction of the clearances given in Table 1 to a minimum of 14 feet for trolley contact conductors is permitted for subways, tunnels or bridges, provided the railway does not operate freight cars where the vertical distance from the top of car or load to trolley contact conductor is less than 6 feet, except that for light rail transit systems, the minimum height shall be that set forth in General Order No. 143, "Rules for the Design, Construction and Operation of Light Rail Transit Systems Including Streetcar Operations." This will require the grading of the trolley contact conductor from the prescribed construction down to the reduced elevation (see App. G, Fig. 64).

No clearance is specified between the trolley contact conductor and the structure. Where the structure is of material which will ground the trolley current in the event the collector leaves the contact conductor, a properly insulated trolley trough or equivalent protection shall be installed to prevent contact between the collector and the structure. Where pantograph collectors are used, this protection is not required. See Rule 54.4-I for provisions applicable to conductors other than trolley contact conductors.

Note: Modified June 27, 1978 by Decision No. 89022.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

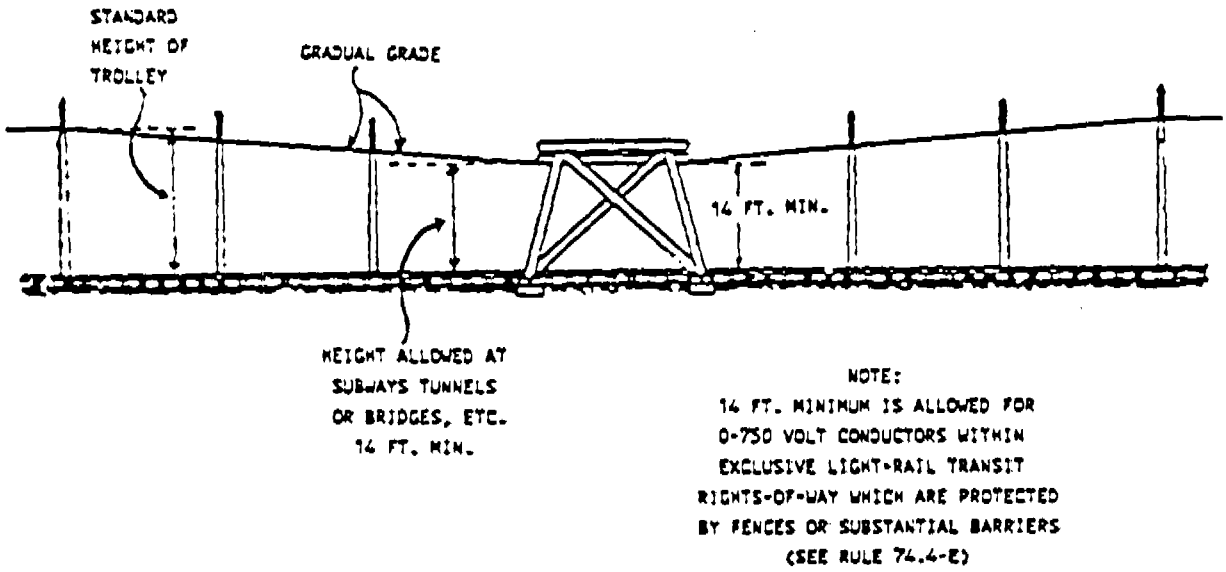
RULE 74.4-E

E. UNDER BRIDGES, ETC.

A reduction of the clearances given in Table 1 to a minimum of 14 feet for trolley contact conductors is permitted for subways, tunnels or bridges, and for 0-750 volt conductors within exclusive and semi-exclusive rights-of-way as defined by Alignment Classifications 9.04-a. and 9.04-b.(1) contained in General Order No. 143-A, "Safety Rules and Regulations Governing Light-Rail Transit", provided the railway does not operate freight cars where the vertical distance from the top of car or load to trolley contact conductor is less than 6 feet.~~, except that for light rail transit systems, the minimum height shall be that set forth in General Order No. 143, "Rules for the Design, Construction and Operation of Light Rail Transit Systems Including Streetcar Operations."~~ This will require the grading of the trolley contact conductor from the prescribed construction down to the reduced elevation (see ~~App. G, Fig. 64~~ Fig. 74-1).

No clearance is specified between the trolley contact conductor and the structure. Where the structure is of material which will ground the trolley current in the event the collector leaves the contact conductor, a properly insulated trolley trough or equivalent protection shall be installed to prevent contact between the collector and the structure. Where pantograph collectors are used, this protection is not required. See Rule 54.4-I for provisions applicable to conductors other than trolley contact conductors.

Note: Modified June 27, 1978 by Decision No. 89022.



