

AERIAL CABLE MECHANICAL PROTECTION

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1. GENERAL

1.01 This section describes and illustrates the various means of providing mechanical protection for aerial cable.

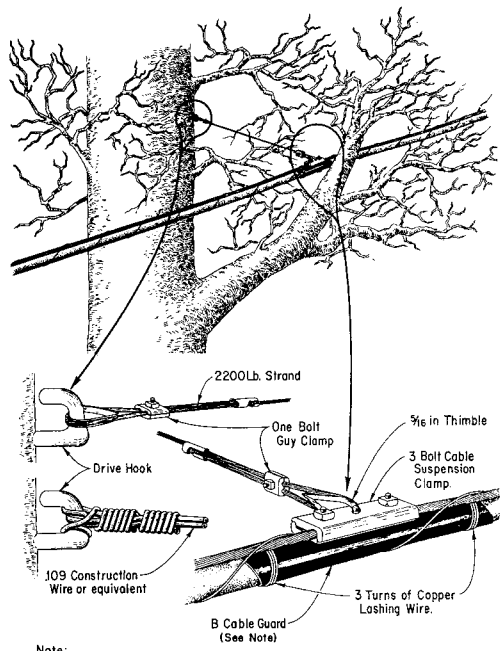
1.02 This section, which was originally issued in 1957, has been reviewed and reissued to indicate that the information covered is still valid.

2. PROTECTING CABLE FROM TREES

2.01 Where it is impracticable to trim trees or to use extension arms to clear the trees, protect the cable in one of the following ways:

- (a) Use a "pull-off" (with approval of supervision or as indicated on the work print). Figure 1 illustrates the construction where the cable is lashed to the strand. Where cable is supported in rings, the construction is the same except that the cable guard is not required.

**Reprinted to comply with modified final judgment.



Note:
Lashed cable supports or recovered cable sheath may be used to protect cable.

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Fig. 1—Pull-off Construction Used to Prevent Cable Contact With Tree Limb

- (b) Use a C Tree Guard, as shown in Fig. 2, where clearance for the cable can be provided by placing a guard on the strand. This method can be used only where the cable is supported in rings.
- (c) Use a D Tree Guard, as shown in Fig. 3, where the C Tree Guard would not be satisfactory for protecting ring supported cable from contact with the tree or limb.
- (d) Use an L Tree Guard for protecting a lashed cable from contact with the tree or limb.

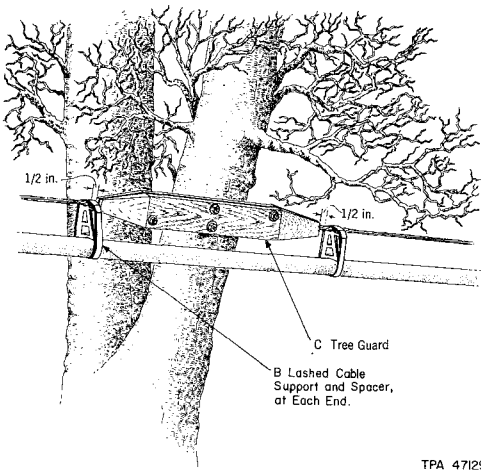


Fig. 2—C Tree Guard Installed to Protect Cable in Rings.

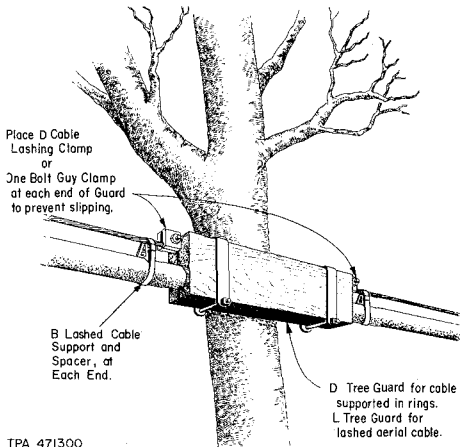


Fig. 3—D Tree Guard Installed to Protect Cable in Rings

Where an L Tree Guard is required, it shall be installed as shown in Fig. 4.

