Decision No. 91030 Application No. 58730 (Filed March 8, 1979)

In the Matter of the Application of SOUTHERN CALIFORNIA EDISON COMPANY for an Order Amending General Order No. 95, "Rules for Overhead Electric Line Construction", to amend Certain Rules with Respect to Increasing the Maximum Voltage where Sectionalized Guy Wires are Required.

O P I N I O N

Southern California Edison Company (Edison) seeks an ex parte order of the Commission modifying General Order No. 95 to increase the voltage provision from 22,500 to 35,500 volts for sectionalizing guy wires, which are in proximity to supply conductors of less than 35,500 volts.

For the purpose of enhancing safety of workmen, there is a present need to revise General Order No. 95 with respect to sectionalizing guy wires. As overhead distribution voltages increase, it becomes necessary to likewise increase voltage provisions for isolating portions of guy wires in proximity to working positions,
to prevent workmen from contacting grounded guy wires and increasing their exposure to lethal distribution voltages.

Discussion

General Order No. 95 has consistently been interpreted to exclude construction not provided for in the general order. General Order No. 95 and predecessor orders have required sectionalizing guy wires through distribution voltage levels then currently in use. As distribution voltages ha increased, coordinating changes wore made in these orders to increase the voltage range through which portions of guy wires must be isolated. This decision contains another coordinating order reflecting voltage progression through current distribution voltage levels.

Through cooperative efforts of the major electric utilities in California, the Commission staff and other interested parties, proposed modifications to General Order No. 95 have been submitted, as Exhibit "Aft to subject application, to establish appropriate standards for sectionalizing guy wires.

Exhibit "A" has been reviewed by Pacific Gas end Electric Company, Pacific Power & Light Company, and San Diego Gas & Electric Company, each of which has advised Edison that it concurs in and endorses such modifications to General Order No. 95. In addition, said modifications were reviewed by the Department of Water and Power of the City of Los Angeles, Sacramento Municipal Utility District, The Pacific Telephone and Telegraph Company, General Telephone Company of California and Continental Telephone Company of California, the

Commission staff and representatives of the International Brotherhood of Electrical Workers and no objections to the revisions were received.

Findings of Fact

1. The revisions proposed herein as Exhibit "A" of this application were reviewed by the six largest public and private electric utilities in California, the three largest telephone utilities in California, representatives of the workers involved and the Commission staff. No objections to these revisions were received.

2. The proposed revisions set forth in Exhibit "A" will, when adopted, establish uniform requirements, the application of which will secure safety to persons engaged in the construction, maintenance and operation of facilities in proximity to energized high voltage conductors and are in the public interest.

Conclusions of Law

1. It is reasonable to modify existing rules of General Under No. 95 to increase the voltage provision from 22,500 to 35,500 volts for sectionaliz1ng guy wires in proximity to supply conductors of less than 35.500 volts.

2. It is reasonable and in the public interest to incorporate into General Order No. 95 changes in the rules therein as are set forth in Appendix A, hereto, and as are discussed in this opinion.

The Commission concludes that the application should be granted as set forth in the following order, and that 8 public hearing is not necessary.

O R D E R

IT IS ORDERED that:

1. The Commission's General Order No. 95, "Rules for Overhead Electric Line Construction", is hereby amended to increase the voltage provision from 22,500 to 35,500 volts for sectiona1izing guy wires in proximity to supply conductors of legs than 35,500 volts as set forth in Appendix A attached to this order.

2. The Executive Director shall cause a copy of this order and its appendix to be served upon each electric and telephone utility operating within California and, the State Division of Occupational Safety and Health.

The effective date of this order shall be thirty days after the date hereof.
Dated NOV 2, 1979 at San Francisco, California.

APPENDIX A

1. Requirements for Supply Lines, Rule 56.6 (Requirements for Sectionalizing with Insulators), subsections A, B, and E are amended to increase the voltage provision from 22,500 volts to 35,500 volts, and shall read as follows:

56.6 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. 45 of App. G).

"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.

"B. GUYS TO ARMS SUPPORTING CONDUCTORS or LESS THAN 35,500 VOLTS

"All portions of arm guys within 6 feet of points of attachment to wood' crossarms, or metal crossarms on wood poles, shall not be grounded if the crossarms support supply conductors of less than 35,500 volts. Where necessary to avoid the grounding of such portions, arm guys shall be sectionalized by means of insulators at locations as specified in Rule 56.7.

"E. GUYS ATTACHED TO GROUNDED POLES OR STRUCTURES

"Guys attached to securely grounded metal poles or structures are not required to be sectionalized except as required by Rule 56.6-A because of, proximity to supply conductors of less than 35,500 volts supported on wood poles, or by Rule 56.6-B."

2. Requirements for Supply Lines, Rule 56.8 (Guy Insulators), introductory section and Table 13 are amended to increase nominal voltage provisions from 17,500 volts to 35,500 volts, and to

recognize the use of multiple insulators in series, and shall read as follows:

56.8 Guy Insulators

"Insulators which sectionalize guys shall conform to the following specifications.

"Table13
Guy Insulator Flashover Voltages

| Nominal voltage of Circuit to Which Guy is in proximity | Dry flashover voltage of insulators |
|---|---|
| 0 - 7,500 volts | 15,000 volts |
| 7,501 - 17,500 volts | Double the circuit voltage |
| 17,501 - 22,500 volts | 35,000 volts |
| 22,501 - 35,500 volts | Double the circuit voltage |

NOTE: To meet dry flashover requirements, use of multiple insulators in series is permissible."

3. Requirements for Communication Lines, Rule 86.4 (Clearances), subsection E; Rule 86.6 (Sectionalizing and Grounding Requirements), subsections A, B(2), C and D; Rule 86.7 (Location of Sectionalizing Insulators), subsection A(2); are amended to increase the voltage provision from 22,500 volts to 35,500 volts, and shall read as follows:

86.4 Clearances

E. FROM POLES

"Where guys passing poles supporting supply conductors are less than 15 inches from surface of pole and less than 8 feet below supply conductors of less than 35,500 volts supported on such pole, the guys shall be sectionalized, in addition to the normal sectionalization required by Rule 86.6, by means of insulators in accordance with Rule 86.6-B2 as though attached to the pole or structure.

86.6 Sectionilizing and Grounding Requirements

"A. WHERE NOT EXPOSED TO SUPPLY CONDUCTORS

"Guys attached to or passing poles or structures supporting only communication conductors need not be sectionalized or grounded, provided such guys are not exposed to supply conductors of 250-22,500 volts and are not in proximity to supply conductors of 0-35,500 volts.

"B. SECTIONALIZED BECAUSE OF EXPOSURE OR PROXIMITY TO SUPPLY CONDUCTORS

"(2) Guys in Proximity: Every overhead or anchor guy, any portion of which is in proximity to a wood pole and supply conductors of 0-35.500 volts .

"C. EXPOSED TO SUPPLY CONDUCTORS OF MORE THAN 22.500 VOLTS

"Portions of guys exposed to supply conductors of more than 22,500 volts shall be securely grounded and such guys need not be sectionalized, unless sectionalization is required by Rule 86.6-B2 because or proximity to supply conductors or 0-35,500 volts (See App. G, Fig. 52c)

"D. GUYS ATTACHED TO GROUNDED POLES OR STRUCTURES

"Guys attached to securely grounded metal poles or structures are not required to be sectionalized except as required by Rule 86.6-B2 because of proximity to supply conductors of less than 35,500 volts supported on wood poles."

86.7 Location of Sectionalizing Insulators .

"A. OVERHEAD GUYS

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

"(2) In Proximity: Overhead guys which are required to be sectionalized by Rules 86.6-B2 shall have an insulator not less than 6 feet and not more than 9 feet (measured along the guy) from each point of attachment to poles crossarms or structures (see App. G. Figs. 47 and 48).

"Excepted from this requirement are guys to poles which support no conductors provided such guys are not in proximity to supply conductors of 0-35.500 volts on any poles other than the poles to which they are attached.

4. Requirements for Communication Lines, Rule 86.8 (Guy Insulators), introductory section and Table 16 are amended to increase nominal voltage provisions from 17,500 volts to 35,500 volts and to recognize the use of multiple insulators in series, and shall read as follows:

86.8 Guy Insulators

"Insulators which sectionalize guys shall conform to the following specifications.

"Table 16
Guy Insulator Flashover Voltages

| Nominal voltage of Circuit to Which Guy is in Proximity | Dry flashover voltage of insulators |
|---|---|
| 0 - 7,500 volts | 15,000 volts |
| 7,501 - 17,500 volts | Double the circuit voltage |
| 17,501 - 22,500 | 35,000 volts |
| 22,501 - 35,500 | Double the circuit voltage |

NOTE: To meet dry flashover requirements, use of multiple insulators in series is permissible."