RULE 74.4-E

FIG. 74-1

FINAL RULE CHANGE *

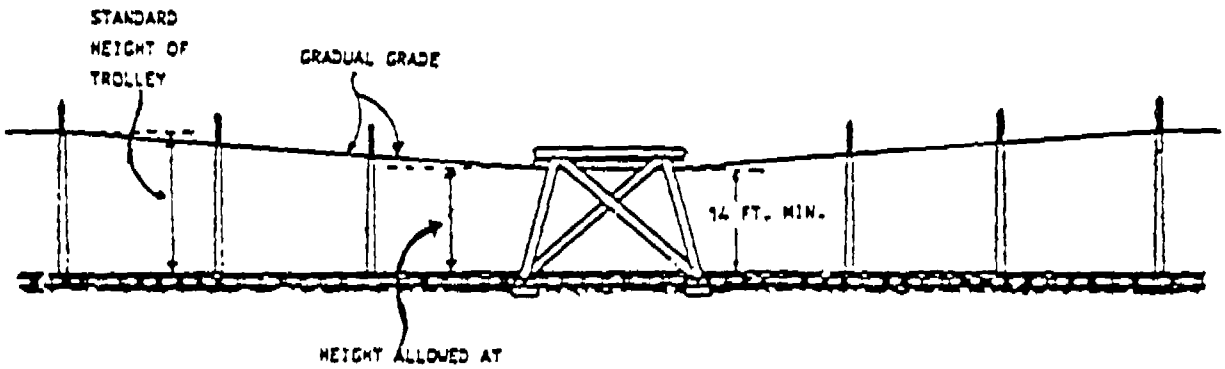
RULE 74.4-E

E. UNDER BRIDGES, ETC.

A reduction of the clearances given in Table 1 to a minimum of 14 feet for trolley contact conductors is permitted for subways, tunnels or bridges, and for 0-750 volt conductors within exclusive and semi-exclusive rights-of-way as defined by Alignment Classifications 9.04-a. and 9.04-b.(1) contained in General Order No. 143-A, "Safety Rules and Regulations Governing Light-Rail Transit", provided the railway does not operate freight cars where the vertical distance from the top of car or load to trolley contact conductor is less than 6 feet. This will require the grading of the trolley contact conductor from the prescribed construction down to the reduced elevation (see Fig. 74-1).

No clearance is specified between the trolley contact conductor and the structure. Where the structure is of material which will ground the trolley current in the event the collector leaves the contact conductor, a properly insulated trolley trough or equivalent protection shall be installed to prevent contact between the collector and the structure. Where pantograph collectors are used, this protection is not required. See Rule 54.4-I for provisions applicable to conductors other than trolley contact conductors.

Note: Modified June 27, 1978 by Decision No. 89022.



NOTE:
14 FT. MINIMUM IS ALLOWED FOR
0-750 VOLT CONDUCTORS WITHIN
EXCLUSIVE LIGHT-RAIL TRANSIT
RIGHTS-OF-WAY WHICH ARE PROTECTED
BY FENCES OR SUBSTANTIAL BARRIERS
(SEE RULE 74.4-E)

RULE 74.4-E

FIG. 74-1

RELATED RULE CHANGE

TABLE 1 - CASE 2 - COLUMN C - REFERENCE i

EXISTING RULE

(i) May be reduced for trolley contact and span wires in subways, tunnels and under bridges.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED

(i) May be reduced for trolley contact and span wires in subways, tunnels, and under bridges~~,~~ and in fenced areas.

PROPOSED RULE CHANGE
(FINAL)

(i) May be reduced for trolley contact and span wires in subways, tunnels, under bridges and in fenced areas.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 77.4-B
REQUIREMENTS FOR TROLLEY LINES
SPAN WIRES, BACKBONES, MESSENGERS, ETC. - CLEARANCES
UNDER BRIDGES, ETC.

This proposed rule change adds language to include overhead clearance reduction for light rail systems operating within exclusive and semi-exclusive rights-of-way as defined by General Order 143-A, Safety Rules and Regulations Governing Light-Rail Transit.

EXISTING RULE

RULE 77.4-B

B. UNDER BRIDGES, ETC.

A reduction of the clearances given in Table 1 to a clearance of not less than 14 feet above the rails is permitted for trolley span wires under bridges, in tunnels, or in subways, provided the railway does not transport freight cars where the vertical distance from the top of car or load to trolley contact conductor is less than 6 feet. The grading of the level of trolley span wires from the basic clearance to this reduced clearance is permitted at approaches to bridges, tunnels, or subways.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)

RULE 77.4-B

B. UNDER BRIDGES, ETC.

A reduction of the clearances given in Table 1 to a clearance of not less than 14 feet above the rails is permitted for trolley span wires under bridges, in tunnels, or in subways, and for 0-750 volt conductors within exclusive and semi-exclusive rights-of-way as defined by Alignment Classifications 9.04-a. and 9.04-b.(1), contained in General Order No. 143-A, "Safety Rules and Regulations Governing Light-Rail Transit", provided the railway does not transport freight cars where the vertical distance from the top of car or load to trolley contact conductor is less than 6 feet. The grading of the level of trolley span wires from the basic clearance to this reduced clearance is permitted at approaches to bridges, tunnels, or subways.

FINAL RULE *

RULE 77.4-B

B. UNDER BRIDGES, ETC.

A reduction of the clearances given in Table 1 to a clearance of not less than 14 feet above the rails is permitted for trolley span wires under bridges, in tunnels, or in subways, and for 0-750 volt conductors within exclusive and semi-exclusive rights-of-way as defined by Alignment Classifications 9.04-a. and 9.04-b.(1), contained in General Order No. 143-A, "Safety Rules and Regulations Governing Light-Rail Transit", provided the railway does not transport freight cars where the vertical distance from the top of car or load to trolley contact conductor is less than 6 feet. The grading of the level of trolley span wires from the basic clearance to this reduced clearance is permitted at approaches to bridges, tunnels, or subways.

ITEM 17

- Rule 84.8-A
- Rule 84.8-B1
- Rule 84.8-B2
- Rule 84.8-C
- Rule 84.8-C1
- Rule 84.8-C2
- Rule 84.8-C3
- Rule 84.8-D1

RATIONALE FOR PROPOSED RULE CHANGE
RULE 84.8-A
SERVICE DROPS

Modern technology continues to make obsolete materials used in todays telecommunications industry. This rule change is proposed to allow flexibility within the industry to utilize the newer technologies while maintaining the standards as set forth in Section IV.

EXISTING RULE
RULE 84.8-A
SERVICE DROPS

RULE 84.8-A (Page 233)

1. A. MATERIAL AND SIZE

2. Communication service drops shall be of material and size as

3. specified in Table 8 and Rule 49.4-C7b with a covering at least

4. equivalent to standard double-braid weatherproofing.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 84.8-A
SERVICE DROPS

RULE 84.8-A (Page 233)

1. A. MATERIAL AND SIZE

2. ~~Communication service drops shall be of material and size as~~

3. ~~specified in Table 8 and Rule 49.4-C7b~~ (See Table 8 and Rule 49.4-C7b) ~~with a~~

4. ~~covering at least equivalent to standard double-braid weatherproofing.~~

PROPOSED RULE CHANGE
(FINAL) *
RULE 84.8-A
SERVICE DROPS

RULE 84.8-A (Page 233)

1. A. MATERIAL AND SIZE (See Table 8 Rule 49.4-C7b)

RATIONALE FOR PROPOSED RULE CHANGE
RULE 84.8-B1
SERVICE DROPS

This proposed rule change alters grammatical style to reflect modern usage.