(e) Where a C, D, or L Tree Guard rubs heavily against the trunk or limb, nail a wood tree

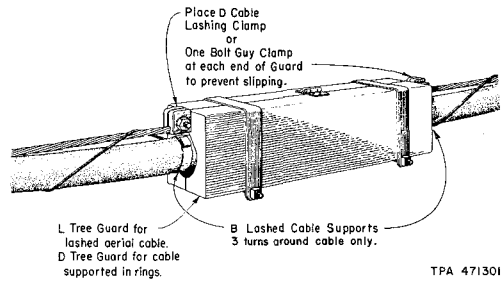


Fig. 4—L Tree Guard Installed to Protect Lashed Cable

block to the trunk or limb at the point of contact to protect the tree from injury. See Fig. 5.

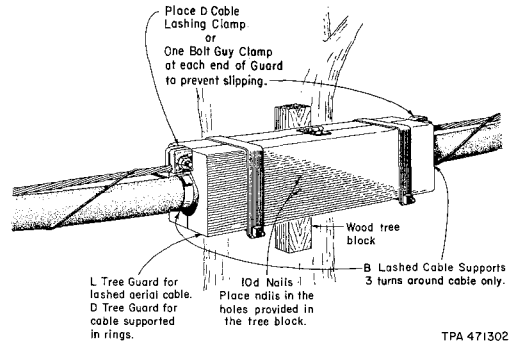


Fig. 5—Tree Block Installed to Prevent Injury to Tree

(f) Where adequate protection would not be provided by a C or D Tree Guard, and it is necessary to protect ring supported cable through heavy tree growth for several feet, use half-round wood molding as shown in Fig. 6. The sizes of wood molding are shown in 5.02.

(g) Where adequate protection would not be provided by an L Tree Guard, and it is necessary to protect lashed cable through heavy tree growth for several feet, use half-round wood molding as shown in Fig. 7. The size of molding used should be 1/2 inch larger than the outside diameter of the cable.

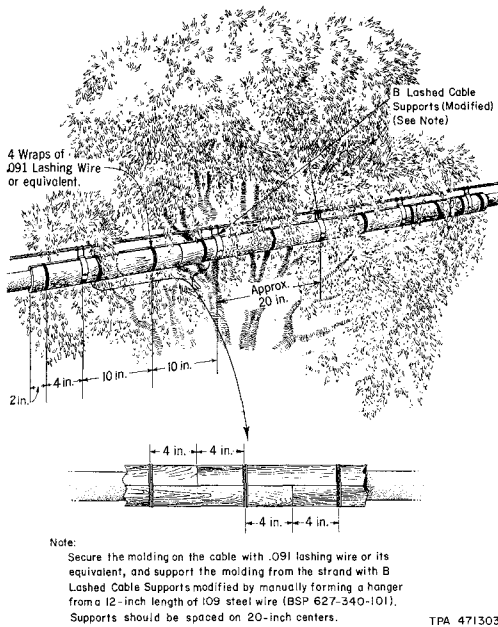


Fig. 6—Half-Round Wood Molding Used to Protect Ring Supported Cable in Heavy Tree Growth

3. PROTECTING CABLE FROM TROLLEY CONTACT WIRES

3.01 Where clearance above trolley contact wire specified in the Clearance Practices cannot

be obtained or when specified on the work print, place two or more D Tree Guards over ring supported cable and suspension strand (Fig. 8). Place an L Trolley Guard over lashed cable and suspension strand, securing the guard to the strand as shown in 2.01 (d).