Revise Fig 45 as Indicated

Guys in Proximity to Wood Poles

And Supply Conductors of ~~22,500~~ 35,500 Volts or Less

**Rules 21.3-D, 56.6-A and 86.6**

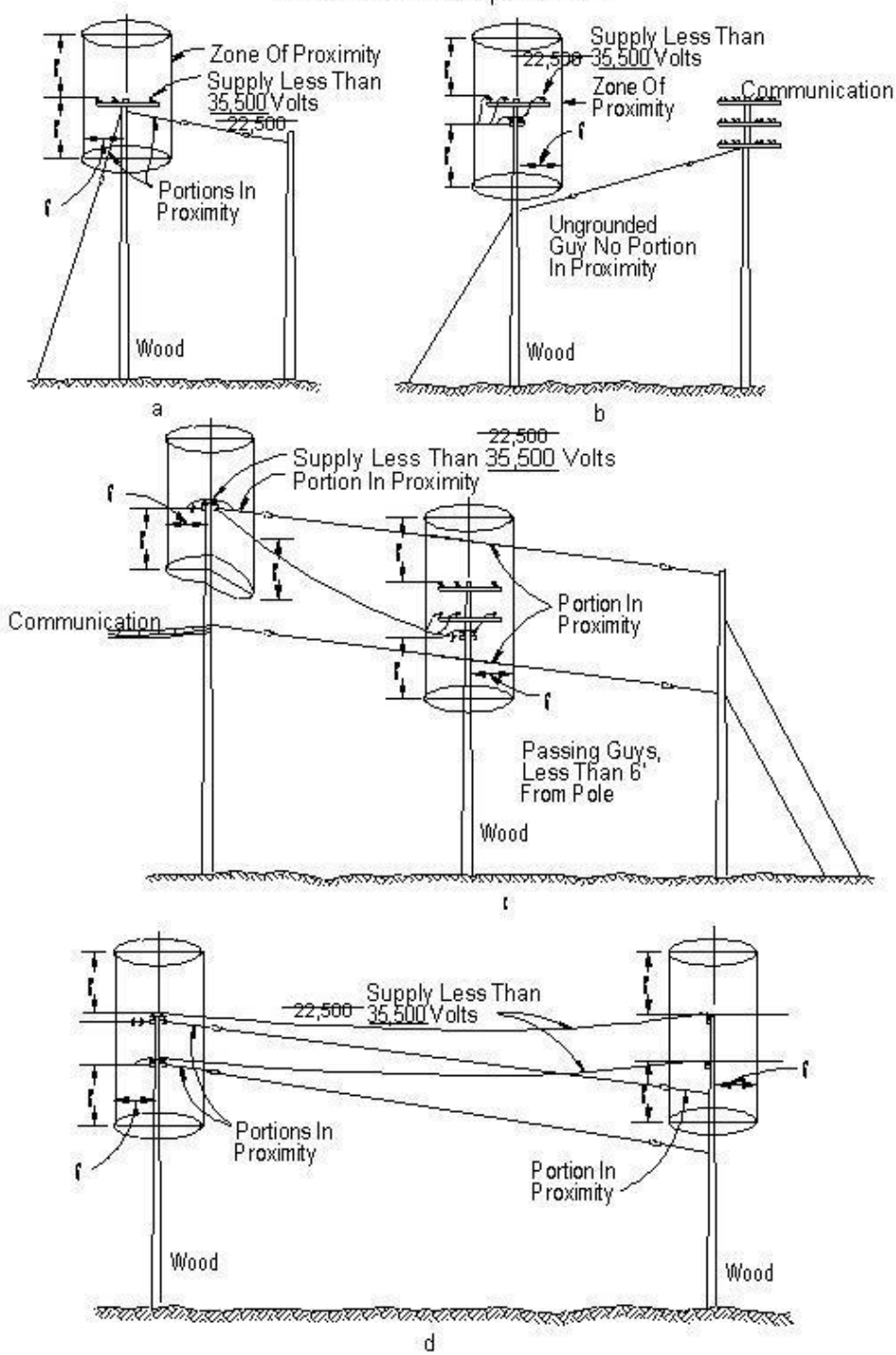



**Figure 45**

Guys in Proximity to Wood Poles and Supply Conductors of 35,500 Volts or Less

Revise Fig 46 as Indicated

**Rule 56.7-A**

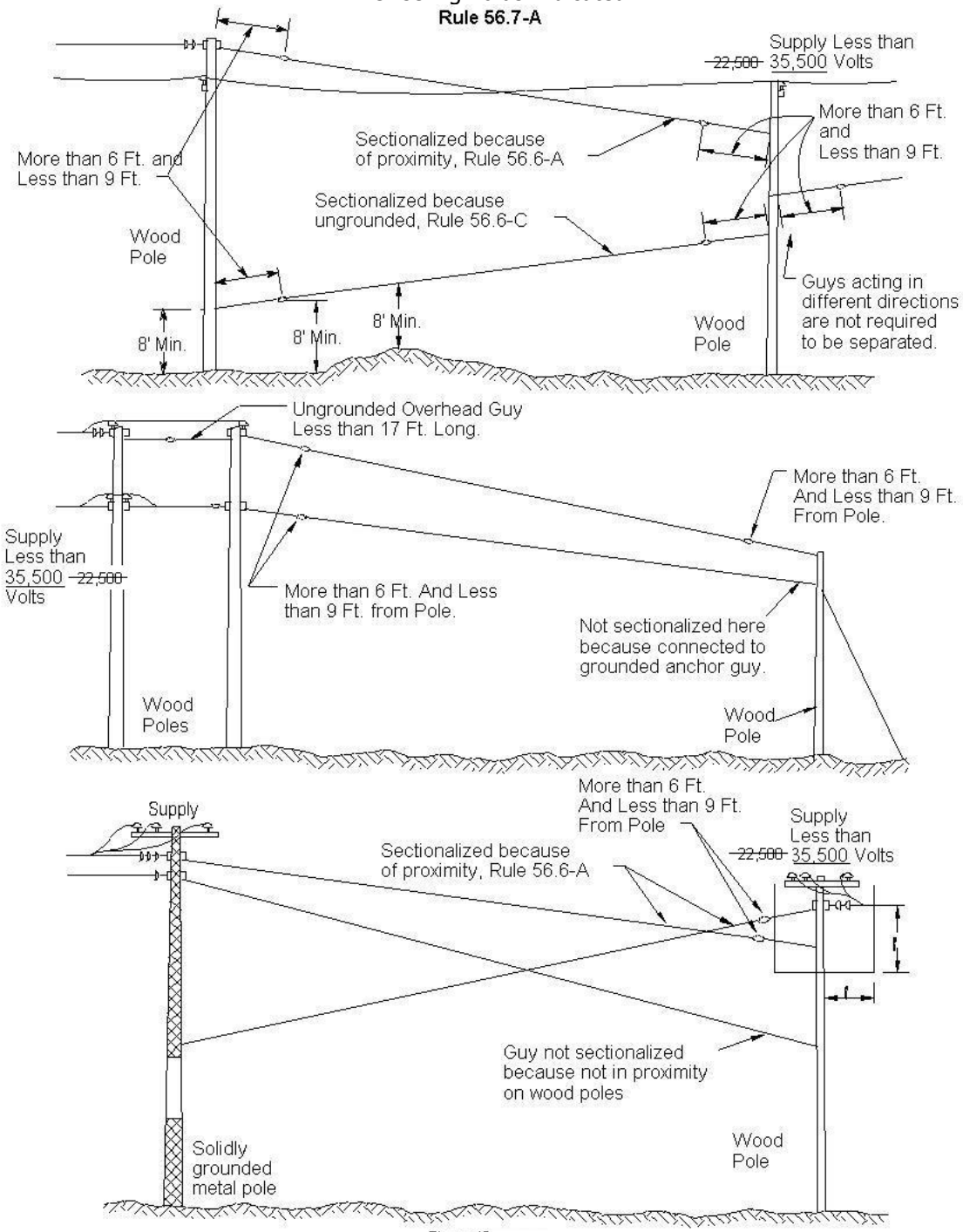



Figure 46

Sectionalization Of Overhead Guys on Supply Lines

Revise Fig 47 as Indicated

**Rule 86.7-A**

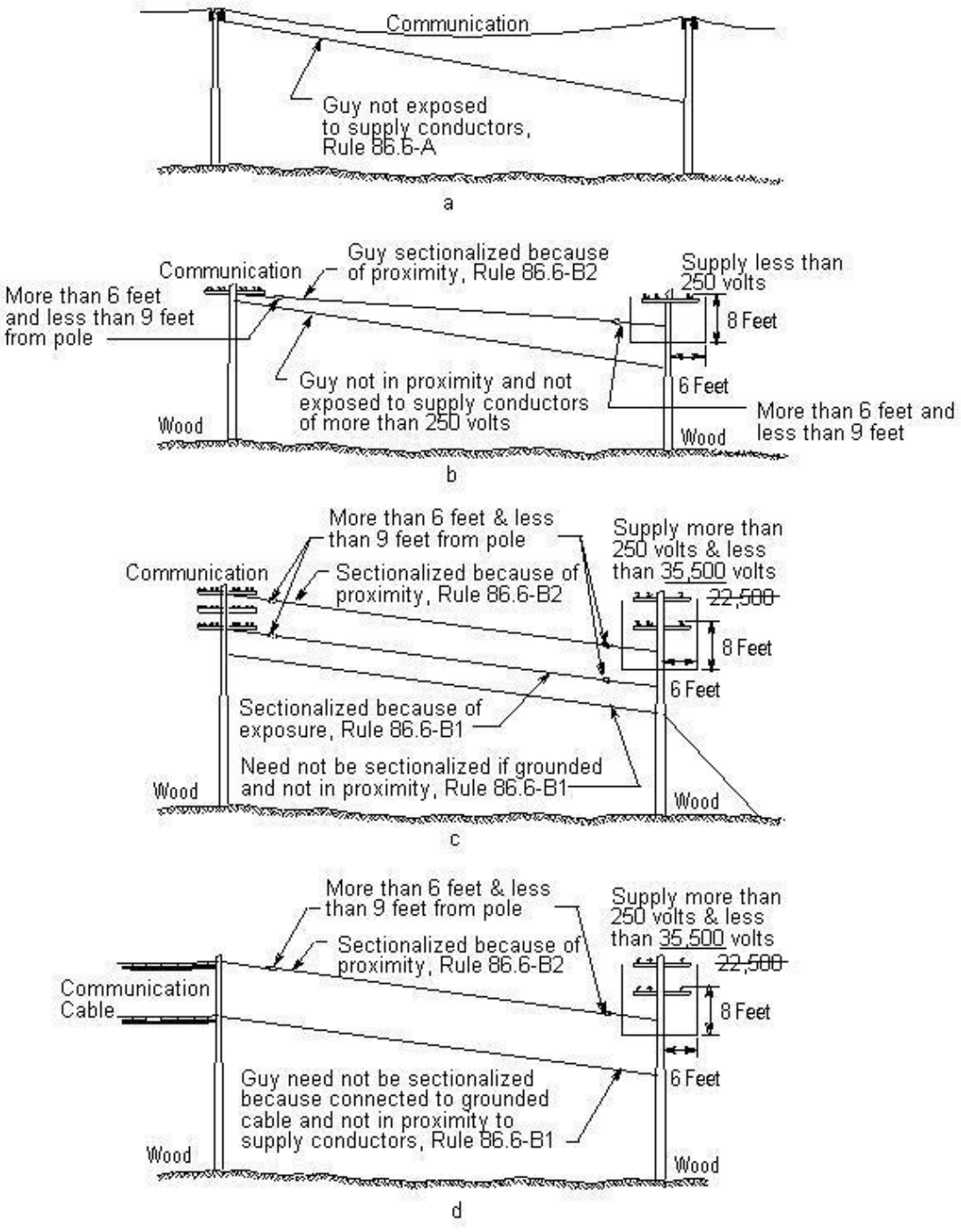
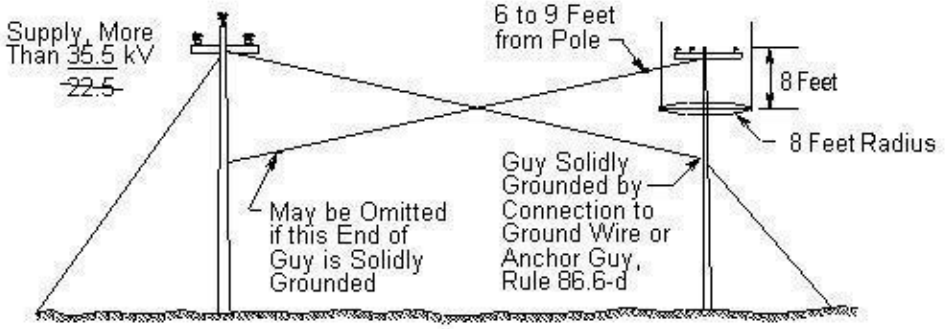


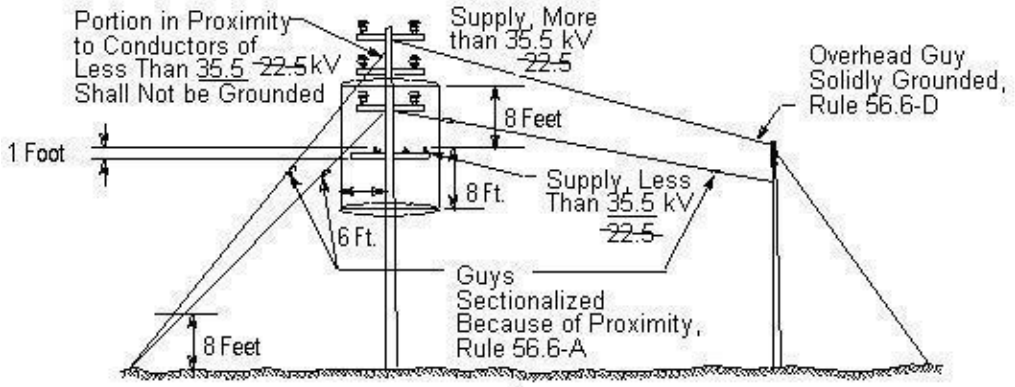

**Figure 47**
Sectionalization of Overhead Guys on Communication Lines

Revise Figure 52 as indicated

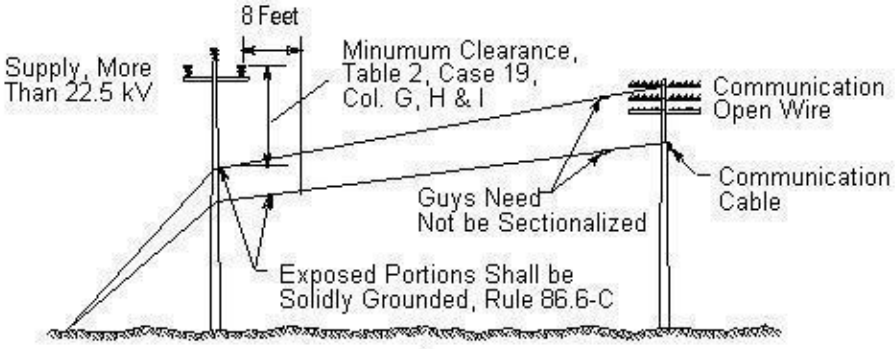
**Rules 21.3-C, 56.6-D and 86.6-C**




a




b




c

**Figure 52**

Guys Exposed to Supply Conductors of More Than 22,500 Volts or in Proximity of Supply Conductors More Than 35,500 Volts.

