BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G50.653.1
Issue 1, May, 1948
AT&T Co Standard

CABLE SPLICING—GENERAL
TEST SPLICE IN TOLL CABLE

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1. GENERAL

1.01 This section describes the splicing operations in making capacitance unbalance tests, capacitance deviation tests and other transmission tests in toll cables.

1.02 The location of each test splice and the sequence in which the splices are made shall be in accordance with the specific instructions which are issued with each job.

2. PREPARATION

2.01 Open the cable at the far ends of the two sections to be test spliced and clear the exposed conductors to eliminate crosses, short circuits and grounds.

2.02 Dry out and wrap the conductors in accordance with the standard procedure and if there is danger that the cable may become wet, seal the cleared ends.

2.03 At the test splice location remove the sheath in the usual manner.

2.04 For some transmission tests it is necessary to board both ends of the splice. This shall be done in accordance with the instructions issued with each job. The linen test boards provided for the purpose are arranged in sets of 5 boards having 40 holes in each, and are numbered consecutively from 1 to 200.

If the cable contains more than 200 quads or pairs, the board marked 1 to 40 should be used with the hundreds digit marked beside the printed number on the board. For convenience in handling the boarded conductors, the boards may be cut into such combinations as may be required to accommodate the various groups of quads or pairs being tested. Following is a typical example of the core arrangement of a quadded cable showing the group segregation plan.

CABLE PER DRAWING CA-1104

6 coaxial pairs
3 19 ga. interstice pairs
4 22 ga. interstice pairs
48 quads 19 gauge

core	First Layer	2nd Layer 21 Qds. 19 Ga.	3rd Layer 27 Qds. 19 Ga.
7 X O, Wh	10 x O, Rd	10 Q 28 White	5 Q 1 GP
8 X B, Wh	1 C	6 Q 29 White	1 Q 2 White
9 X W, Wh	11 x R, Wh	7 Q 30 White	2 Q 3 White
	2 C	8 Q 31 Red	3 Q 4 White
	12 x W, Wh	9 Q 32 Red	4 Q 5 White
	3 C	6 Q 33 Red	1 Q 6 Red
	13 x B, Wh	7 Q 34 Red	2 Q 7 Red
	4 C	8 Q 35 Red	3 Q 8 Red
	5 C	9 Q 36 Red	4 Q 9 Red
	6 C	6 Q 37 Red	1 Q 10 Red
		7 Q 38 Red	2 Q 11 Red
		8 Q 39 White	3 Q 12 Red
		9 Q 40 White	4 Q 13 Red
		6 Q 41 Green	1 Q 14 Red
		7 Q 42 Green	2 Q 15 White
		8 Q 43 Green	3 Q 16 White
		9 Q 44 Green	4 Q 17 White
		6 Q 45 Green	1 Q 18 White
		7 Q 46 Green	2 Q 19 Green
		8 Q 47 Green	3 Q 20 Green
		9 Q 48 Green	4 Q 21 Green
			1 Q 22 Green
			2 Q 23 Green
			3 Q 24 Green
			4 Q 25 Green
			1 Q 26 Green
			2 Q 27 Green

GP = Gas pressure quad
White = 2 - Wire quads
Red = 4 - Wire East Bound quads
Green = 4 - Wire West Bound quads
Quads within each of the above groups (White, Red, Green) are boarded at random.

Notes - Q = 19 gauge quads
Numbers to right of Q are theoretical pair count.
Numbers to left designate types of quads
x = 22 gauge pair
X = 19 gauge pair
C = Coaxial pair
B = Blue insulation
O = Orange insulation
W = White insulation
R = Red insulation
Rd = Red wrapper
Wh = White wrapper
Numbers in core and first layer are actual pair count.

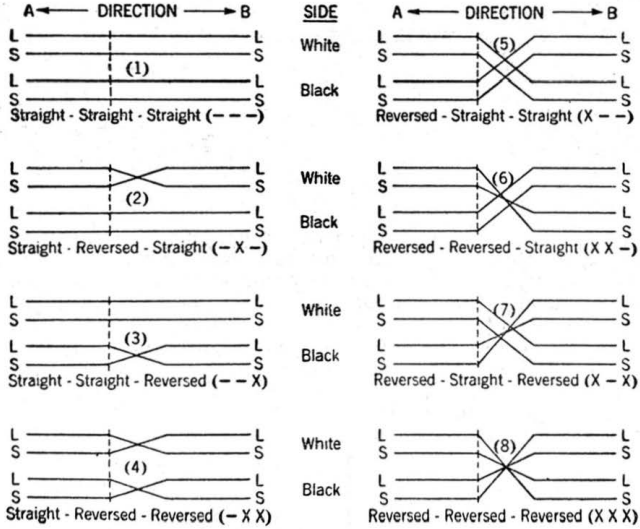
2.05 If necessary for identification purposes cut one wire of each pair approximately 2" shorter than its mate. During splicing and testing the two pairs of a quad are designated as "white" and "black." The long and short wire of each pair are designated "white and mate" and "black and mate," respectively, the "mate" being the shorter of the two wires in each case.