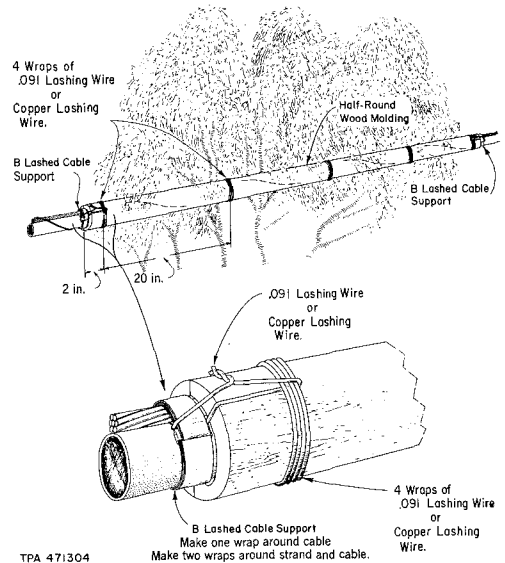
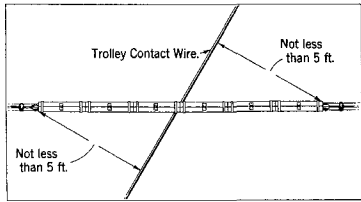
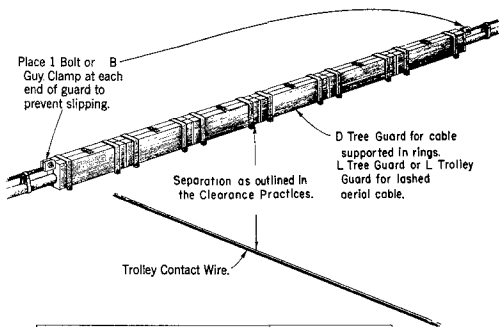


Fig. 7—Half-Round Wood Molding Used to Protect Lashed Cable in Heavy Tree Growth



Note:
Extend the protection at least 5 ft. each side of the trolley contact wire or wires as shown above.

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Fig. 8—Tree Guard Used to Protect Cable from Trolley Contact Wires

3.02 The sizes of the D Tree Guards to be used with the various sizes of *ring supported cable* are as follows:

For Use with Cable Not Over (Inches)	Nominal Size of Guard (Inches)
1-1/4	1-1/2
2	2
2-3/8	2-1/2
2-5/8	2-7/8
3	3-1/4

Note: The D Tree Guard is 2 feet in length.

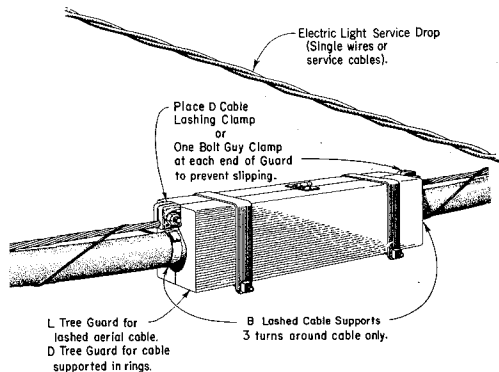
3.03 The sizes of the L Trolley Guards and L Tree Guards to be used with the various sizes of *lashed cable* are as follows:

Maximum Diameter of Cable (Inches)	Size of Guard (Inches)
1-3/8	1-3/4
2	2-3/8
2-5/8	3

Note: The L Tree Guard is 2 feet and the L Trolley Guard is 5 feet in length.

4. PROTECTING CABLE FROM ELECTRIC LIGHT SERVICE DROPS AND TROLLEY POLES

4.01 Where there is a possibility of contact due to sagging of an electric light service drop, place a tree guard as shown in Fig. 9.



Note:
Where a single Tree Guard does not afford adequate protection place two or more Tree Guards.