Strikeout and Underline Section added by Raymond G Fugere on August 7, 2002

**Original Version**

Rule 56.6-A

56.6-A Guys in Proximity to Supply Conductors of Less Than 22,500 Volts (See Rule 21.3-D for definition of proximity and Fig 45 of App. G)

All portions of guys within both a vertical distance of 8 feet from the level of supply conductors of less than 22,500 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.

**Strikeout and Underline Version**

Rule 56.6-A

56.6-A Guys in Proximity to Supply Conductors of Less Than ~~22,500~~ 35,500 Volts (See Rule 21.3-D for definition of proximity and Fig 45 of App. G)

All portions of guys within both a vertical distance of 8 feet from the level of supply conductors of less than ~~22,500~~ 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.

**Final Version**

Rule 56.6-A

56.6-A Guys in Proximity to Supply Conductors of Less Than 35,500 Volts (See Rule 21.3-D for definition of proximity and Fig 45 of App. G)

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.

**Original Version**
Rule 56.6-B

56.6-B Guys To Arms Supporting Conductors of Less Than 22,500 Volts

All portions of arm guys within 6 feet of points of attachment to wood crossarms, or metal crossarms on wood poles, shall not be grounded if the crossarms support supply conductors of less than 22,500 volts. Where necessary to avoid the grounding of such portions, arm guys shall be sectionalized by means of insulators at locations as specified in Rule 56.7.

**Strikeout and Underline Version**
Rule 56.6-B

56.6-B Guys To Arms Supporting Conductors of Less Than ~~22,500~~ 35,500 Volts

All portions of arm guys within 6 feet of points of attachment to wood crossarms, or metal crossarms on wood poles, shall not be grounded if the crossarms support supply conductors of less than ~~22,500~~ 35,500 volts. Where necessary to avoid the grounding of such portions, arm guys shall be sectionalized by means of insulators at locations as specified in Rule 56.7.

**Strikeout and Underline Version**
Rule 56.6-B

56.6-B Guys To Arms Supporting Conductors of Less Than 35,500 Volts

All portions of arm guys within 6 feet of points of attachment to wood crossarms, or metal crossarms on wood poles, shall not be grounded if the crossarms support supply conductors of less than 35,500 volts. Where necessary to avoid the grounding of such portions, arm guys shall be sectionalized by means of insulators at locations as specified in Rule 56.7.

**Original Version**
Rule 56.6-E

56.6-E Guys Attached To Grounded Poles or Structures

Guys attached to securely grounded metal poles or structures are not required to be sectionalized except as required by Rule 56.6-A because of proximity to supply conductors of less than 22,500 volts supported on wood poles, or by Rule 56.6-B.

**Strikeout and Underline Version**
Rule 56.6-E

56.6-E Guys Attached To Grounded Poles or Structures

Guys attached to securely grounded metal poles or structures are not required to be sectionalized except as required by Rule 56.6-A because of proximity to supply conductors of less than ~~22,500~~ 35,500 volts supported on wood poles, or by Rule 56.6-B.

**Strikeout and Underline Version**
Rule 56.6-E

56.6-E Guys Attached To Grounded Poles or Structures

Guys attached to securely grounded metal poles or structures are not required to be sectionalized except as required by Rule 56.6-A because of proximity to supply conductors of less than 35,500 volts supported on wood poles, or by Rule 56.6-B.

**Original Version**
Rule 56.8 (Table 13)

56.8 Guy Insulators

Insulators which sectionalize guys shall conform to the following specifications based on the highest voltage carried at the level on the pole, tower, structure or crossarm nearest which the guy is attached and also based on the voltage of higher voltage circuits through which the guy passes.

A Material

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

B Strength (see Rule 44, Table 4 and Rule 49.5-B)

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 their 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.

Table 13
Guy Insulator Flashover Voltage

| *Nominal voltage of circuits nearest point of attachments* | *Dry flashover voltage of insulators* |
|---|---|
| 0-7500 volts | 15,000 volts |
| 7500-17,500 volts | Double the circuit voltage |
| Over 17,500 volts | 35,000 volts |

**Strikeout and Underline Version**
Rule 56.8 (Table 13)

56.8 Guy Insulators

Insulators which sectionalize guys shall conform to the following specifications based on the highest voltage carried at the level on the pole, tower, structure or crossarm nearest which the guy is attached and also based on the voltage of higher voltage circuits through which the guy passes.

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

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Table 13
Guy Insulator Flashover Voltage

| *Nominal voltage of circuits ~~nearest point of attachments~~* Circuit to Which Guy Is in Proximity | *Dry flashover voltage of insulators* |
|---|---|
| 0-7500 volts | 15,000 volts |
| 750~~0~~1-17,500 volts | Double the circuit voltage |
| ~~Over~~ 17,50~~0~~1 – 22,500 volts | 35,000 volts |
| 22,501 – 35,500 volts | Double the circuit voltage |

Note: To Meet dry flashover requirements, use of multiple insulators in series is permissible

**Final Version**

Rule 56.8 (Table 13)

56.8 Guy Insulators

Insulators which sectionalize guys shall conform to the following specifications based on the highest voltage carried at the level on the pole, tower, structure or crossarm nearest which the guy is attached and also based on the voltage of higher voltage circuits through which the guy passes.

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

B Strength (see Rule 44, Table 4 and Rule 49.5-B)

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Table 13
Guy Insulator Flashover Voltage

| Nominal voltage of circuits Circuit to Which Guy Is in Proximity | Dry flashover voltage of insulators |
|---|---|
| 0-7500 volts | 15,000 volts |
| 7501-17,500 volts | Double the circuit voltage |
| 17,501 – 22,500 volts | 35,000 volts |
| 22,501 – 35,500 volts | Double the circuit voltage |

Note: To Meet dry flashover requirements, use of multiple insulators in series is permissible

**Original Version**
Rule 86.4-E

86.4-E From Poles

Where guys passing poles supporting supply conductors are less than 15 inches from surface of pole and less than 8 feet below supply conductors of less than 22,500 volts supported on such pole, the guys shall be sectionalized, in addition to the normal sectionalization required by Rule 86.6, by means of insulators in accordance with Rule 86.6-B2 as though attached to the pole or structure.

**Strikeout and Underline Version**
Rule 86.4-E

86.4-E From Poles

Where guys passing poles supporting supply conductors are less than 15 inches from surface of pole and less than 8 feet below supply conductors of less than ~~22,500~~ 35,500 volts supported on such pole, the guys shall be sectionalized, in addition to the normal sectionalization required by Rule 86.6, by means of insulators in accordance with Rule 86.6-B2 as though attached to the pole or structure.

**Final Version**
Rule 86.4-E

86.4-E From Poles

Where guys passing poles supporting supply conductors are less than 15 inches from surface of pole and less than 8 feet below supply conductors of less than 35,500 volts supported on such pole, the guys shall be sectionalized, in addition to the normal sectionalization required by Rule 86.6, by means of insulators in accordance with Rule 86.6-B2 as though attached to the pole or structure.

**Original Version**
Rule 86.6

86.6 Sectionalizing and Grounding Requirements

The general requirements governing the sectionalizing of guys by means of insulators are based upon the exposure or proximity of the guys to supply conductors. For definitions of guys exposed and guys in proximity to supply conductors see Rules 21.3-C and D respectively (see also App. G, Figs. 44 and 45). The following requirements shall apply to the treatment and sectionalizing of guys.

A Where Not Exposed To Supply Conductors

Guys attached to or passing poles or structures supporting only communication conductors need not be sectionalized or grounded provided such guys are not exposed to sup- ply conductors of 250-22,500 volts and are not in proximity to supply conductors of 0-22,500 volts.

B Sectionalized Because Of Exposure Or Proximity To Supply Conductors:

(1) Overhead Guys Exposed To Supply Conductors Of 250-22,500 Volts: Ungrounded overhead guys which are exposed to supply conductors of 250-22,500 volts, and which are not in proximity to supply conductors of 0-22,500 volts shall be sectionalized by means of insulators located as specified in Rule 86.7-A1 (see App. G, Fig. 44).

(2) Guys In Proximity: Every overhead or anchor guy, any portion of which is in proximity to a wood pole and supply conductors of 0-22,500 volts (see App. G, Figs 45, 48 and 49) shall be sectionalized by means of insulators as specified in Rule 86.7-A2 or Rule 86.7-B and no portion in proximity to such supply conductors shall be grounded. Excepted from this requirement are anchor guys, and grounded overhead guys, which are attached to poles at a level less than 8 feet but not less than 6 feet below the level of supply conductors provided the level of the guy attachment is at or below the level of communication cable messenger attached to the same pole (see App. G, Figs 48a and 49f). Also excepted from this requirement are anchor guys, and grounded over-head guys, which are attached to poles at a level less than 6

feet but not less than 4 feet below the level of supply conductors of 0-750 volts provided such guys are extensions of or attached to a cable messenger, are in the same vertical plane (or extension thereof) as the messenger, and are below the guard arms required by Rule 87.7-B for such a messenger (see App. G, Fig. 48a).

C Exposed To Supply Conductors Of More Than 22,500 Volts

Portions of guys exposed to supply conductors of more than 22,500 volts shall be securely grounded and such guys need not be sectionalized, unless sectionalization is required by Rule 86.6-B2 because of proximity to supply conductors of 0-22,500 volts. (See App. G, Fig. 52c.)

D Guys Attached To Grounded Poles Or Structures

Guys attached to securely grounded metal poles or structures are not required to be sectionalized except as required by Rule 86.6-B2 because of proximity to supply conductors of less than 22,500 volts supported on wood poles.

E Anchor Guys Through Supply Conductor Levels

An anchor guy which passes through the level of supply conductors at positions other than between pole pin positions or outside of the outer pin positions shall have insulators above and below the level of supply conductors at locations as specified in Rule 86.7-B. (See App. G, Fig. 49d.)