2.06 Remove one inch of insulation from the end of each wire.

3. SPLICING QUADS — CAPACITANCE UNBALANCE TEST SPLICE

3.01 On completion of the transmission test the tester will give the splicer the necessary instruction for splicing the wires together.

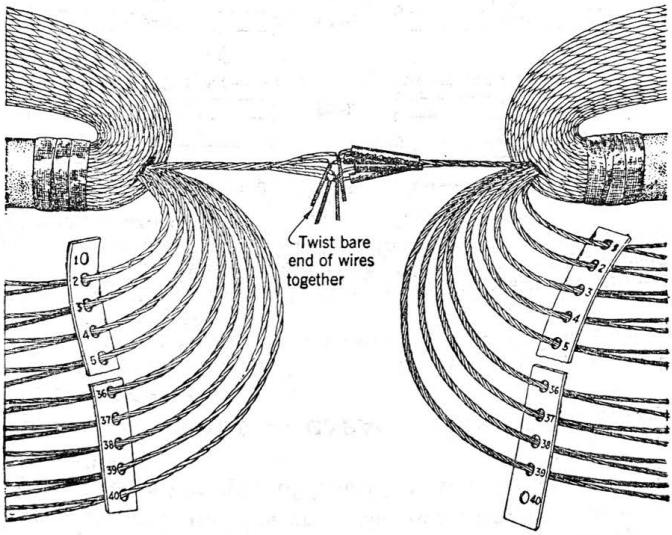
3.02 In splicing two quads there are eight possible combinations into which the wires can be spliced. The different combinations and the designation for each are shown in the following illustration.



3.03 The three-word name accompanying each combination describes the connections: the first tells whether the pairs are connected straight (white to white) or reverse (white

to black); the second, whether the white pair is connected straight (long wire to long wire) or reversed (long wire to short wire); and the third the manner in which the black pair is connected. The symbols (X) and (—) also are used for describing these connections, (X) meaning "reversed," and (—) meaning "straight." The letters "L" and "S" appearing on the diagrams denote respectively the long and short wires.

3.04 Cut and splice each wire of the quad in the usual manner. Each wire shall be cut and spliced before cutting the next wire of the quad. Make the joints of each quad in one position without staggering them. If twisted joints are made do not solder the joints or bend down the pigtails at this time. If soldered sleeve joints are made, place the wires in the tinned copper sleeves but do not solder them. If additional capacitance is required in the form of building out condensers it shall be added at this time. The splicer may joint 2 or 3 quads as outlined above before check testing.



3.05 The tester will then check test the quad or quads. If the connections are correct the splicer shall solder the joints and slide the cotton sleeves in position.

4. SPLICING QUADS — CAPACITANCE DEVIATION TEST SPLICE

4.01 At a capacitance deviation test splice prepare the cable as outlined in Paragraph 2, except that the conductors need not be boarded before testing, also it is not necessary to cut the wires of each pair of a quad "long" or "short."

4.02 On completion of the tests the splicer will joint the quads in accordance with the instructions given by the tester.

4.03 The most common type of deviation splice is one in which, on completion of the capacitance readings the quads on each side of the splice are divided into three approximately equal groups containing respectively the highest capacitance quads, the intermediate capacitance quads and the lowest capacitance quads. After the quads have been segregated according to the tester's instruction and either tied together in bundles or boarded in their respective groups they are random spliced as follows: The high capacitance quad group on one side of the splice to the low capacitance group on the other side of the splice, and the average capacitance groups are spliced together.

4.04 In some instances this procedure is modified as follows: After the quads are divided into groups a capacitance unbalance test splice is made within each group (high capacitance quads on one side of the splice and low capacitance quads on the other side of the splice, etc.).

4.05 There are other variations of the capacitance deviation test splicing procedure. Instructions will be furnished with each job.

4.06 At deviation test splices no check readings are taken after the conductors are joined.

5. SPLICING TOLL PAIRS

5.01 The method of splicing toll pairs is essentially the same as that used in splicing quads, except that the wires are paired. The tests to be made and the method of associating the pairs will be determined by the tester

6. SPLICING EXCHANGE CONDUCTORS

6.01 If the cable contains a complement of exchange conductors they shall be spliced in the usual manner, without soldering unless specifically called for.

7. COMPLETION OF SPLICE

7.01 Dry and wrap the splice in accordance with the usual procedure. Then place the lead sleeve and wipe the joints.