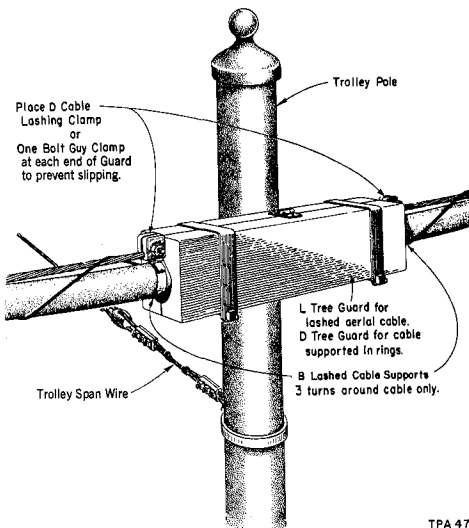
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Fig. 9—L Tree Guard Used to Protect Cable from Electric Light Service Drop

4.02 Where there is a possibility of the cable swinging into contact with a metal trolley pole supporting a span wire, consideration should be given to one of the following:

- (a) Place cable extension arms on the poles to provide adequate clearance between the cable and the trolley poles.
- (b) Reroute the pole line.

Where it is not practicable to place extension arms or reroute the pole line, tree guards should be placed as shown in Fig. 10.

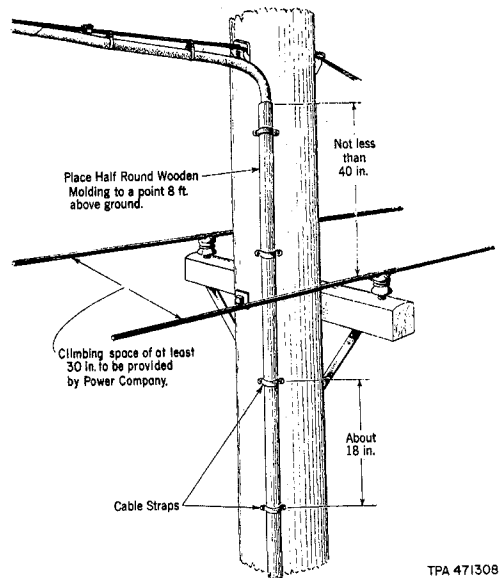


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Fig. 10—L Tree Guard Used to Protect Cable from Contact With Metal Pole

5. PROTECTING VERTICAL RUNS OF CABLE

5.01 Where the cable passes between trolley feeders or power wires on jointly used poles, protect the cable with half-round wood molding as shown in Fig. 11. Two sections of half-round molding are required to encircle the cable and these shall be secured to the pole by means of cable straps and 2-inch strap nails.



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Fig. 11—Half-Round Wood Molding Used to Protect Vertical Cable Run

5.02 The following shows the sizes of molding and cable straps that are required with the various sizes of cable:

Outside Diameter of Cable (Inches)	Half Round Molding Size (Inches)	Cable Strap Size
1/2	1/2	20
9/16 to 1	1	30
1-1/16 to 1-1/4	1-1/4	36
1-5/16 to 1-1/2	1-1/2	36
1-9/16 to 2	2	56
2-1/16 to 2-1/2	2-1/2	56

6. PROTECTING CABLE FROM GUYS

6.01 To avoid contact between the cable and a guy, place a tree guard on the cable as shown in Fig. 12.

7. PROTECTING CABLE FROM BLASTING OPERATIONS

7.01 Where there would be a possibility of damage to aerial cable resulting from blasting

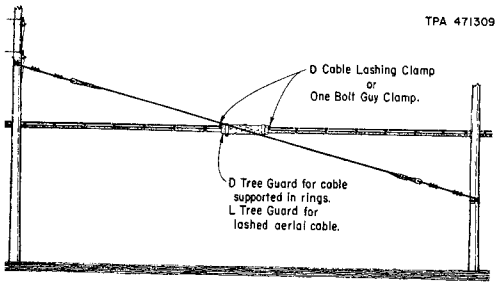


Fig. 12—Tree Guard Used to Protect Cable From Contact With Guy

operations, place a locally fabricated metal guard. The approximate dimensions for the guard are given in Fig. 13.

