BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G50.664.1
Issue 1, May, 1948
AT&T Co Standard

CABLE GENERAL—SPLICING
CARRYING METALLIC SHIELDS THROUGH SPLICE

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1. GENERAL

1.01 This section describes the procedure for making metallic shields continuous through splices.

2. MATERIALS

2.01 In addition to the material usually carried by splicers the following special materials are required.

Braid, Shielding, Copper, for Carrier Cable: A copper wire braid approximately 1 inch wide (for making concentric shield continuous through splice).

Braid, Shielding, Iron, for Carrier Cable: A tinned iron wire braid approximately 1 inch wide (for making concentric shield continuous through splice).

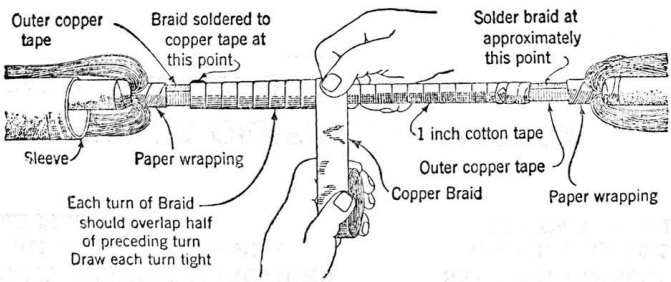
2.02 The approximate lengths of braid required for shielding different size cables can be determined from the following table.

Number of 19 Gauge Pairs under Shield	Required Length of Braid (Feet)		
	Inner Braid (Copper)	Center Braid (Iron)	Outer Braid (Copper)
20	15	17	19
40	19	22	25
60	23	27	31
80	27	31	35
100	30	34	39
120	32	37	42

3. SINGLE SHIELDS

3.01 Shields consisting of a single wrapping of metallic tape are terminated at each end of the splice opening. It is sometimes necessary to make the shield continuous through the splice as in circumstances in which carrier circuits are routed into and out of a repeater station through the same cable.

3.02 Shield the conductors as follows: Place a muslin envelope over the innermost group of conductors to be shielded and apply the required quantity of desiccant. Wrap the envelope with a half-lapped layer of muslin. Starting at the terminated layer shield at one end of the splice, apply a half-lapped layer of copper shielding braid as shown in the following sketch. Avoid leaving any sharp edges where the braid is soldered to the tape.



3.03 Apply two half-lapped layers of muslin over the braid, overlapping the shield on each side of the splice.

3.04 If there are other layer shields in the cables they should be made continuous across the splice in the same manner.

3.05 Bring the ends of the textile insulated wires connected to the terminated layer shields out through the muslin wrappings where they shall be twisted together, lashed to the cable sheath and soldered to it.

3.06 Complete the splice in the usual manner.

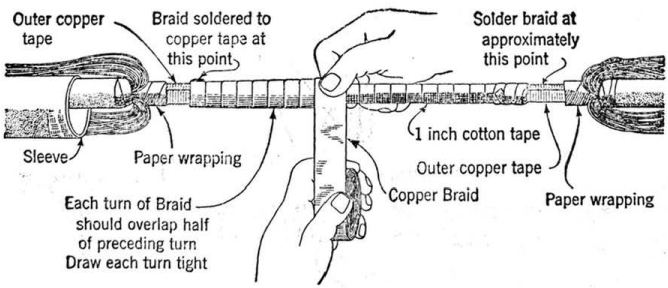
4. MULTIPLE SHIELDS AT STRAIGHT SPLICES

4.01 Multiple shields, such as those in shielded K Carrier Cables, consisting of three or more metallic tapes are terminated at each end of the splice opening. These shields are always made continuous across the splice using iron and copper braids, as outlined below. Each layer of braid should start at the same end of the splice and be soldered on top of the underlying braid.

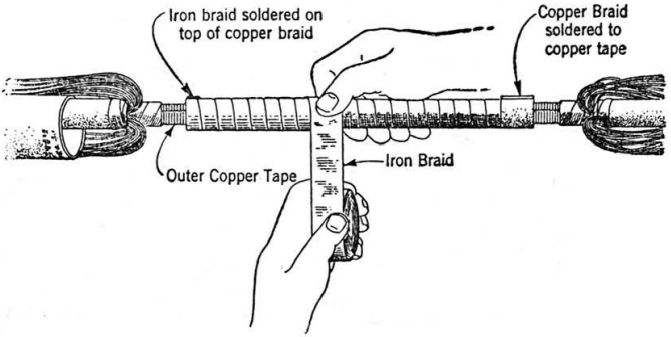
4.02 After all conductors inside the shield have been spliced, enclose this portion of the splice in a muslin envelope in the usual way and apply the required quantity of desiccant. Tightly wrap the splice with one half-lapped layer of 1-inch cotton tape, overlapping the shield ends about 1 inch.

4.03 Apply the shield as follows:

(a) Wrap the inner copper braid across the splice as shown below.



(b) Wrap the iron braid across the splice as shown below.



(c) Apply the outer copper braid in the same way as the iron braid, as outlined in (b).