EXISTING RULE
RULE 84.8-B1
SERVICE DROPS

RULE 84.8-B1

B. ATTACHED TO SURFACE OF POLE

1. (1) Service Drops From Open Wire Lines: Where open wire
2. communication line conductors are supported on crossarms, service
3. drop attachments (by means of hooks, knobs, or brackets) on the
4. surface of pole shall be not less than 6 feet below or 4 feet above
5. the level of the nearest unprotected supply conductor supported on
6. the same pole.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 84.8-B1
SERVICE DROPS

RULE 84.8-B1

B. ATTACHED TO SURFACE OF POLE

1. (1) Service Drops From Open Wire Lines/ Supported on Crossarms:
2. ~~Where/open/wire/communication/conductors/are/supported/on~~
3. ~~crossarms/service/drop~~ Attachments. (by means of hooks, knobs or
4. brackets) on the surface of pole shall not ~~not~~ be ~~not~~ less than 6 feet
5. below or 4 feet above the level of the nearest unprotected supply
6. conductor supported on the same pole.

PROPOSED RULE CHANGE
(FINAL)*
SERVICE DROPS

RULE 84.8-B1

1. (1) Service Drops From Open Wire Lines Supported on Crossarms:
2. Attachments, (by means of hooks, knobs, or brackets) on the surface
3. of pole shall not be less than 6 feet below or 4 feet above the level
4. of the nearest unprotected supply conductor supported on the same
5. pole.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 84.8-B2
SERVICE DROPS

This proposed rule change has been reformatted for the convenience of the reader to establish subparagraph structure, thus allowing for elimination of text redundancy, obsolete drop hardware and accompanying text instructions and figures. In addition, grammatical style has been altered to reflect contemporary usage.

EXISTING RULE
RULE 84.8-B2
SERVICE DROPS

RULE 84.8-B2

1. (2) Service Drops From Cabled Lines:
2. (a) Cable Supported on Crossarm: Service drops attached to
3. crossarms supporting cables shall be not less than 15 inches
4. from center line of pole as required by Table 1, Case 8,
5. Column B.
6. (b) Cable Without Guard Arm, Supported on Surface of Pole:
7. Where the cable is supported on the surface of pole with
8. messenger and cable 6 feet or more below the level of the
9. nearest unprotected supply conductor, service drops may be
10. attached to opposite sides of poles but not more than two sides
11. (there being four sides). Such service drop attachments shall be
12. not less than 6 feet below the level of any supply conductor of
13. more than 750 volts and shall be not less than 5 feet vertically
14. below the level of any unprotected supply conductor of 0-750
15. volts. Where drive hooks are used, they shall occupy pole
16. surface areas not more than 8 inches in vertical extent and 1
17. inch in width, and not more than four hooks shall be placed in
18. each of these areas. See Appendix G, Figure 39.
19. (c) Cable With Guard Arm, Supported on Surface of Pole: Where
20. the cable is supported on the surface of pole at a minimum of 4
21. feet below the nearest unprotected supply conductor supported on
22. the same pole, and is below a guard arm, service drop
23. attachments may be attached to the face, back and bottom of the
24. guard arm, provided such attachments are not less than 15 inches

from center line of pole, the drop wires are below the top surface of the guard arm and the lateral run of the drop wires is installed in accordance with the provisions of Rule 84.6-C.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 84.8-B2
SERVICE DROPS

RULE 84.8-B2

(2) Service Drops From Cabled Lines:

(a) Cable Supported on Crossarm: Service drops attached to crossarms supporting cables shall ~~be~~ not be less than 15 inches from the center line of pole as required by Table 1, Case 8, Column B.

(b) Cable Without Guard Arm, Supported on Surface of Pole: ~~Where the cable is supported on the surface of pole with messenger and cable 8 feet or more below the level of the nearest unprotected supply conductor, service drops may be attached to opposite sides of poles but not more than two sides (there being four sides).~~

(1) ~~Such service drop~~ Attachments shall ~~be~~ not be less than 6 feet below the level of any supply conductor of more than 750 volts and shall ~~be~~ not be less than 5 feet vertically below the level of any unprotected supply conductor of 0-750 volts.

(2) ~~Where~~ Drive hooks ~~are used, they~~ shall occupy pole surface areas not more than 8 inches in height ~~vertical extent~~ and 1 inch in width, and not more than four hooks shall be placed in each of these areas. See ~~Appendix B,~~ Figure ~~28,~~ 84-1 (Rule 84.8-B2b)

(3) Service drops shall not be attached to more than three sides (there being four sides) while maintaining climbing space.

(c) Cable With Guard Arm, Supported on Surface of Pole: ~~Where the cable is supported on the surface of pole at a minimum of of 4 feet~~

(STRIKE OUT AND UNDERLINED - RULE 84.8-B2 Cont.)

24. ~~below/the/nearest/approximated/supply/conductor/supported/on/the~~

25. ~~same/pole//and/is/below/a/guard/arm//serving/drop~~

26. Attachments may be ~~attached~~ placed on ~~to~~ the face, back and

27. bottom of the guard arm//~~provided/such/attachments/are~~ not less

28. than 15 inches from the center line of pole, provided the drop wires are

29. below the top surface of the guard arm and the lateral run of the

30. drop wires is installed ~~in/accordance~~ with the provisions of Rule

31. 84.6-C.

