BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

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CABLE TESTING—GENERAL
IDENTIFYING CONDUCTORS—ONE MAN OPERATION

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1. GENERAL

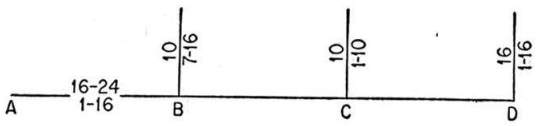
1.01 This section describes a method of identifying non-working cable pairs by one man working alone when cutting in terminals, branches, etc.

1.02 The pairs are identified using a test set such as the 76-type set and a head telephone set.

1.03 The test connections can be made at a main frame, cross-connecting terminal or distribution terminal, or at the end of a cable.

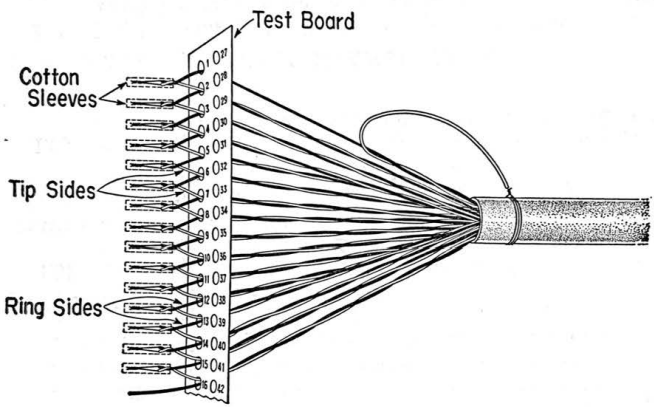
2. PROCEDURE—SMALL BRANCH CABLE

2.01 The basic method is illustrated by the following example which involves cutting in three terminals in the 16-pair cable shown in the following sketch.

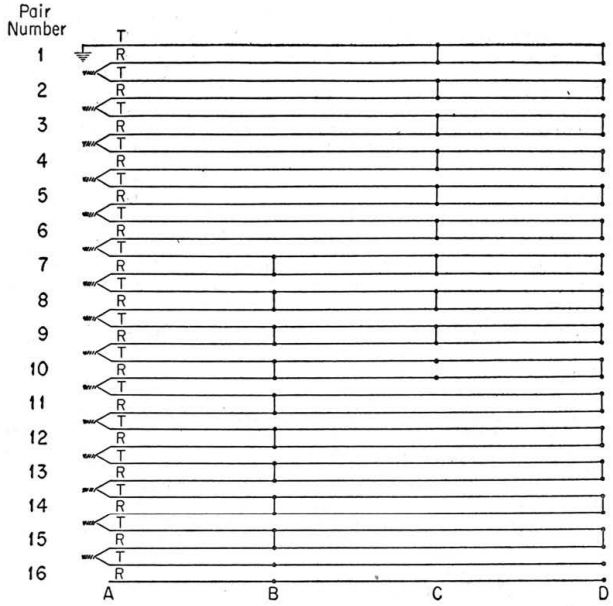


(1) The conductors at end A, which will be spliced into the working cable, should be placed in a test board as shown.

(2) Ground the tip side of pair 1 and connect the ring side of this pair to the tip side of pair 2. Then connect the ring side of pair 2 to the tip side of pair 3; the ring side of pair 3 to the tip side of pair 4, etc., until all wires, except the ring side of the last pair (pair 16), have been connected as shown. Place a cotton sleeve over each joint and then wrap the end of the cable.



(3) Clear the ends of the conductors at terminal D and identify the pairs in the stub in the usual manner. Then identify pair 1 in the branch cable; this is the pair having the ground on the tip side. Splice this pair to pair 1 in the stub and place a short across the binding posts of pair 1. This places a ground on the tip side of pair 2. Identify pair 2 in the branch cable, splice it to pair 2 in the stub and place a short across the binding posts of this pair. The circuit for these tests is shown below. Continue to identify until the 16 pairs in the terminal have been spliced. After the terminal has been cut in, remove the straps from the binding posts.



(4) At terminal C follow the same procedures as at terminal D, identifying and splicing the pairs until the terminal has been cut in. As terminal B has been assigned the count 7 to 16, remove the straps from pairs 7, 8 and 9 at terminal C. This leaves a ground on the tip and ring sides of pairs 1 to 6 and a ground only on the tip side of pair 7. Pairs 8 to 16 will test clear.