**Strikeout and Underline Version**
Rule 86.6

86.6 Sectionalizing and Grounding Requirements

The general requirements governing the sectionalizing of guys by means of insulators are based upon the exposure or proximity of the guys to supply conductors. For definitions of guys exposed and guys in proximity to supply conductors see Rules 21.3-C and D respectively (see also App. G, Figs. 44 and 45). The following requirements shall apply to the treatment and sectionalizing of guys.

A Where Not Exposed To Supply Conductors

Guys attached to or passing poles or structures supporting only communication conductors need not be sectionalized or grounded provided such guys are not exposed to sup- ply conductors of 250-22,500 volts and are not in proximity to supply conductors of 0-~~22,500~~ 35,500 volts.

B Sectionalized Because Of Exposure Or Proximity To Supply Conductors:

(1) Overhead Guys Exposed To Supply Conductors Of 250-22,500 Volts: Ungrounded overhead guys which are exposed to supply conductors of 250-22,500 volts, and which are not in proximity to supply conductors of 0-22,500 volts shall be sectionalized by means of insulators located as specified in Rule 86.7-A1 (see App. G, Fig. 44).

(2) Guys In Proximity: Every overhead or anchor guy, any portion of which is in proximity to a wood pole and supply conductors of 0-~~22,500~~ 35,500 volts (see App. G, Figs 45, 48 and 49) shall be sectionalized by means of insulators as specified in Rule 86.7-A2 or Rule 86.7-B and no portion in proximity to such supply conductors shall be grounded. Excepted from this requirement are anchor guys, and grounded overhead guys, which are attached to poles at a level less than 8 feet but not less than 6 feet below the level of supply conductors provided the level of the guy attachment is at or below the level of communication cable messenger attached to the same pole (see App. G, Figs 48a and 49f). Also excepted from this requirement are anchor guys, and grounded over- head guys, which are attached to

poles at a level less than 6 feet but not less than 4 feet below the level of supply conductors of 0-750 volts provided such guys are extensions of or attached to a cable messenger, are in the same vertical plane (or extension thereof) as the messenger, and are below the guard arms required by Rule 87.7-B for such a messenger (see App. G, Fig. 48a).

C Exposed To Supply Conductors Of More Than 22,500 Volts

Portions of guys exposed to supply conductors of more than 22,500 volts shall be securely grounded and such guys need not be sectionalized, unless sectionalization is required by Rule 86.6-B2 because of proximity to supply conductors of 0-~~22,500~~ 35,500 volts. (See App. G, Fig. 52c.)

D Guys Attached To Grounded Poles Or Structures

Guys attached to securely grounded metal poles or structures are not required to be sectionalized except as required by Rule 86.6-B2 because of proximity to supply conductors of less than ~~22,500~~ 35,500 volts supported on wood poles.

E Anchor Guys Through Supply Conductor Levels

An anchor guy which passes through the level of supply conductors at positions other than between pole pin positions or outside of the outer pin positions shall have insulators above and below the level of supply conductors at locations as specified in Rule 86.7-B. (See App. G, Fig. 49d.)

86.6 Sectionalizing and Grounding Requirements

The general requirements governing the sectionalizing of guys by means of insulators are based upon the exposure or proximity of the guys to supply conductors. For definitions of guys exposed and guys in proximity to supply conductors see Rules 21.3-C and D respectively (see also App. G, Figs. 44 and 45). The following requirements shall apply to the treatment and sectionalizing of guys.

A Where Not Exposed To Supply Conductors

Guys attached to or passing poles or structures supporting only communication conductors need not be sectionalized or grounded provided such guys are not exposed to supply conductors of 250-22,500 volts and are not in proximity to supply conductors of 0-35,500 volts.

B Sectionalized Because Of Exposure Or Proximity To Supply Conductors:

(1) Overhead Guys Exposed To Supply Conductors Of 250-22,500 Volts: Ungrounded overhead guys which are exposed to supply conductors of 250-22,500 volts, and which are not in proximity to supply conductors of 0-22,500 volts shall be sectionalized by means of insulators located as specified in Rule 86.7-A1 (see App. G, Fig. 44).

(2) Guys In Proximity: Every overhead or anchor guy, any portion of which is in proximity to a wood pole and supply conductors of 0-35,500 volts (see App. G, Figs 45, 48 and 49) shall be sectionalized by means of insulators as specified in Rule 86.7-A2 or Rule 86.7-B and no portion in proximity to such supply conductors shall be grounded. Excepted from this requirement are anchor guys, and grounded overhead guys, which are attached to poles at a level less than 8 feet but not less than 6 feet below the level of supply conductors provided the level of the guy attachment is at or below the level of communication cable messenger attached to the same pole (see App. G, Figs 48a and 49f). Also excepted from this requirement are anchor guys, and grounded over-head guys, which are attached to poles at a level less than 6

feet but not less than 4 feet below the level of supply conductors of 0-750 volts provided such guys are extensions of or attached to a cable messenger, are in the same vertical plane (or extension thereof) as the messenger, and are below the guard arms required by Rule 87.7-B for such a messenger (see App. G, Fig. 48a).

C Exposed To Supply Conductors Of More Than 22,500 Volts

Portions of guys exposed to supply conductors of more than 22,500 volts shall be securely grounded and such guys need not be sectionalized, unless sectionalization is required by Rule 86.6-B2 because of proximity to supply conductors of 0-35,500 volts. (See App. G, Fig. 52c.)

D Guys Attached To Grounded Poles Or Structures

Guys attached to securely grounded metal poles or structures are not required to be sectionalized except as required by Rule 86.6-B2 because of proximity to supply conductors of less than 35,500 volts supported on wood poles.

E Anchor Guys Through Supply Conductor Levels

An anchor guy which passes through the level of supply conductors at positions other than between pole pin positions or outside of the outer pin positions shall have insulators above and below the level of supply conductors at locations as specified in Rule 86.7-B. (See App. G, Fig. 49d.)

**Original Version**
**Rule 86.7-A**

86.7 Location of Sectionalizing Insulators

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

(1) Exposed: Ungrounded overhead guys which are required by Rule 86.6-B1 to be sectionalized because of exposure to supply conductors of 250-22,500 volts shall have an insulator not less than 6 feet and not more than 9 feet (measured along the guy) from each point of attachment to wood poles or structures which support conductors. One insulator will suffice where such an overhead guy is less than 17 feet in length between wood poles or structures.

(2) In Proximity: Overhead guys which are required to be sectionalized by Rule 86.6-B2 shall have an insulator not less than 6 feet and not more than 9 feet (measured along the guy) from each point of attachment to poles, crossarms or structures (see App. G, Figs. 47 and 48).

Excepted from this requirement are guys to poles which support no conductors provided such guys are not in proximity to supply conductors of 0-22,500 volts on any poles other than the poles to which they are attached. Such guys, if required to be sectionalized by Rule 86.6-B2, shall have an insulator 6 to 9 feet from the point of attachment to the pole which supports conductors (see App. G, Figs. 44b and 44e).

**Strikeout and Underline Version**
**Rule 86.7-A**

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Excepted from this requirement are guys to poles which support no conductors provided such guys are not in proximity to supply conductors of 0-~~22,500~~ 35,500 volts on any poles other than the poles to which they are attached. Such guys, if required to be sectionalized by Rule 86.6-B2, shall have an insulator 6 to 9 feet from the point of attachment to the pole which supports conductors (see App. G, Figs. 44b and 44e).

**Final Version**
**Rule 86.7-A**

86.7 Location of Sectionalizing Insulators

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Excepted from this requirement are guys to poles which support no conductors provided such guys are not in proximity to supply conductors of 0-35,500 volts on any poles other than the poles to which they are attached. Such guys, if required to be sectionalized by Rule 86.6-B2, shall have an insulator 6 to 9 feet from the point of attachment to the pole which supports conductors (see App. G, Figs. 44b and 44e).

**Original Version**
Rule 86.8 (Table 16)

86.8 Guy Insulators

Insulators which sectionalize guys shall conform to the following specifications based on the highest voltage of supply conductors carried at the level on the pole, tower, structure or crossarm nearest which the guy is attached and adequate for the voltage of supply circuits through which the guy passes.

A Material

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

B Strength (see Rule 44, Table 4 and Rule 49.5-B)

C Voltage Requirements

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

Insulation used in guys on communication lines shall have a dry flashover voltage not less than as specified in Table 16 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.

Table 16
Guy Insulator Flashover Voltage

| *Nominal voltage of circuits nearest point of attachments* | *Dry flashover voltage of insulators* |
|---|---|
| 0-7500 volts | 15,000 volts |
| 7500-17,500 volts | Double the circuit voltage |
| Over 17,500 volts | 35,000 volts |

**Strikeout and Underline Version**
Rule 86.8 (Table 16)

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Table 16
Guy Insulator Flashover Voltage

| *Nominal voltage of circuits* ~~*nearest point of attachments*~~ Circuit to Which Guy Is in Proximity | *Dry flashover voltage of insulators* |
|---|---|
| 0-7500 volts | 15,000 volts |
| 750~~0~~1-17,500 volts | Double the circuit voltage |
| ~~Over~~ 17,50~~0~~1 – 22,500 volts | 35,000 volts |
| 22,501 – 35,500 volts | Double the circuit voltage |

Note: To Meet dry flashover requirements, use of multiple insulators in series is permissible

**Strikeout and Underline Version**
Rule 86.8 (Table 16)

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|---|---|
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| 7501-17,500 volts | Double the circuit voltage |
| 17,501 – 22,500 volts | 35,000 volts |
| 22,501 – 35,500 volts | Double the circuit voltage |

Note: To Meet dry flashover requirements, use of multiple insulators in series is permissible