PROPOSED RULE CHANGE
(FINAL) *
RULE 84.8-B2
SERVICE DROPS

RULE 84.8-B2

1. (2) Service Drops From Cabled Lines:
2. (a) Cable Supported on Crossarms: Service drops attached to
3. crossarms supporting cables shall not be less than 15 inches from
4. the center line of pole as required by Table 1, Case 8, Column B.
5. (b) Cable Without Guard Arm, Supported on Surface of Pole:
6. (1) Attachments shall not be less than 6 feet below the level of
7. any supply conductor of more than 750 volts and shall not be less
8. than 5 feet vertically below the level of any unprotected supply
9. conductor of 0-750 volts.
10. (2) Drive hooks shall occupy pole surface areas not more than 8
11. inches in height and 1 inch in width, and not more than four hooks
12. shall be placed in each of these areas.
13. See Figure 84-1 (Rule 84.8-B2b)
14. (3) Service drops shall not be attached to more than three sides
15. (there being four sides) while maintaining climbing space.
16. (c) Cable With Guard Arms, Supported on Surface of Pole:
17. Attachments may be placed on the face, back and bottom of the guard
18. arm not less than 15 inches from the center line of pole, provided
19. the drop wires are below the top surface of the guard arm and the
20. lateral run of the drop wires is installed with the provisions of
21. Rule 84.6-C.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 84.8-C
SERVICE DROPS

This proposed rule change alters grammatical style to reflect modern usage.

EXISTING RULE
RULE 84.8-C
SERVICE DROPS

RULE 84.8-C

C. CLEARANCES ABOVE GROUND AND BUILDINGS

1. The vertical clearances of communication service drops shall be not
2. less than the minimum clearances specified in Rule 37, Table 1,
3. Column B, with the following modifications.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 84.8-C
SERVICE DROPS

RULE 84.8-C

C. CLEARANCES ABOVE GROUND AND BUILDINGS

1. The vertical clearances ~~of/communication/service/drops~~ shall ~~be~~
2. not be less than the minimum clearances specified in Rule 37, Table
3. 1, Column B, with the following modifications:

PROPOSED RULE CHANGE
(FINAL) *
RULE 84.8-C
SERVICE DROPS

RULE 84.8-C

C. CLEARANCES ABOVE GROUND AND BUILDINGS

1. The vertical clearances shall not be less than the minimum clearances
2. specified in Rule 37, Table 1, Column B, with the following
3. modifications:

RATIONALE FOR PROPOSED RULE CHANGE
RULE 84.8-C1
SERVICE DROPS

This rule change is proposed for clarity and simplification of the rule's language. Additionally the rule structure, as currently written, is slightly reformatted to help focus the readers attention on the rule's exception.

EXISTING RULE
RULE 84.8-C1
SERVICE DROPS

RULE 84.8-C1

(1) Above Public Thoroughfares: Service drop conductors shall have a vertical clearance of not less than 18 feet above public thoroughfares, except that this clearance may grade from 18 feet at a position not more than 12 feet horizontally from the curb line to a clearance of not less than 16 feet at the curb line, provided the clearance at the center line of any public thoroughfare shall in no case be less than 18 feet. Where there are no curbs the foregoing provisions shall apply using the outer limits of possible vehicular movement in lieu of a curb line.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 84.8-C1
SERVICE DROPS

RULE 84.8-C1

(1) Above Public Thoroughfares: ~~Service drop conductors shall have a y~~ Vertical clearance ~~of not less than~~, shall not be less than 18 feet. ~~Where there are no curbs the foregoing provisions shall apply using the outer limits of possible vehicular movement in lieu of a curb line.~~

EXCEPTION: ~~In~~ ~~Not more than 12 feet horizontally from the curb line. ~~In no case shall the clearance at the center line of any public thoroughfare shall in no case be less than 18 feet. Where there are no curbs the foregoing provisions shall apply using the outer limits of~~ the 18 ~~feet~~ foot clearance may be gradually reduced to not less than 16 feet at the curb line. ~~In~~ no case shall the clearance at the center line be less than 18 feet. Where there are no curbs, the foregoing provisions shall apply using the outer limits of ~~possible~~ normal longitudinal vehicular movement in lieu of a curb line.

PROPOSED RULE CHANGE
(FINAL) *
RULE 84.8-C1
SERVICE DROPS

RULE 84.8-C1

(1) Above Public Thoroughfares: Vertical clearance shall not be less than 18 feet.

EXCEPTION: Not more than 12 feet horizontally from the curb line, the 18 foot clearance may be gradually reduced to not less than 16 feet at the curb line. In no case shall the clearance at the center line be less than 18 feet. Where there are no curbs, the foregoing provisions shall apply using the outer limits of normal longitudinal vehicular movement in lieu of a curb line.

RATIONALE FOR PROPOSED RULE CHANGE
RULE 84.8-C2
SERVICE DROPS

This rule change is proposed for clarity and simplification of the rule language and reduce the repetitious use of certain words. Additionally the rule structure, as currently written, is slightly reformatted to help focus the readers' attention on the rule's exception.

EXISTING RULE
RULE 84.8-C2
SERVICE DROPS

RULE 84.8-C2

1. (2) Above Private Thoroughfares or Private Property:
2. (a) Industrial and Commercial Premises: Over private driveways or
3. lanes, or over private property accessible to vehicles, service drops
4. shall have a vertical clearance of not less than 16 feet.
5. (b) Residential Premises: Over residential driveways or lanes, or
6. over residential property accessible to vehicles, service drops shall
7. have a vertical clearance of not less than 12 feet. If the building
8. served does not permit an attachment which will provide this 12 foot
9. clearance without the installation of a structure on the building the
10. clearance shall be as great as possible but in no case less than 10
11. feet.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 84.8-C2
SERVICE DROPS

RULE 84.8-C2

1. (2) Above Private Thoroughfares or Private Property:
2. (a)Industrial and Commercial Premises: Over private driveways
3. ~~or~~ lanes~~/~~ or ~~over/private~~ property accessible to vehicles,
4. service drops shall ~~have/a/vertical/clear~~ not be less than
5. 16 feet.
6. (b)Residential Premises: Over residential driveways, ~~or~~ lanes~~/~~
7. or ~~over/residential~~ property accessible to vehicles, service drops
8. shall ~~have/a/vertical/clear~~ not be less than 12 feet.