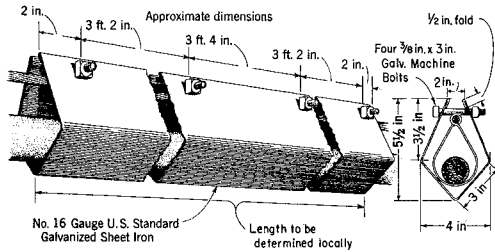


Fig. 13—Fabricated Guard Used to Protect Cable From Blasting Operations

8. PROTECTING CABLE AT STRAND ATTACHMENTS

8.01 Where it is not possible to obtain 1/2-inch separation between aerial cable and the pole or from any strand attachment, place a B Cable Guard over the cable to protect against abrasion.

8.02 The B Cable Guard is an eight-inch length of split polyethylene tubing furnished in four sizes as follows:

Size	Cable Diameter (Inches)
1/2 in.	5/8 in. or smaller
1 in.	5/8 in. to 1 in.
1-1/2 in.	1 in. to 1-3/4 in.
2 in.	1-3/4 in. or larger

The 1/2 in. and 1 in. sizes have ends cut at an angle of 60 degrees to facilitate installation in cold weather. The ends of the 1-1/2 in. and 2 in. sizes are cut square.

8.03 B Cable Guards which cover approximately three quarters of the circumference of the largest cables and overlap approximately one-quarter of the circumference of the smallest cable with which they are to be used, furnish satisfactory sheath protection.

8.04 Install the B Cable Guard as follows:

- (a) 1/2 inch and 1 inch B Cable Guards with the ends cut at 60 degrees are held at right angles to the cable with the slit pointed end forward. Push the guard to cause the pointed ends to ride over the cable. Move the lower end of the guard up to the cable forcing the guard over the cable as shown in Fig. 14.

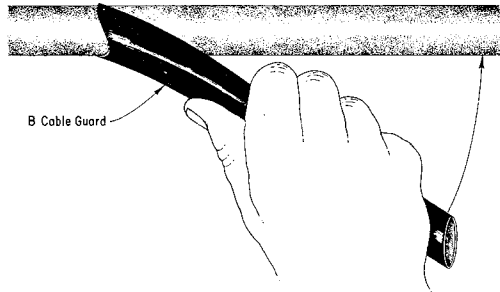


Fig. 14—Installing B Cable Guard

- (b) Where the lashing wire is continuous, place the cable guard around the cable and under the lashing wire at the location where the abrasion is likely to occur as shown in Fig. 15.

- (c) At corner locations where the lashing wire has been terminated, secure the B Cable Guard with 3 turns of lashing wire at each end of the guard as shown in Fig. 16.

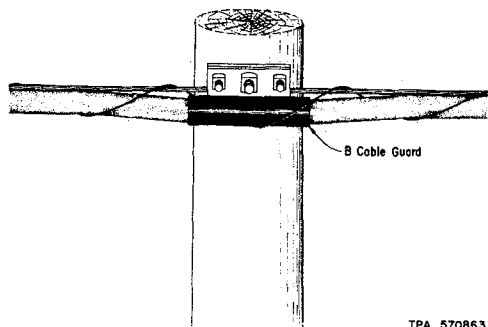


Fig. 15—B Cable Guard Installed Where Lashing Wire Is Continuous

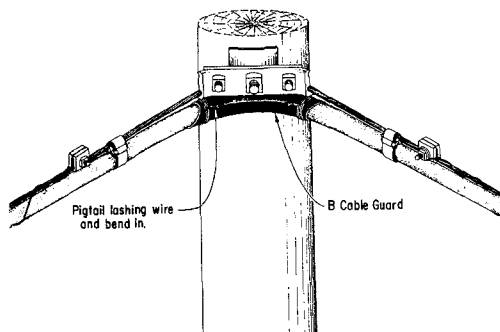


Fig. 16—B Cable Guard Installed Where Lashing Wire Is Terminated