(5) At terminal B follow the same procedure as at terminal C. Pair 7 in the branch cable will show a ground on the tip side. (Pairs 1 to 6 will show a ground on both the tip and ring sides.) After pair 7 has been identified, splice it to pair 7 in the stub and place a short across the binding posts of this pair. Then continue to identify and splice until the terminal is cut in. After the terminal has been spliced, remove the straps from the binding posts.

(6) Remove the straps from the binding posts of pairs 1 to 6 at terminal C.

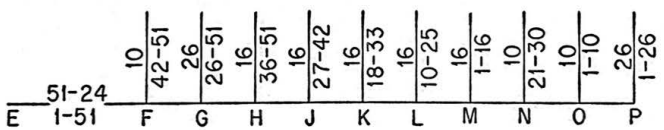
2.02 The branch cable is now ready to be spliced to the feeder cable.

2.03 If end A is at a main frame, cross-connecting or distribution terminal, the conductors should be prepared for identification as follows: Connect the tip side of pair 1 to ground. Then, by means of short lengths of wire, connect the ring side of pair 1 to the tip side of pair 2; the ring side of pair 2 to the tip side of pair 3, etc., for the full count except that the ring side of the last pair (pair 16) remains clear.

3. PROCEDURE—LARGE BRANCH CABLE

3.01 The procedure outlined in Part 2 can also be applied to more complicated layouts, involving larger branch cables and more terminals. The sequence in which the terminals are cut in should be so planned that minimum travel will be required between terminals.

3.02 The sketch below shows a layout of 10 distribution terminals to be spliced to a 51-pair cable. The suggested procedure in testing and splicing is outlined below.



(1) At end E, prepare the conductors for testing as covered in Paragraph 2.01 (1) and (2), or 2.03 depending on whether the end of the cable is free or terminated.

(2) At terminal P, identify the pairs in the stub and clear the ends of the branch cable. Then consecutively identify, and splice pairs 1 to 26, as covered in Paragraph 2.01 (3). After the terminal has been spliced, remove the straps from the binding posts.

(3) At terminal O, proceed as at terminal P. After removing all straps at O, move to M (skipping N for the present).

(4) At terminal M, identify and splice pairs 1 to 16. As terminal L (pair count 10 to 25) is next to be spliced, remove the straps from pairs 10 to 15, after terminal M is cut in. (Pair 16 had not been strapped.)

(5) At terminal L, pairs 1 to 9 will show both sides grounded, pairs 11 to 51 will show clear and pair 10 will show a ground on the tip side only. Starting with pair 10, consecutively identify and splice pairs 10 to 25. As the pairs in terminal L overlap the first pairs in the terminals at K and N, either of these terminals can be spliced next. However, if terminal N is spliced before terminal K, all the binding post straps can be removed at terminal N and it will not be necessary to return to N. Therefore, before leaving terminal L, remove the straps from pairs 21 to 24. (Pair 25 had not been strapped.)

(6) At terminal N, pairs 1 to 20 will show both sides grounded, pairs 22 to 51 will show no ground and pair 21 will show ground on the tip side only. Starting with pair 21, consecutively identify and splice pairs 21 to 30. After the terminal is cut in, remove all straps from the binding posts; then return to terminal L and remove the straps from pairs 18, 19 and 20 so that pair 18 can be identified at terminal K.

(7) At terminal K, pairs 1 to 17 will show both sides grounded, pairs 19 to 51 will show no ground and pair 18 will show a ground on the tip side. Starting with pair 18, consecutively identify and splice pairs 18 to 33. After the terminal has been spliced, remove the straps from pairs 27 to 32 so that pair 27 can be identified at terminal J.

(8) At terminal J, pairs 1 to 26 will show both sides grounded, pairs 28 to 51 will show clear and pair 27 will show a ground on the tip side. Starting with pair 27, consecutively identify and splice pairs 27 to 42. After the terminal has been spliced, remove all straps from the binding posts; then at terminal K remove the strap from pair 26 so that it can be identified at terminal G.

(9) At terminal G starting with pair 26, consecutively identify and splice pairs 26 to 51. After the terminal is spliced, remove the straps from pairs 36 to 50 so that pair 36 can be identified at terminal H.

(10) At terminal H starting with pair 36, consecutively identify and splice pairs 36 to 51. After the terminal is spliced, remove the straps from pairs 42 to 50 so that pair 42 can be identified at terminal F.

(11) At terminal F starting with pair 42, consecutively identify and splice pairs 42 to 51. After the terminal is spliced, remove all straps.

(12) At terminals G, H, K, L and M, remove all straps. The straps have previously been removed from the other terminals.