9. EXCEPTION: If the building served does not permit an attachment
10. which will provide this 12 foot clearance without the installation of
10. a structure on the building, the clearance shall be as great as
11. possible, but in no case less than 10 feet.
12. NOTE: In exceptional circumstances, see Rule 14

PROPOSED RULE CHANGE
(FINAL) *
RULE 84.8-C2
SERVICE DROPS

RULE 84.8-C2

1. (2) Above Private Thoroughfares or Private Property:
2. (a) Industrial and Commercial Premises: Over private driveways,
3. lanes or property accessible to vehicles, service drops shall not be
4. less than 16 feet.
5. (b) Residential Premises: Over residential driveways, lanes or
6. property accessible to vehicles, service drops shall not be less t
7. 12 feet.
8. EXCEPTION: If the building served does not permit an attachment
9. which will provide this 12 foot clearance without the installation of
10. a structure on the building, the clearance shall be as great as
11. possible, but in no case less than 10 feet.
12. NOTE: In exceptional circumstances see Rule 14

RATIONALE FOR PROPOSED RULE CHANGE
RULE 84.8-C3
SERVICE DROPS

This rule change is proposed for clarity and simplification of the rule's language. Additionally the rule structure, as currently written, is slightly reformatted to help focus the readers attention on the rule's exception and realign the words "Table, Case and Column" thereby maintaining continuity of format throughout the General Order.

EXISTING RULE
RULE 84.8-C3
SERVICE DROPS

RULE 84.8-C3

(3) **Above Ground in Areas Accessible to Pedestrians Only:**

(a) **Industrial and Commercial Premises:** Over areas accessible to pedestrians only, service drops shall have a vertical clearance of not less than 12 feet.

(b) **Residential Premises:** Over areas accessible to pedestrians only, service drops shall be maintained at a vertical clearance of not less than 10 feet. If the building served does not permit an attachment which will provide this 10-foot clearance without the installation of a structure on the building, the clearance shall be as great as possible but in no case less than 8 feet 6 inches.

(c) **Above Ground on Fenced Railway Rights-of-Way:** Service drops to railway signal devices shall be maintained at clearances as specified in Rule 84.4-A4. Service drops which are entirely on fenced railw rights-of-way in areas accessible to pedestrians only may have clearances above ground less than as specified in Table 1, Column B, Case 5 (10 feet), but not less than 7 feet.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 84.8-C3
SERVICE DROPS

RULE 84.8-C3

1. Above Ground in Areas Accessible to Pedestrians Only:
2. (a) Industrial and Commercial Premises: Over areas accessible to
3. pedestrians only, ~~service drops~~ the vertical clearance shall ~~have~~
4. ~~a vertical clearance of~~ not be less than 12 feet.
5. (b) Residential Premises: Over areas accessible to pedestrians
6. only, ~~service drops~~ the vertical clearance shall not be
7. ~~maintained at a vertical clearance of~~ less than 10 feet.
8. EXCEPTION: If the building served does not permit an attachment
9. which will provide this 10-foot clearance without the installation of
10. a structure on the building, the clearance shall be as great as
11. possible but in no case less than 8 feet 6 inches.
12. (c) Above Ground on Fenced Railway Rights-of Way: (See Rule
13. 84.4-A4)
14. ~~Service drops to railway signal devices shall be maintained at~~
15. ~~clearances as specified in Rule 84.4-A4.~~ ~~Service drops which~~
16. ~~entirely on fenced railroad right-of-way in areas~~ ~~accessible to~~
17. ~~pedestrians only may have a clearance above ground less than~~
18. ~~specified in Table 1, Column B, Case B, 110 feet, but not less~~
19. ~~than 7 feet.~~

PROPOSED RULE CHANGE
(FINAL) *
RULE 84.8-C3
SERVICE DROPS

RULE 84.8-C3

1. Above Ground in Areas Accessible to Pedestrians Only:
2. (a) Industrial and Commercial Premises: Over areas accessible to
3. pedestrians only, the vertical clearance shall not be less than 12
4. feet.
5. (b) Residential Premises: Over areas accessible to pedestrians
6. only, the vertical clearance shall not be less than 10 feet.
7. EXCEPTION: If the building served does not permit an attachment
8. which will provide this 10-foot clearance without the installation of
9 a structure on the building, the clearance shall be as great as
10. possible, but in no case less than 8 feet 6 inches.
11. (c) Above Ground on Fenced Railway Rights-of-Way: (See Rule
12. 84.4-A4)

EXISTING RULE
RULE 84.8-D1
SERVICE DROPS

RULE 84.8-D1 (Page 236)

1. (1) Above or Below Supply Line Conductors (see Rule 32.2 F):
2. (a) Crossings in Spans: Service drops which cross below supply line
3. conductors of 0-750 volts, or above supply line cables where treated
4. as in Rule 57.8, may have a vertical clearance less than as specified
5. in Table 2, Case 4, Column C (48 inches), from such supply
6. conductors, but not less than 24 inches; provided the crossing is 6
7. feet or more from any pole which supports any conductor involved in
8. the crossing but which does not support both conductors involved in
9. the crossing.
10. (b) Supported on the Same Pole: Service drops which are supported
11. on a pole which also support supply conductors and which are not on a
12. pole-top clearance attachment may have a vertical clearance less than
13. as specified in Table 2, Case 9, Column C (48 inches), above or below
14. supply line conductors provided not less than the clearance shown in
15. Table 15 are maintained.

PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 84.8-D1
SERVICE DROPS

RULE 84.8-D1 (Page 236)

(1) Above or Below Supply Line Conductors (See Rule 32.2-F):

(a) Crossings in Spans: (Table 2, Case 4, Column C [48inches]:

Service drops which cross below supply line conductors of 0-750 volts, or above line cables as in Rule 57.8, may have a vertical clearance less than as specified in Table 2, Case 4, Column C [48 inches], but not less than 24 inches provided the crossing span has no supports and does not support conductors involved in the crossing.

Vertical clearances may be reduced to not less than 24 inches provided:

1. Crossings are below line conductors of 0-750 volts, or above line cables as in Rule 57.8, and
2. Crossing is 6 feet or more from any pole supporting one, but not both, involved conductors.

(b) Supported on the Same Pole: (Table 2, Case 9, Column C [48 inches]): Service drops which are supported on a pole which also supports supply conductors and which have a clearance attachment may have a vertical clearance less than as specified in Table 2, Case 9, Column C [48 inches], but not less than the clearance shown in Table 15 are allowed.

(STRIKE OUT AND UNDERLINED - RULE 84.8-D1 Cont.)

Vertical clearances may be reduced to not less than the values shown in Table 15, provided pole-top clearance attachments are not involved.

PROPOSED RULE CHANGE
(FINAL) *
RULE 84.8-D1
SERVICE DROPS

RULE 84.8-D1 (Page 236)

(1) Above or Below Supply Line Conductors (See Rule 32.2-F):

(a) Crossings in spans: (Table 2, Case 4, Column C [48 inches]):

Vertical clearances may be reduced to not less than 24 inches provided:

1. Crossings are below line conductors of 0-750 volts, or above line cables as in Rule 57.8, and
2. Crossing is 6 feet or more from any pole supporting one, but not both, involved conductors.

(b) Supported on the Same Pole (Table 2, Case 9, Column C [48 inches]): Vertical clearances may be reduced to not less than the values shown in Table 15, provided pole-top clearance attachments are not involved.

ITEM 18

. Rule 92.1-F4

RATIONAL FOR PROPOSED RULE CHANGE
RULE 92.1-F4
VERTICAL CLEARANCES
BETWEEN CONDUCTORS, CABLES, MESSENGERS AND MISC. EQUIPMENT
TRANSFORMERS OR REGULATORS

Provide a new Figure to clarify the language of Rule 92.1-F4.

EXISTING G.O. 95 RULE
RULE 92.1-F4
TRANSFORMERS OR REGULATORS

Rule 92.1-F4

(4) **Transformers or Regulators:** Transformers or regulators of supply systems shall normally be located above communication equipment. Where it is necessary to locate transformers or regulators below communication equipment they shall be placed at least 6 feet vertically below and all energized parts shall be protected and guarded so as to afford the least possibility of contact.

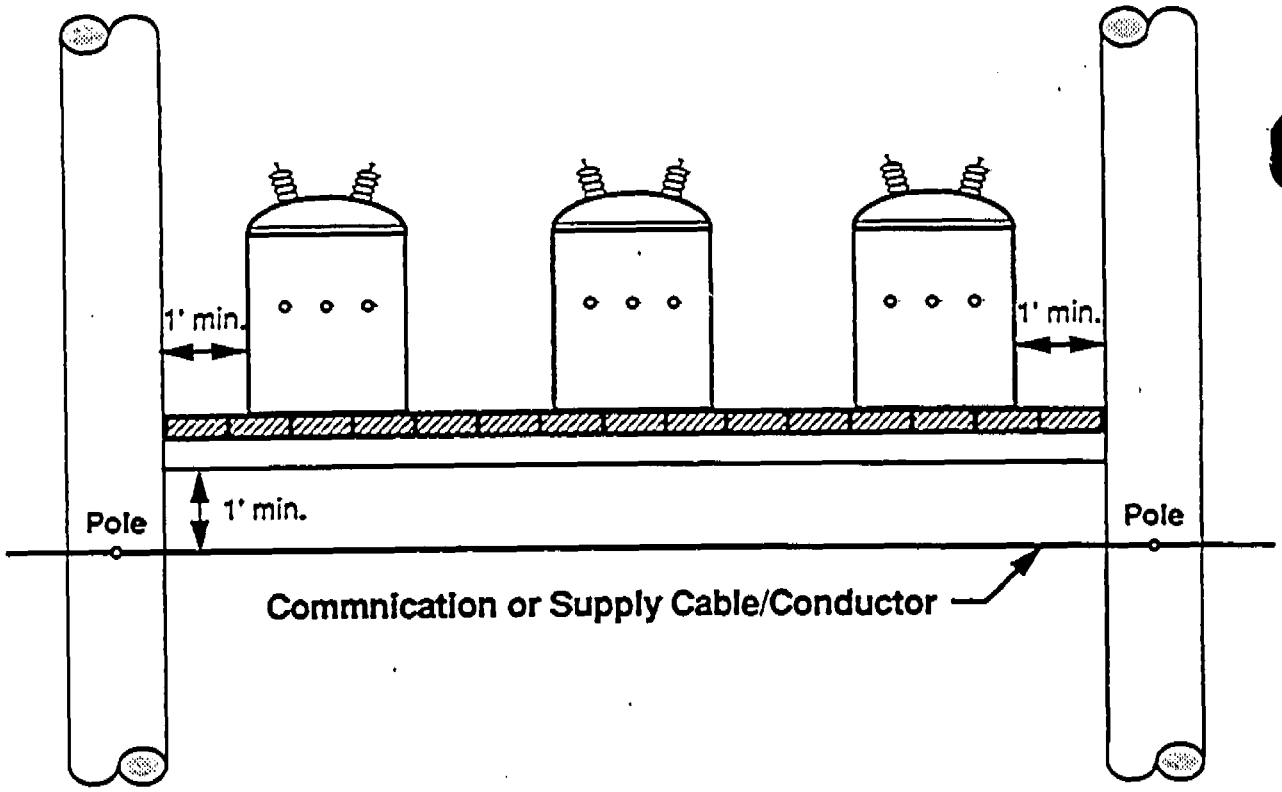
Where transformers or regulators are installed on platforms having continuous flooring which extends not less than 1 foot horizontally outside of the vertical plane of all transformers or regulator lead and bus wires on the same pole or structure, cables or other conductors may be installed at a minimum vertical distance of 12 inches below the transformer or regulator cases provided such cables or conductors do not extend laterally beyond the platform.