Figure 45 Original Version

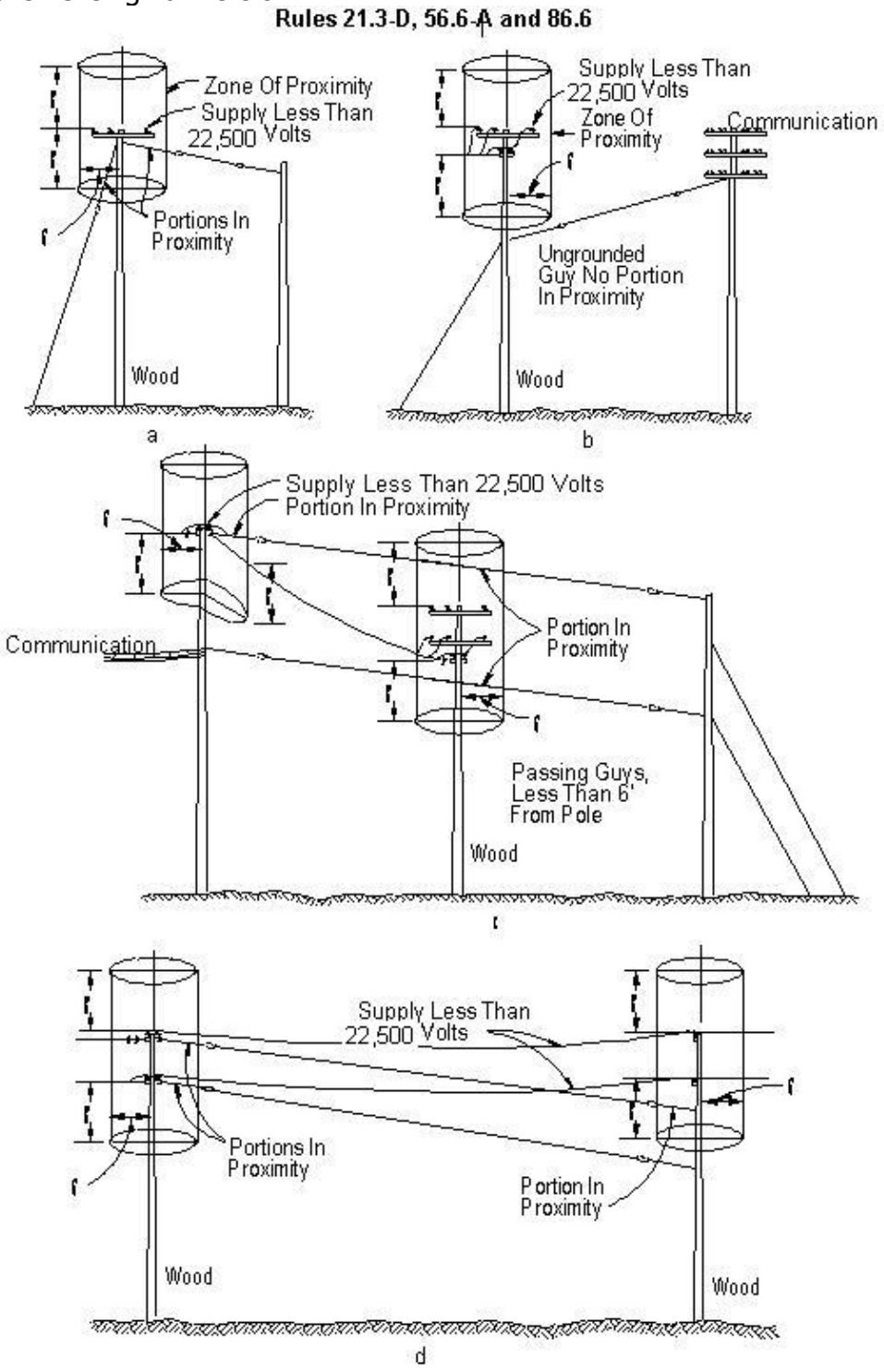


**Figure 45**
Guys in Proximity to Wood Poles and Supply Conductors of 35,500 Volts or Less

Figure 45 Strikeout and Underline Version

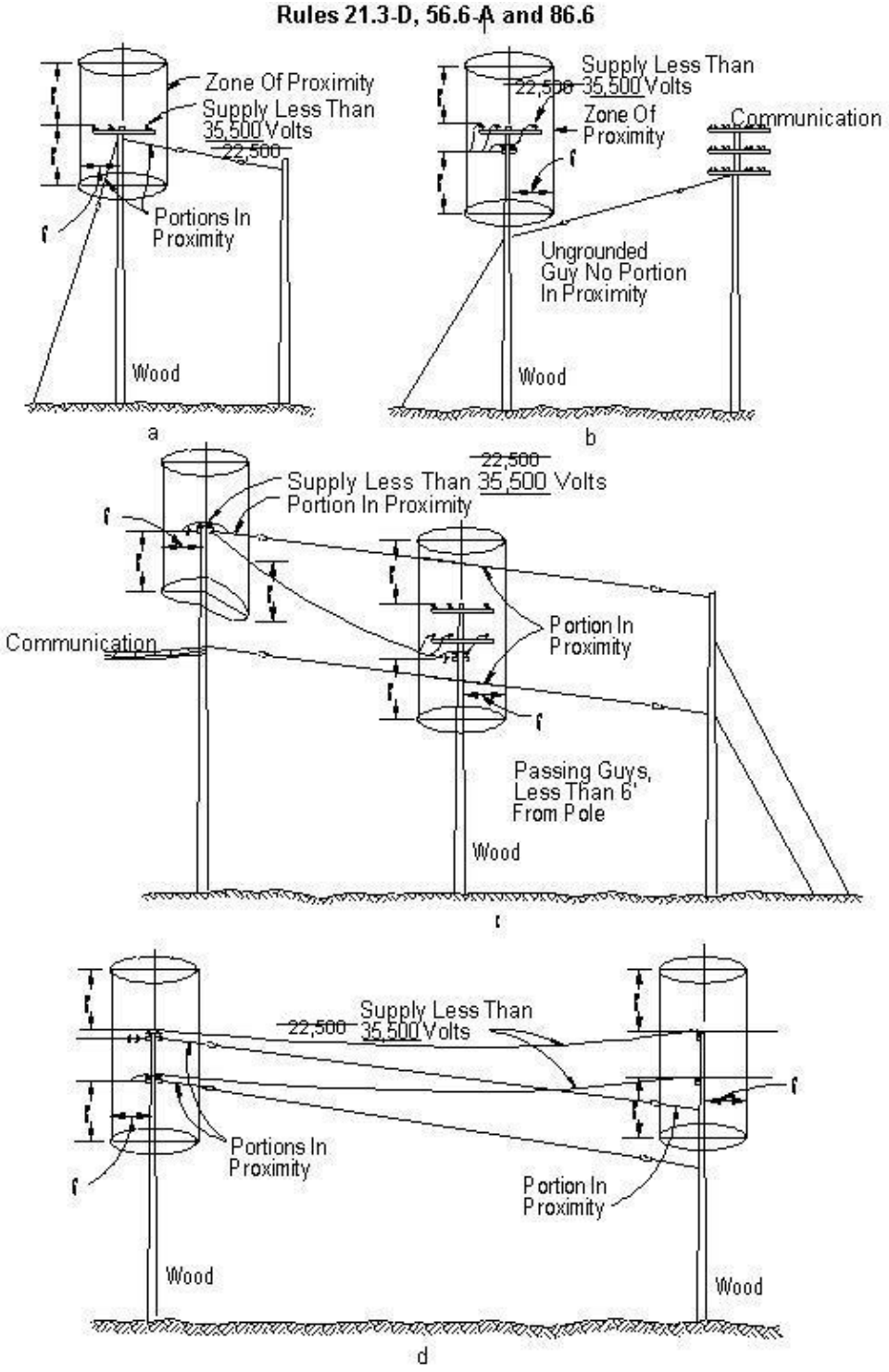


**Figure 45**
Guys in Proximity to Wood Poles and Supply Conductors of 35,500 Volts or Less

Figure 45 Final Version

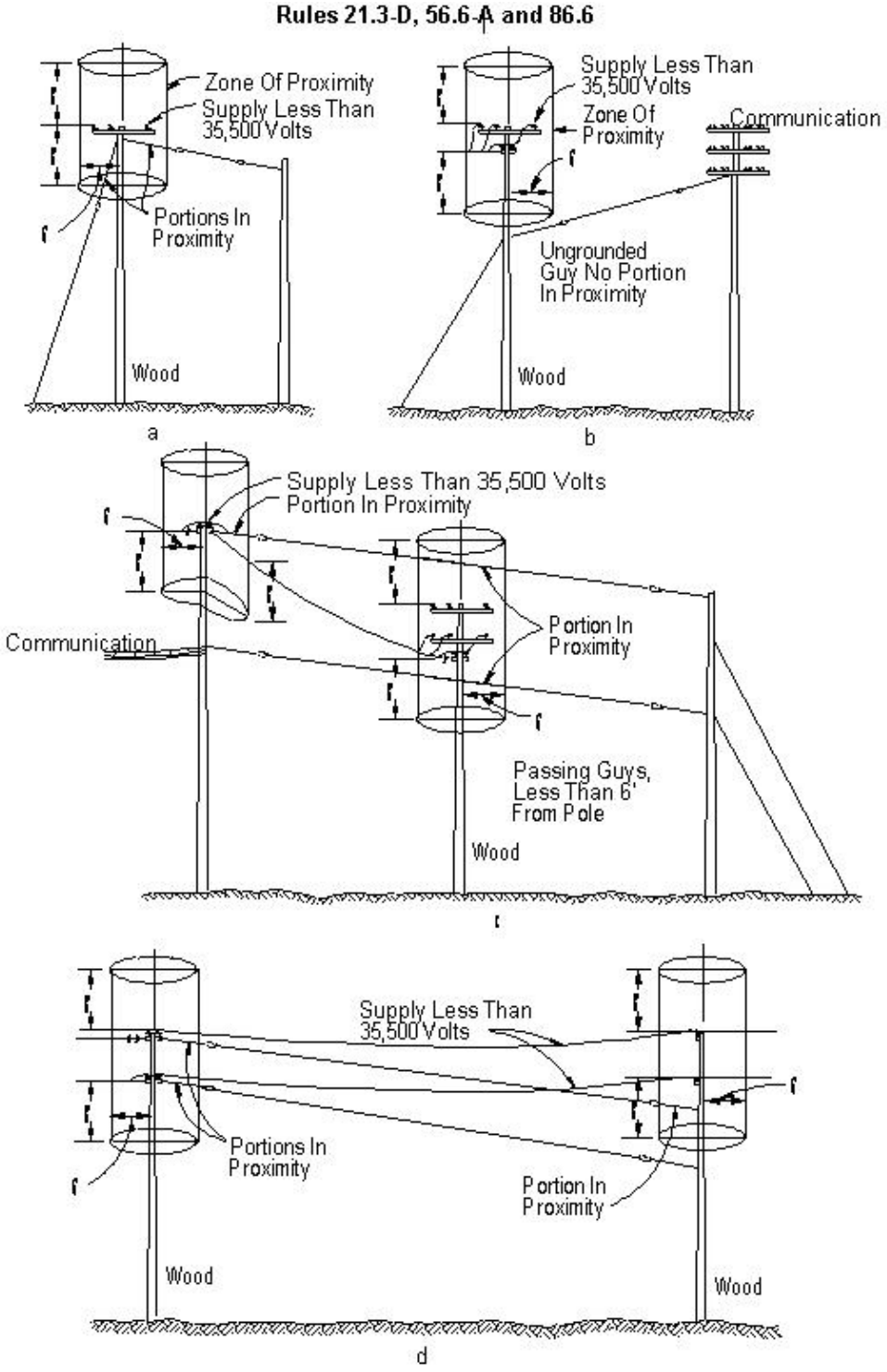


**Figure 45**
Guys in Proximity to Wood Poles and Supply Conductors of 35,500 Volts or Less

Figure 46 Original Version

