BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G52.443.1
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AT&T Co Standard

CABLE REPAIRING—AERIAL
SLIT SHEATH METHOD
LEAD SHEATH CABLE

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1. GENERAL

1.01 This section describes the repair of lead covered aerial cable by the slit sheath method.

1.02 The method consists of slitting the sheath, removing the core, repairing the conductors, replacing the core in the sheath and soldering the slit in the sheath with the acetylene torch.

1.03 The method is generally applicable to cables 1-1/2 inches and less in diameter. Where a large number of conductors must be repaired and the core becomes bulky, it may be advisable to remove the sheath and close the opening with a split lead sleeve.

2. TOOLS AND MATERIALS

2.01 The tools and materials listed below are required in making repairs.

2.02 **Tools:**

Brush, Carding
File, H
Opener, Sheath (2 required)
Pliers, Cable
Puller, Slack
Slitter, Sheath, Cable
Torch, Acetylene

2.03 **Materials:**

Desiccant
Muslin
Solder, Core, Stearine
Stearine
Tape, Cambric, Varnished, Bias Cut, Black
Tape, Electrical, Scotch
Tape, Serving, Lead

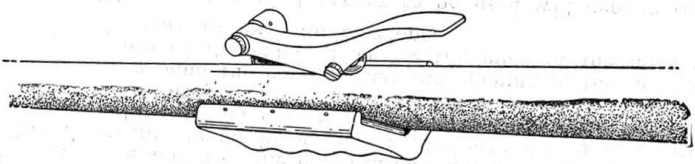
3. OPENING SHEATH

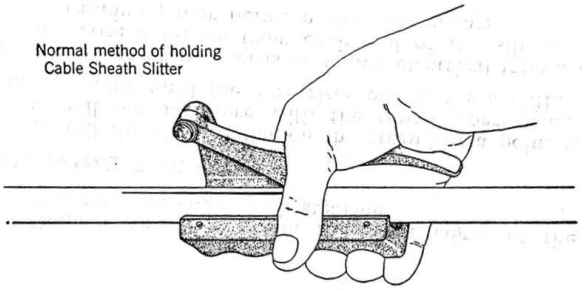
3.01 If the cable is supported by cable rings, remove a sufficient number to provide working space. If the cable is lashed to the strand, clamp the lashing wire at each end of the area needed for opening the cable and turn back the wire between the clamps.

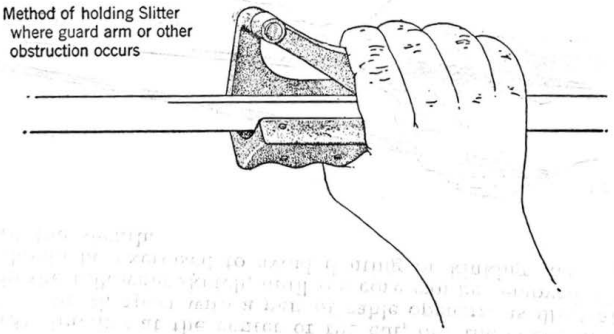
3.02 The sheath should be slit as follows:

(1) Clean an 18 inch by 1/4 inch strip of sheath on the top of the cable with a carding brush and coat the cleaned area with stearine. If the core is wet, the opening should be made long enough to expose all of the core affected by the moisture and some dry core on each side of the trouble.

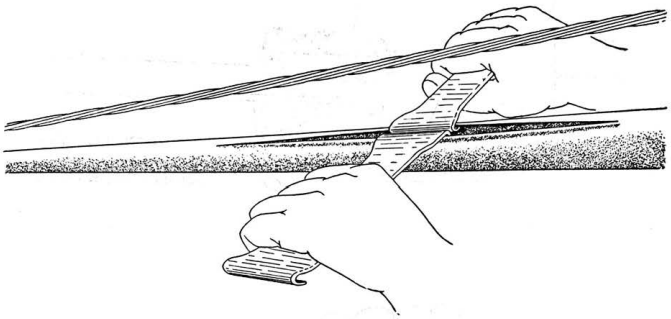
(2) Score the sheath lightly with the cable sheath slitter along the center of the cleaned area, as shown in the following sketches. Then cut the sheath by drawing the slitter back and forth along the score mark until the core wrapping paper is exposed at several points.