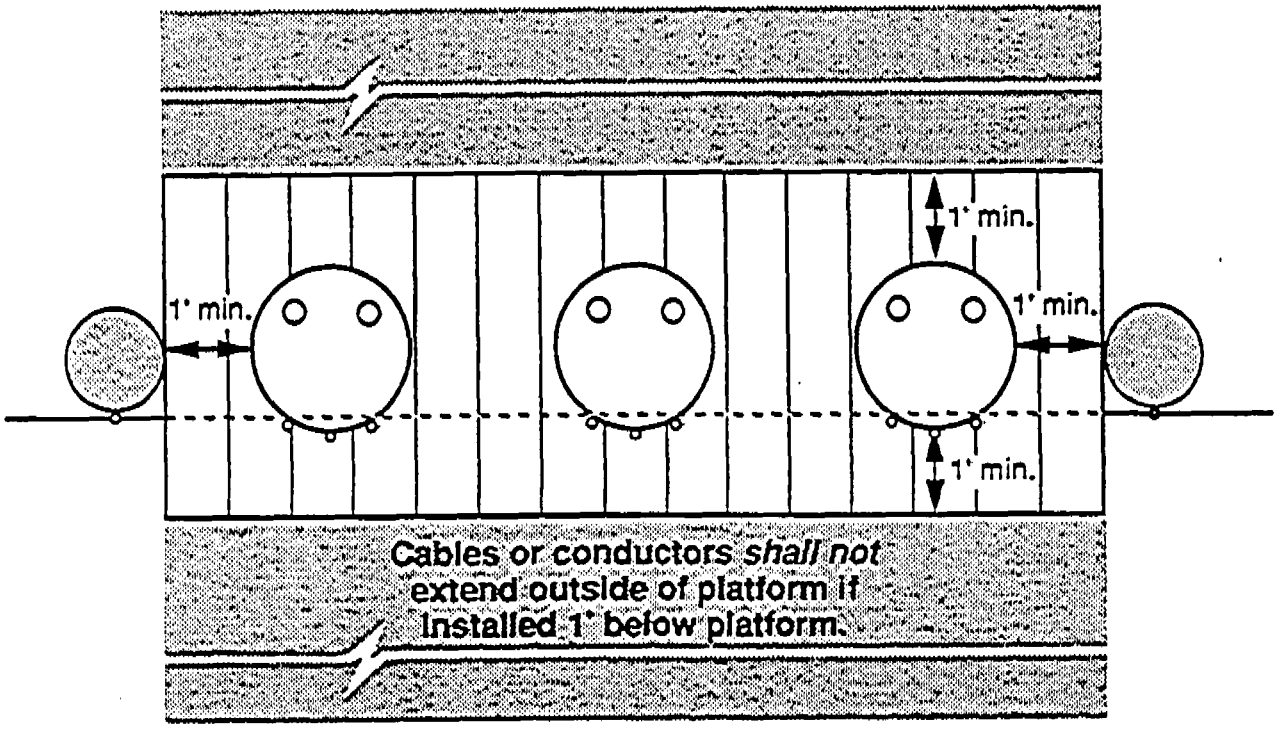
PROPOSED RULE CHANGE
(STRIKE OUT AND UNDERLINED)
RULE 92.1-F4
TRANSFORMERS OR REGULATORS

Rule 92.1-F4

(4) Transformers or Regulators: Transformers or regulators of supply systems shall normally be located above communication equipment. Where it is necessary to locate transformers or regulators below communication equipment they shall be placed at least 6 feet vertically below and all energized parts shall be protected and guarded so as to afford the least possibility of contact.

Where transformers or regulators are installed on platforms having continuous flooring which extends not less than 1 foot horizontally outside of the vertical plane of all transformers or regulator lead and bus wires on the same pole or structure, cables or other conductors may be installed at a minimum vertical distance of 12 inches below the transformer or regulator cases provided such cables or conductors do not extend laterally beyond the platform (see Fig. 92-1).





Transformers or Regulators (Rule 92.1-F4)