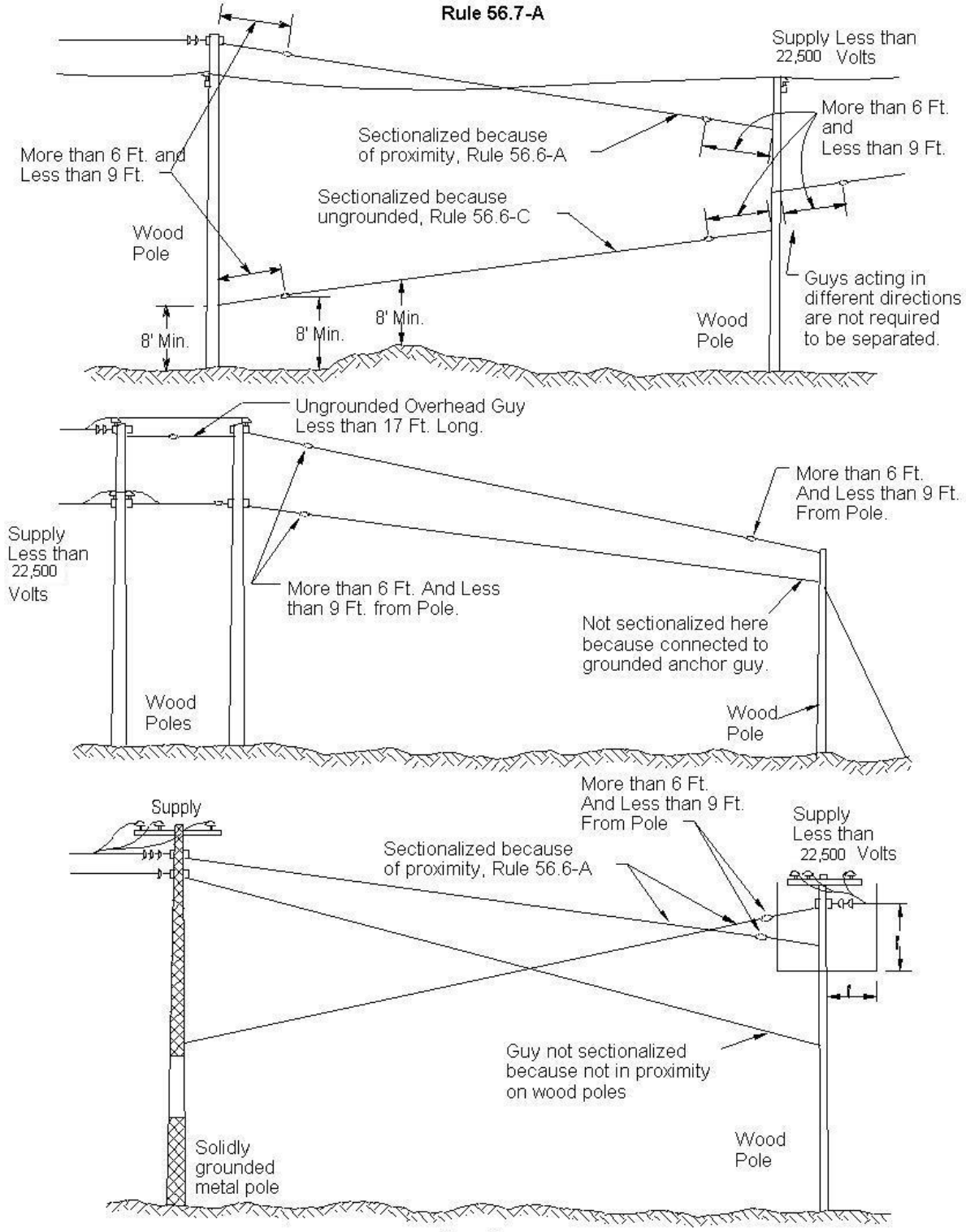


Figure 46
Sectionalization Of Overhead Guys on Supply Lines

Figure 46 Strikeout and Underline Version

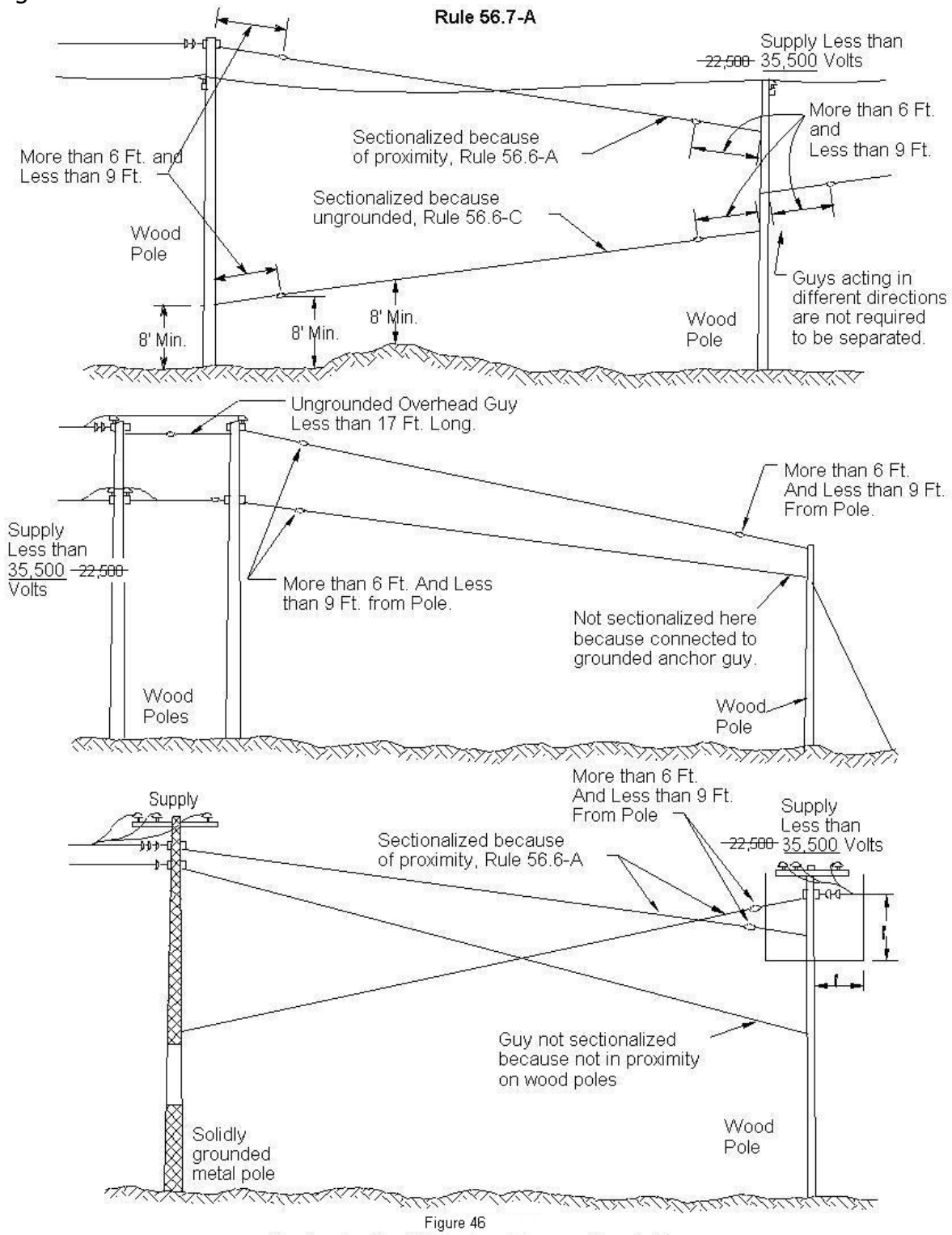


Figure 46
Sectionalization Of Overhead Guys on Supply Lines

Figure 46 Final Version

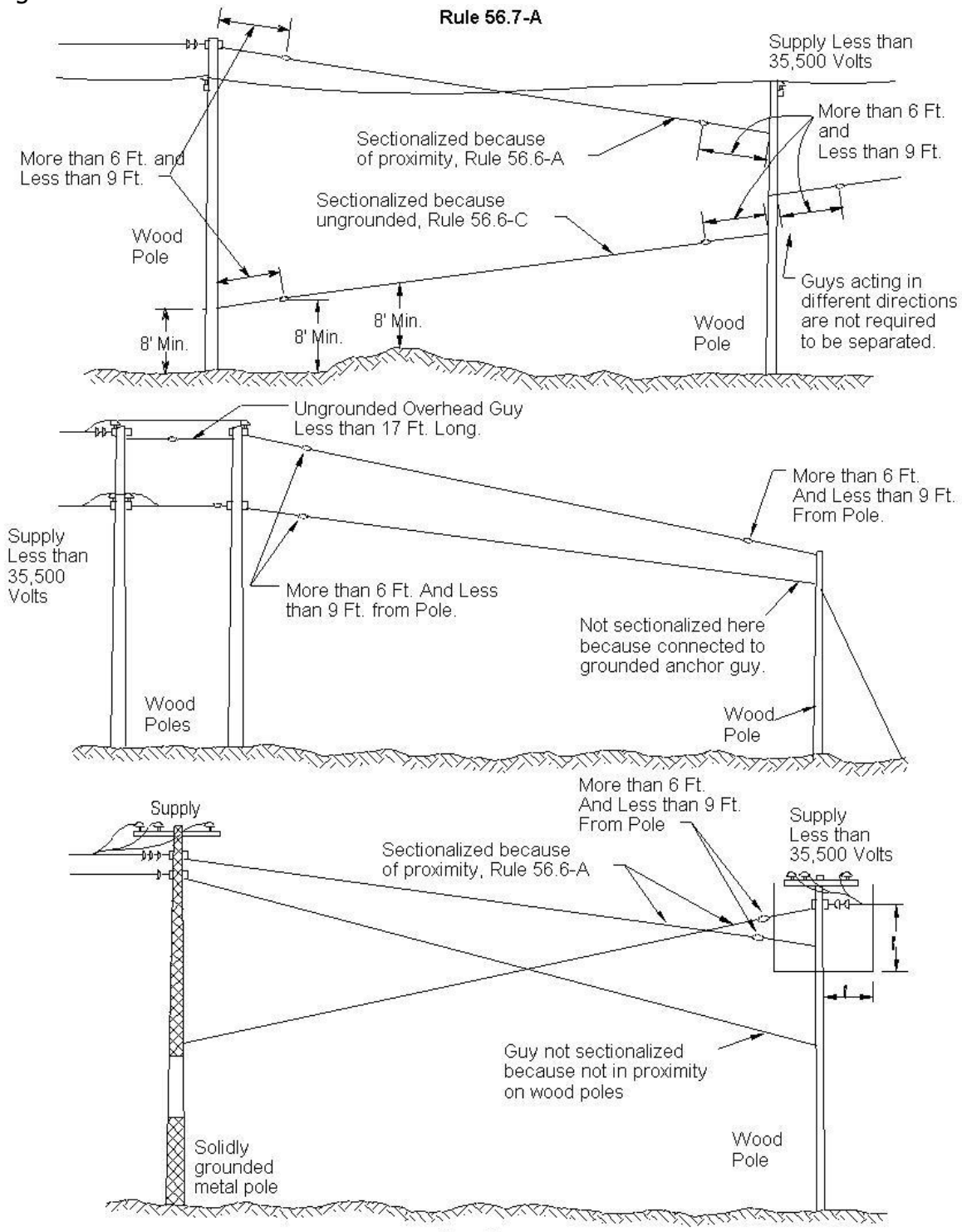


Figure 46
Sectionalization Of Overhead Guys on Supply Lines

Figure 47 Original Version

**Rule 86.7-A**

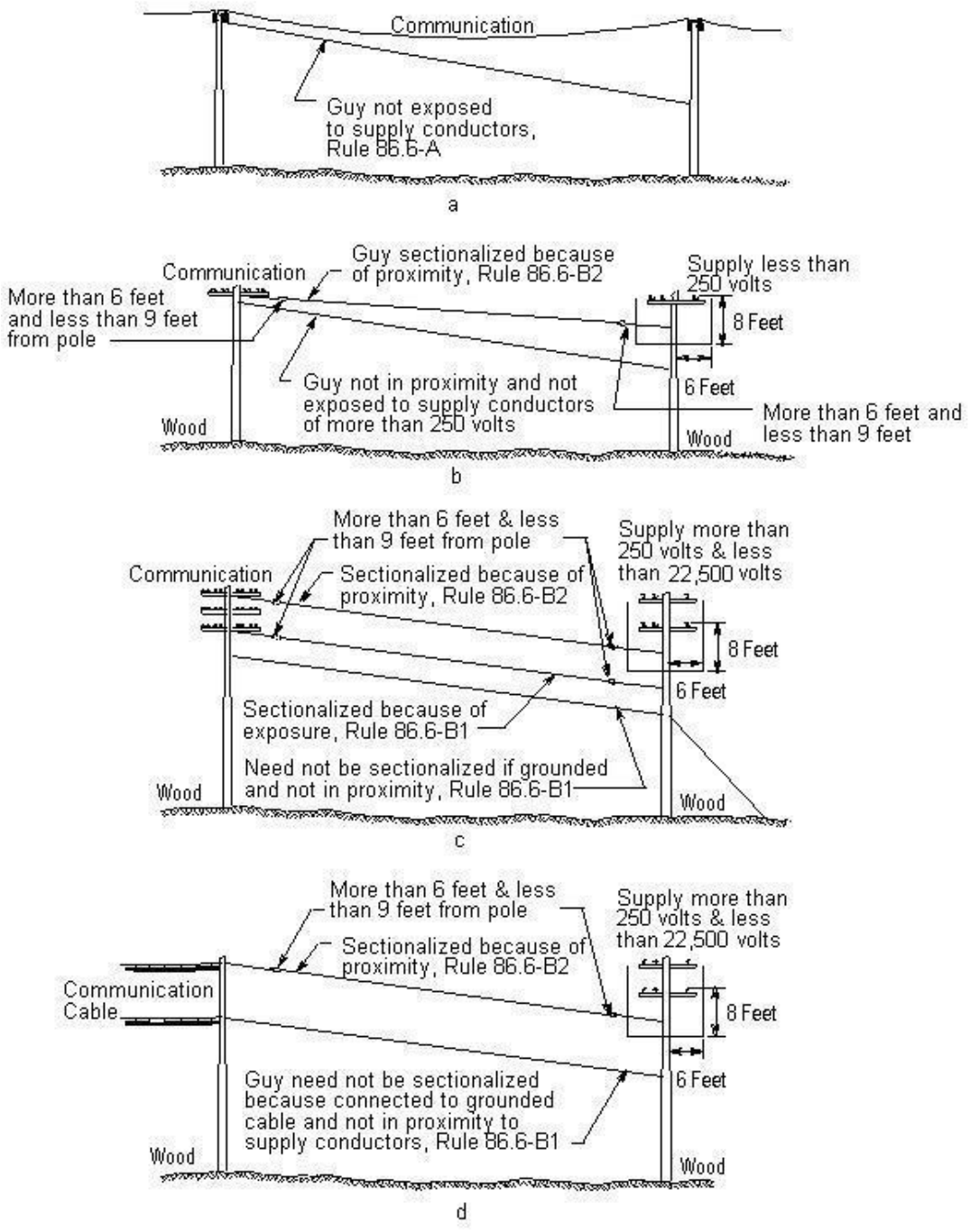


**Figure 47**
Sectionalization of Overhead Guys on Communication Lines