Normal method of holding
Cable Sheath Slitter


Method of holding Slitter
where guard arm or other
obstruction occurs

(3) Starting at the center of the cut, pry the edges of the sheath apart with a pair of cable openers, as illustrated in the following sketch, until the core can be removed. Care should be exercised to avoid denting or kinking the edges of the sheath.



(4) Remove the burrs from the inner edges of the slit and coat the edges with stearine.

4. REMOVING THE CORE

4.01 Install the slack puller on the strand at a point where it will not interfere with the repair operations. Pull slack in the cable until the core rises out of the sheath.

4.02 Place one or two turns of scotch electrical tape around the core 3 inches from each end of the slit. Remove the core wrapping paper between the tape collars.

5. REPAIRING CONDUCTORS

5.01 If the conductors are wet, dry them with desiccant. Care should be exercised in applying the desiccant as the abrasive action of the material may damage wet insulation. The desiccant should be applied as follows: Cut a piece of muslin slightly shorter than the length of the exposed core and several inches wider than the circumference of the cable. Wrap the muslin around the core so that the opening in the muslin is at the top of the cable. Then tie the ends of the muslin around the core to form an envelope.

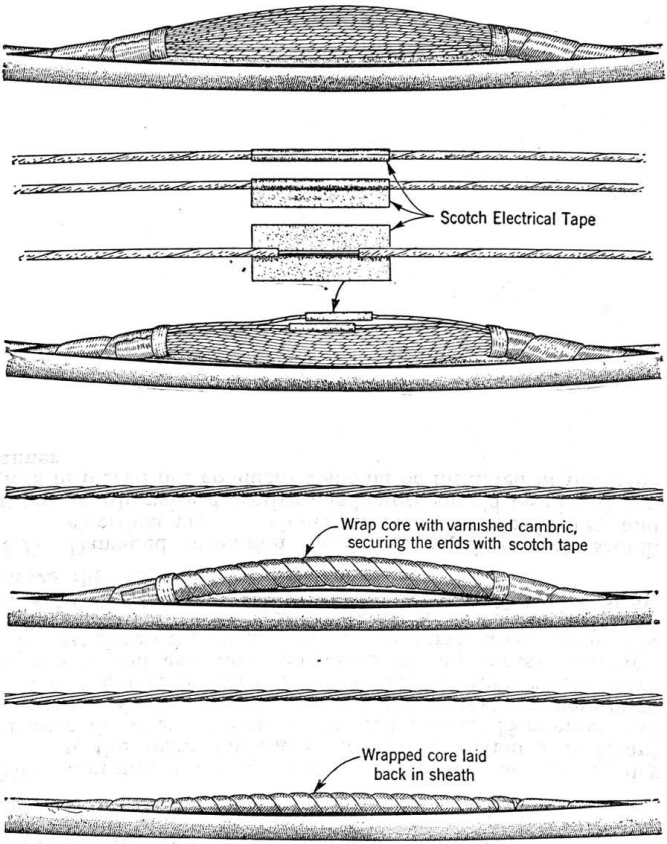
5.02 The quantity of desiccant to be used will depend on the size of the cable, length of the opening and the quantity of moisture in the cable. Do not use any more desic-

cant than can be distributed among the conductors as the material that falls to the bottom of the muslin or is piled on top of the wires does not aid in drying the insulation.

5.03 Sprinkle the desiccant among the conductors distributing it as thoroughly as possible. Distribution of the desiccant will be facilitated by separating the conductors with the fingers and gently working the granules into all spaces. Desiccant which falls to the bottom should be picked up with the fingers and replaced among the conductors. It will ordinarily require about five minutes for thoroughly distributed desiccant to lose its effectiveness in very wet cable.

5.04 Continue these operations until all conductors are dry to the touch. Then add another application of desiccant and wrap the opening with muslin. After about 15 minutes, call the testboard and request an insulation test to determine whether the conductors are serviceable. If they are, remove the muslin and envelope and shake out all excess desiccant. If the test shows the conductors are not serviceable, remove the muslin, shake out the desiccant and replace with fresh desiccant. After 10 to 15 minutes, call for another test. When clear, remove the bandage and envelope.

5.05 Damaged insulation should be repaired with scotch electrical tape, as shown in the following figures, and burned or otherwise defective conductors should be pieced out. Joints in pieced out conductors should be insulated in the same manner.