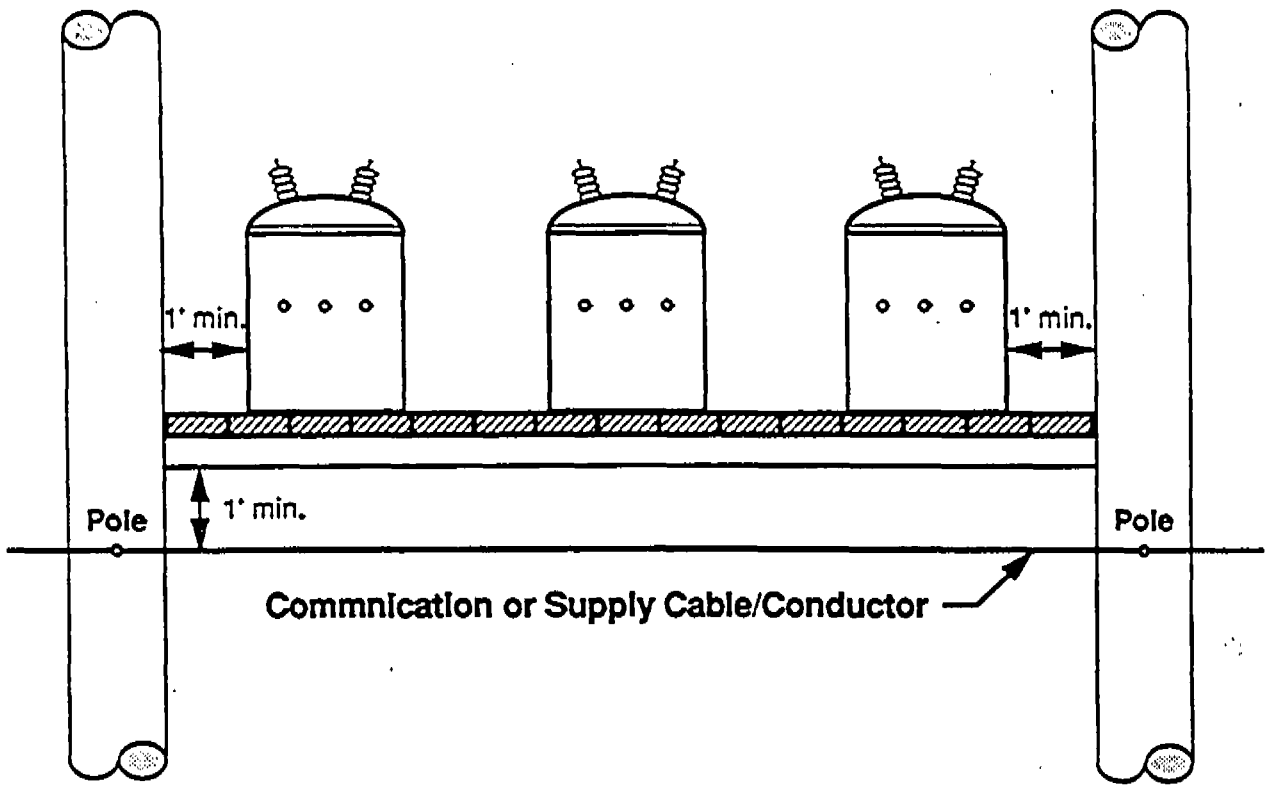
Figure 92-1

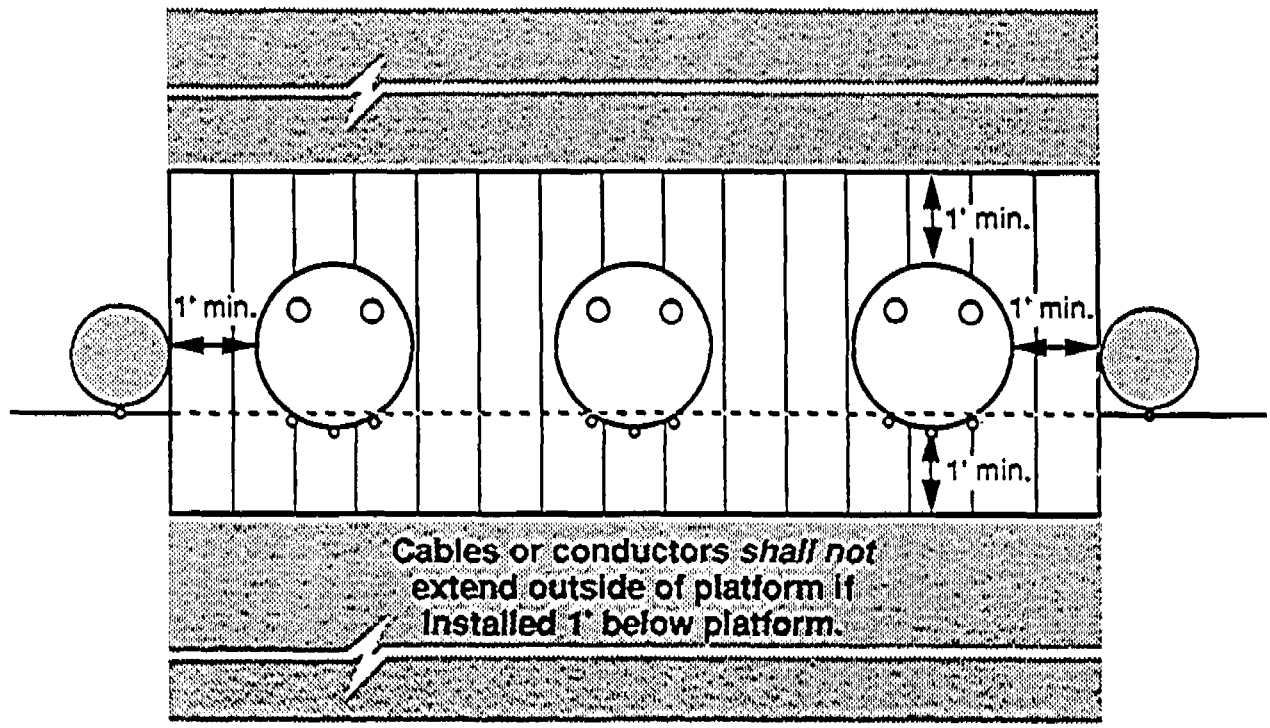
PROPOSED RULE CHANGE
(FINAL)
RULE 92.1-F4
TRANSFORMERS OR REGULATORS

Rule 92.1-F4

(4) **Transformers or Regulators:** Transformers or regulators of supply systems shall normally be located above communication equipment. Where it is necessary to locate transformers or regulators below communication equipment they shall be placed at least 6 feet vertically below and all energized parts shall be protected and guarded so as to afford the least possibility of contact.

Where transformers or regulators are installed on platforms having continuous flooring which extends not less than 1 foot horizontally outside of the vertical plane of all transformers or regulator lead and bus wires on the same pole or structure, cables or other conductors may be installed at a minimum vertical distance of 12 inches below the transformer or regulator cases provided such cables or conductors do not extend laterally beyond the platform (see Fig. 92-1).





Transformers or Regulators (Rule 92.1-F4)

Figure 92-1