Figure 47 Strikeout and Underline Version

**Rule 86.7-A**

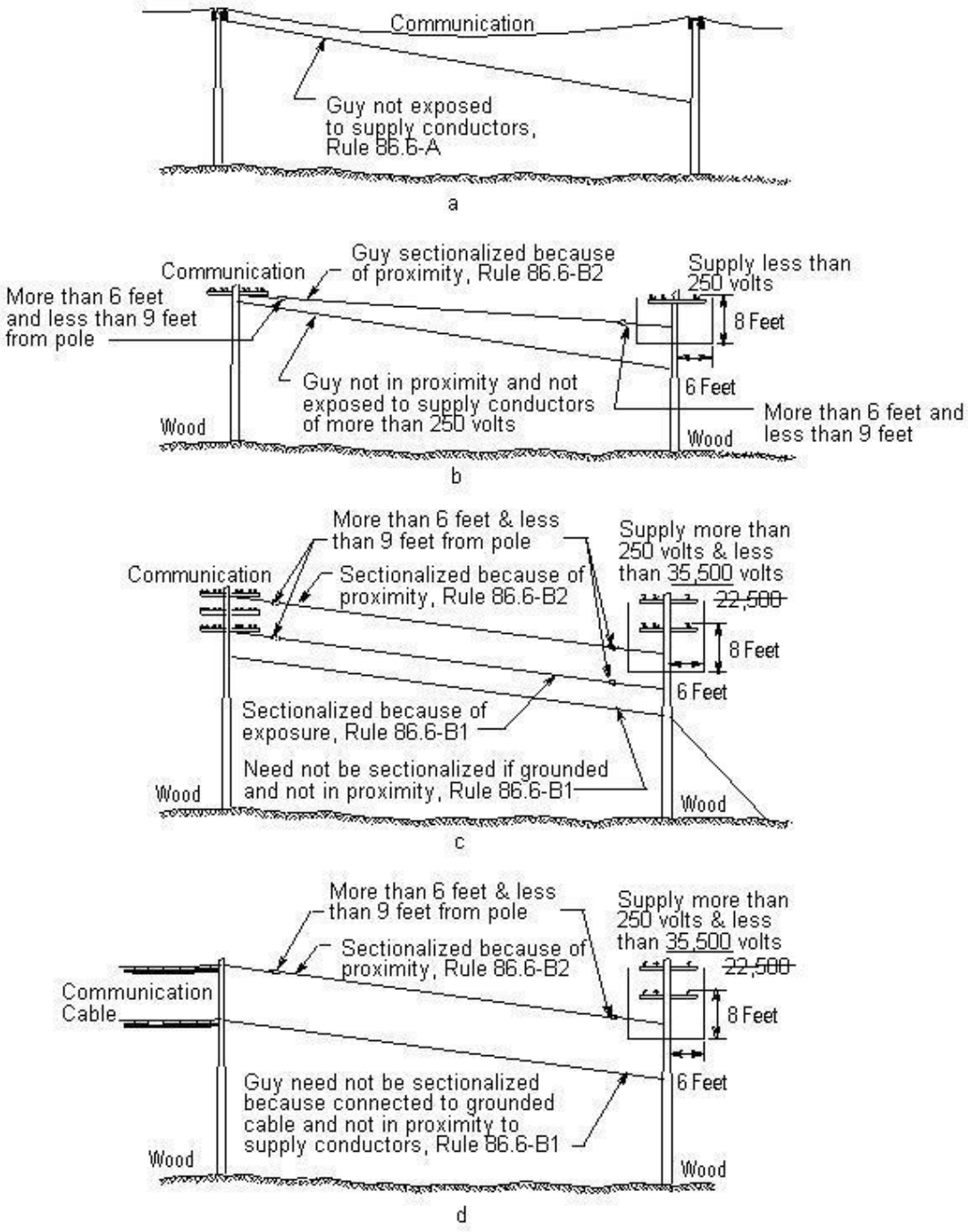


**Figure 47**
Sectionalization of Overhead Guys on Communication Lines

Figure 47 Final Version

**Rule 86.7-A**

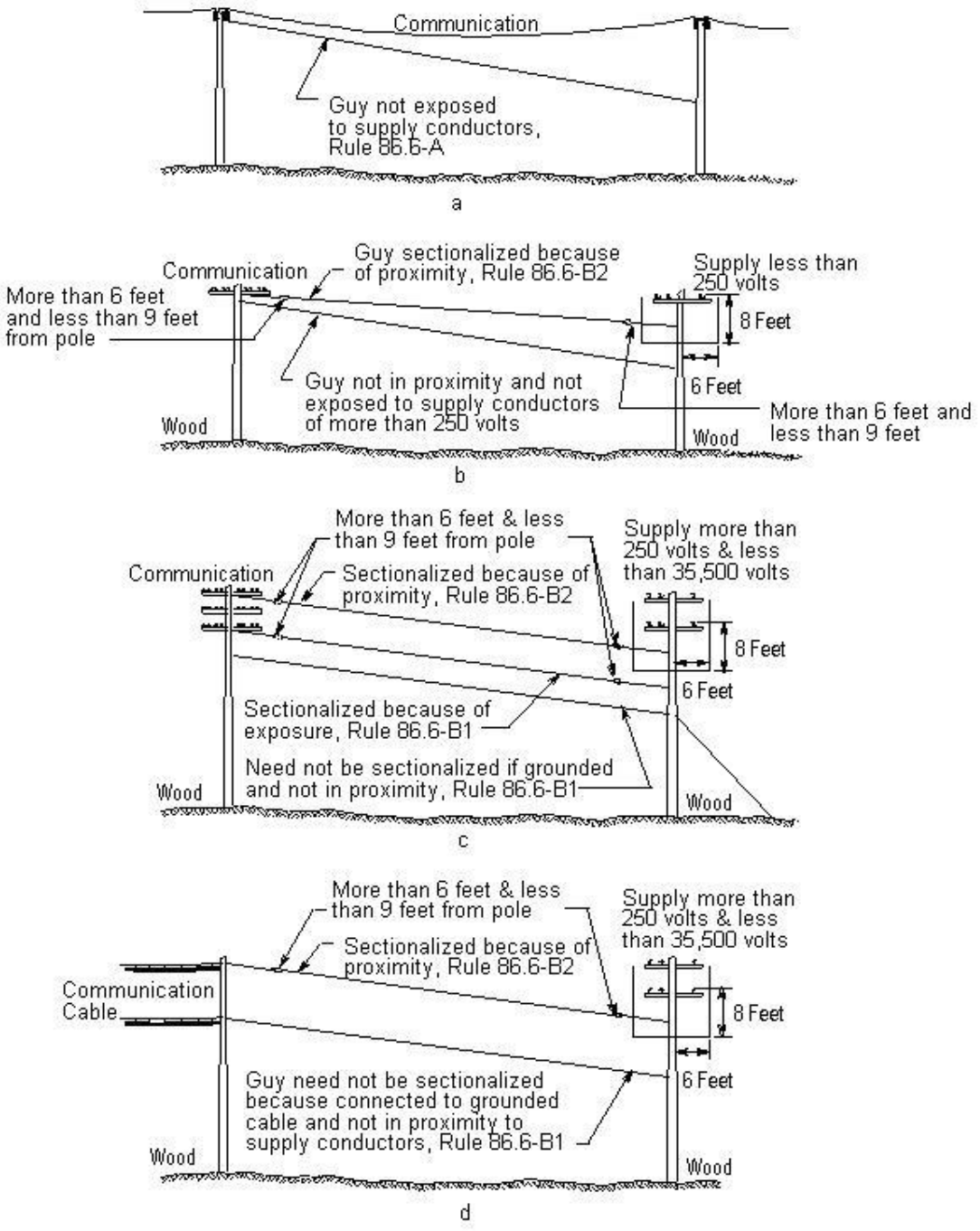


**Figure 47**
Sectionalization of Overhead Guys on Communication Lines

Figure 52 Original Version

**Rules 21.3-C, 56.6-D and 86.6-C**

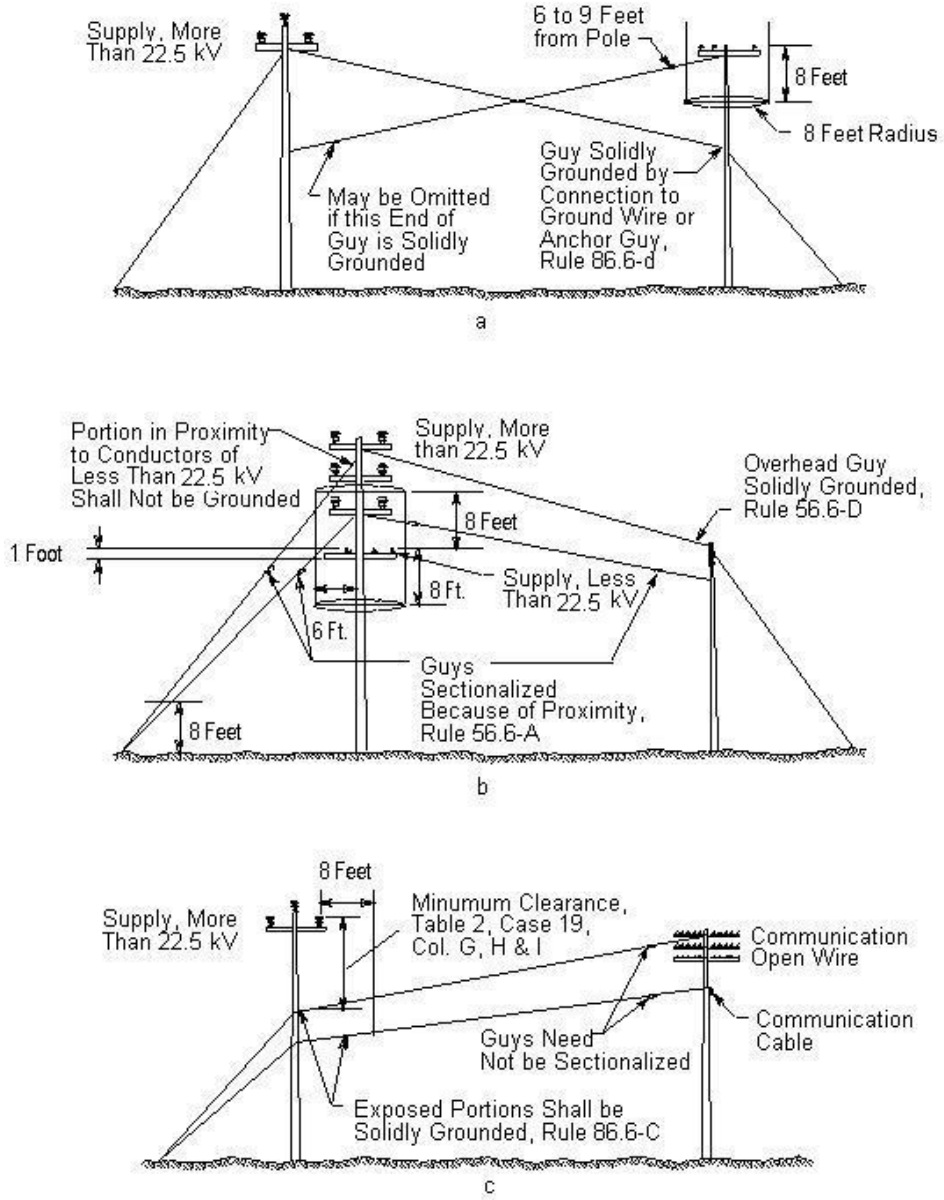


**Figure 52**
Guys Exposed to Supply Conductors of More Than 22,500 Volts or in Proximity of Supply Conductors More Than 35,500 Volts.