5.06 As much of the desiccant should be removed as practicable. Then wrap the core with 1-inch black bias cut varnished cambric tape overlapping the cambric 1/3 its width. Wrap the core as tightly as practicable, to obtain a small core diameter. The cambric tape should overlap the undisturbed core at each end. Secure the tape at each end by means of one or two turns of scotch tape.

6. REPLACING THE CORE

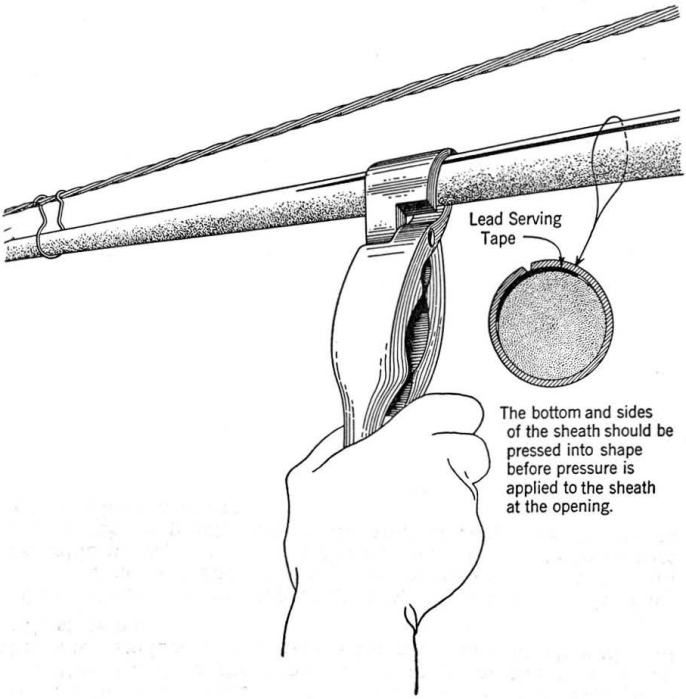
6.01 Inspect the inside of the sheath, removing any dents or inside burrs.

6.02 If the sheath has a large hole in it, place a piece of cleaned lead serving tape over the hole inside the sheath, before the core is replaced. Scotch tape may be used to hold the serving tape in place.

6.03 Remove the slack puller. Place the core in the sheath and partially close the sheath with the hands and the cable pliers, working from the ends toward the middle.

6.04 Cut a piece of lead serving tape approximately 1/4 inch longer than the sheath opening and between 1/4 and 1 inch wide, depending upon the diameter of the cable. Taper the ends of the tape to facilitate inserting them under the sheath at the ends of the cut. Form the tape lengthwise over the strand to the approximate shape of the core. Clean the outer surface of the tape with a carding brush and coat with stearine.

6.05 Place the lead tape in the opening, working the ends under the sheath. Close the sheath over the tape with the cable pliers, working the pliers around the cable to restore it as much as practicable to its original shape, as illustrated in the following figure.



7. SOLDERING SEAM AND DEFECTS IN THE SHEATH

7.01 Solder the opening with stearine core solder using the acetylene torch. Defects in the sheath should be repaired after the slit has been soldered.

7.02 In the case of fatigued sheath, file the defective sheath to about 1/2 the original thickness. Clean the area around the repair with a carding brush and coat the area with stearine. Solder with stearine core solder building up the solder patch about 1/2 the thickness of the sheath and taper off toward the edges.

7.03 Where a hole in the sheath is covered with lead serving tape, clean the tape and area around the hole with a carding brush and then solder with stearine core solder using the acetylene torch.

7.04 Restore the cable to its original position under the strand and replace the cable rings or lashing wire.

8. USE OF SMALL LEAD SLEEVE

8.01 If the sheath is damaged so that repair by slitting the sheath is not practicable, the cable should be repaired as follows:

(1) Remove sufficient sheath to expose the length of core affected. Protect the core at the ends of the sheath with two or three turns of scotch tape and remove the core wrapping paper between the tape collars.

(2) Dry the core with desiccant, repair the insulation and defective conductors and wrap the core with varnished cambric tape in a manner similar to that described for the slit sheath method, exercising care so that the wrapped core is no larger in diameter than the outside diameter of the adjacent cable sheath.

(3) Prepare a split lead sleeve two inches longer than the length of sheath removed and just large enough in diameter to cover the wrapped core. Then place the lead sleeve over the opening.

(4) Run the seam on the lead sleeve and solder the ends to the cable sheath with the acetylene torch.