4.04 Wrap the completed shield tightly with two half-lapped layers of muslin or 1-inch cotton tape, overlapping the shield wrapping paper at each end of the splice.

4.05 In splicing the wires outside the shield, leave sufficient slack so that when a spliced quad is pulled out from the splice there will be approximately 5 inches of slack between it and the shield at the midpoint of the splice.

4.06 Complete the splice in the usual manner.

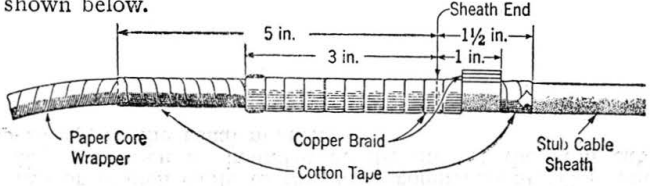
5. MULTIPLE SHIELDS AT Y SPLICES

5.01 Branch or stub cables that are to be spliced to a group of conductors inside the multiple shield are shielded as outlined below.

5.02 The sheath of the stub or branch cable should extend into the splice about 1 inch beyond the sheath of the main cable. Protect the core of the stub cable at the butt in the usual manner. Apply a half-lapped wrapping of 1-inch cotton tape at the sheath end of the branch or stub cable, covering about 5 inches of the core and about 1-1/2 inches of the sheath, to provide insulation between the sheath and the shielding braids applied subsequently.

5.03 Shield the branch or stub cable conductors as follows: On the stub cable, start the first wrapping by taking two turns of copper braid around the cotton tape wrapping of the core at a point 3 inches from the sheath end. Solder the first turn to the second turn. Wrap the braid to a point about 1 inch beyond the end of the stub cable sheath. Hold the excess length of braid firmly and solder it to the last turn, then

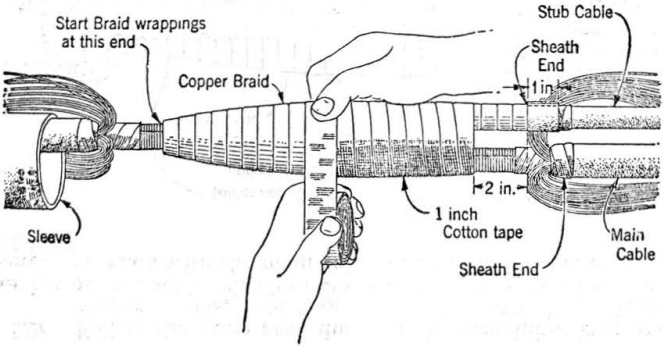
cut off the excess braid. Similarly apply the iron braid layer and outer copper braid layer, soldering the ends at the points where the underlying braid is soldered. The completed shield is shown below.



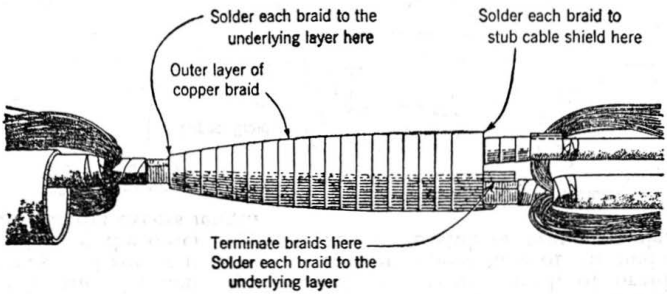
5.04 Splice the branch cable to the group of conductors inside the multiple shield in the main cable and splice the remaining conductors in the inner compartment in the usual manner.

5.05 Place a muslin envelope over the spliced conductors and apply the required quantity of desiccant. Then wrap the splice as outlined for a straight splice, without removing the previously applied cotton tape wrapping from the stub cable.

5.06 Shield the main cable conductors as follows: Start the braid wrappings at the end of the splice opposite to that at which the stub or branch cable enters, as illustrated below. Solder the end of the first copper braid to the outer copper tape adjacent to the shield end, wrap the braid on the splice to a point 2 inches from the main cable sheath at the other side of the splice and pass it between the stub or branch cable and the main cable. Hold the excess length of braid firmly and solder it to both the outer copper tape of the main cable and the outer copper braid of the stub or branch cable. Cut off the excess length



5.07 Follow the same procedure for the remaining iron and copper braids, soldering where the underlying braid (or braids) are soldered. The following drawing shows the completed operation with the main cable and the stub cable entirely shielded.



5.08 Apply two tight half-lapped layers of muslin over the outer copper braid, overlapping the shield wrapping paper at each end of the splice.

5.09 Set up any other stub or branch cables for the conductors outside the multiple shield and complete the splice in the usual manner leaving 5 inches of slack in the wires as called for in a straight splice.

6. LOADING IN K SHIELDED CABLE

6.01 It is not practical to install splice loading directly in the main cable splice on compartment type cables if quads in the inner compartment are involved. In such cases it will be necessary to splice a stub cable to quads of the inner compartment in the same manner as described for connecting a stub or branch cable to the inner compartment. The splice loading can then be installed at the end of the stub cable separately, in the usual manner.