Figure 52 Strikeout and Underline Version

**Rules 21.3-C, 56.6-D and 86.6-C**

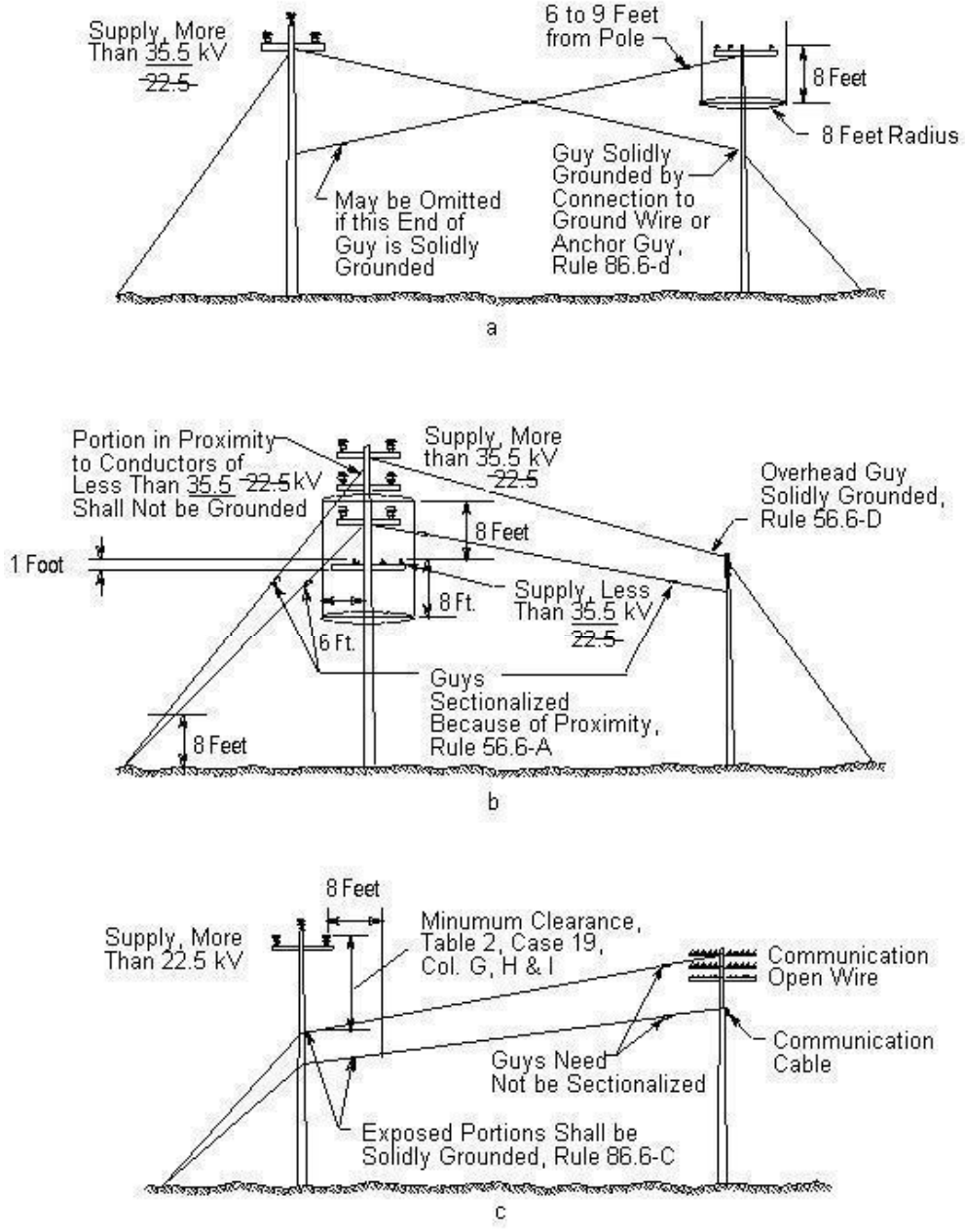


**Figure 52**
Guys Exposed to Supply Conductors of More Than 22,500 Volts or in Proximity of Supply Conductors More Than 35,500 Volts.

Figure 52 Final Version

**Rules 21.3-C, 56.6-D and 86.6-C**

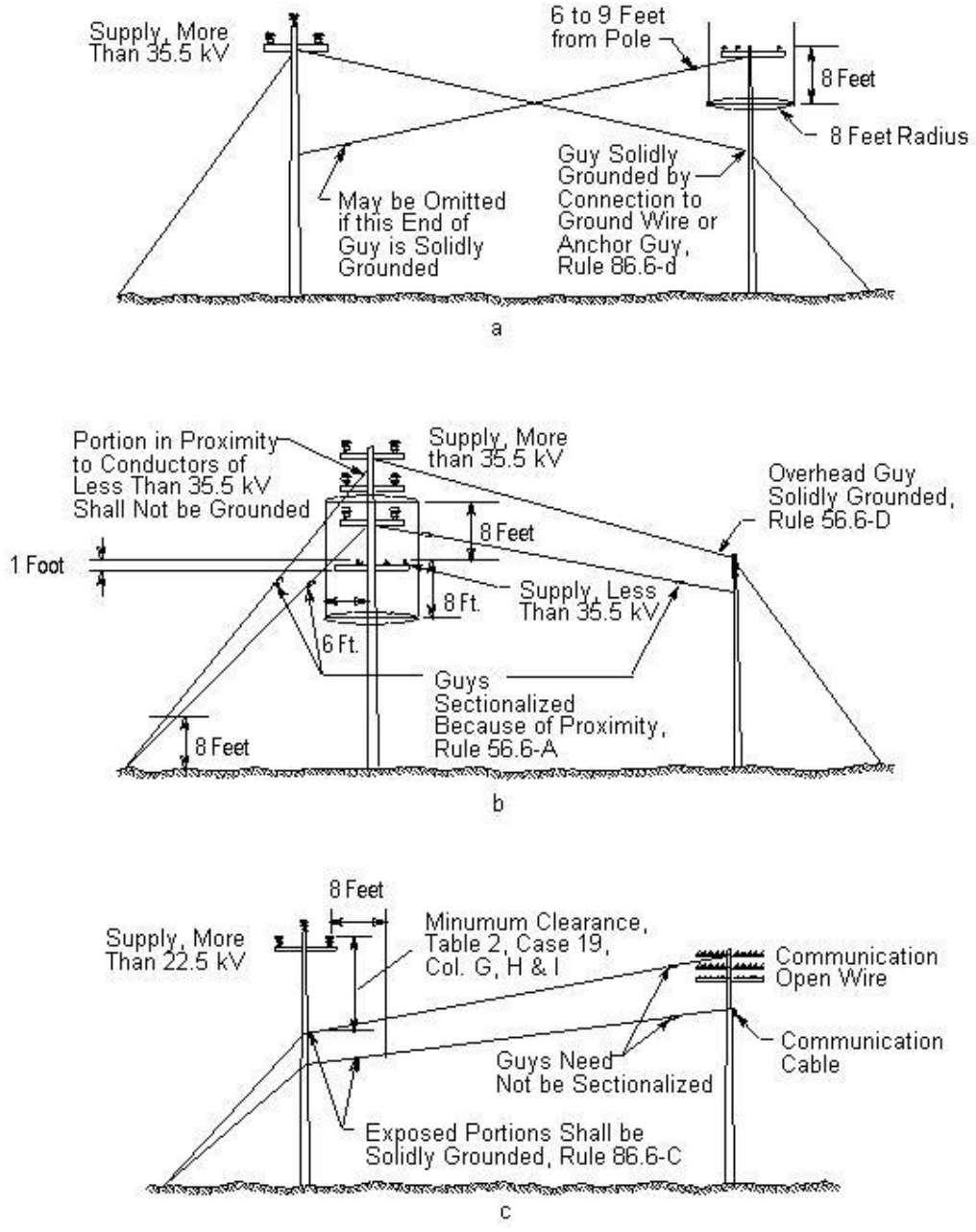


**Figure 52**
Guys Exposed to Supply Conductors of More Than 22,500 Volts or in Proximity of Supply Conductors More Than 35,500 Volts.