BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G50.650.1
Issue 1, April, 1948
AT&T Co Standard

CABLE SPLICING—GENERAL
RANDOM SPLICES IN TOLL CABLES

Contents **Page**

1. General 1
2. Splicing within Groups 2
3. Color Random Splice 2
4. Bunch Random Splice 4
5. Number Random Splice 4

1. GENERAL

1.01 This section describes the method of making three general types of random splices in toll cables. In each of these types the pairs or quads are mixed according to a plan for the purpose of reducing crosstalk to a minimum. The type of random splice to be made will be determined by the size of the cable, method of segregation, kind of circuit for which the conductors will be used, etc.

1.02 The three types of random splice made in toll cable are as follows:

(a) **Color Random** splice in which the wires are joined in accordance with a plan based on the colors of insulation.

(b) **Bunch Random** splice, in which the wires in each complement (2-wire quads, 4-wire quads, etc.) are divided into three approximately equal groups and spliced in a definite pattern.

(c) **Numbered Random** splice, in which the wires are boarded in a predetermined sequence and spliced by number according to a plan furnished with the job specification.

1.03 In some instances more than one type of random splice may be used in the same cable. The kind of random splice to be made in a particular complement is based on the type of circuit for which the complement will be used.

1.04 The individual job specification will show the segregation of the cable into complements and the types of splices to be made. Each complement shall be handled as a separate unit and the wires in that unit on one side of the splice shall be joined only to wires in the corresponding group on the other side of the splice.

2. SPLICING WITHIN GROUPS

2.01 Quads or pairs within each group shall be joined in accordance with the following general rules:

(1) Splice quads or pairs of the same gauge together unless otherwise instructed.

(2) Splice a complete quad in one direction to a complete quad in the other direction. Do not split the quad.

(3) Splice pairs in one direction to pairs in the other direction. Do not split pairs.

3. COLOR RANDOM SPLICE

3.01 In color random splices the following rules shall be observed:

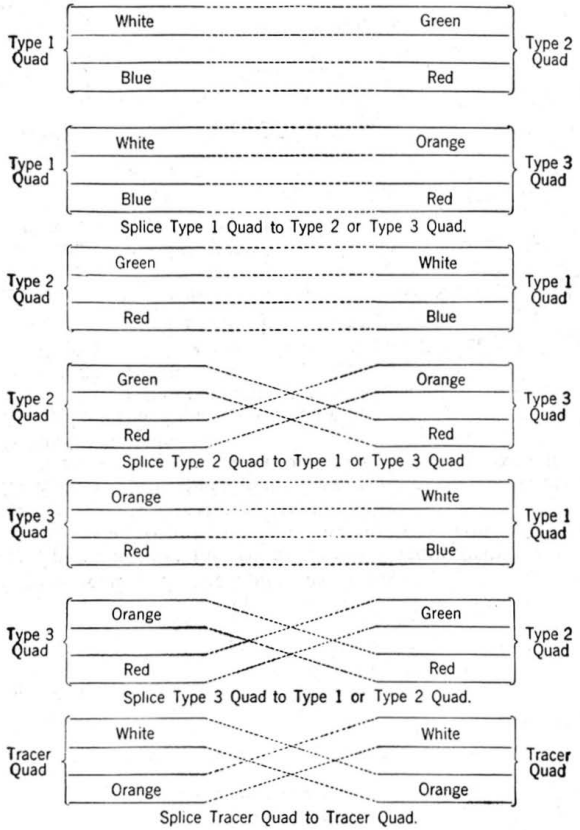
(1) Different types of quads or pairs shall be spliced together as far as practicable, except tracer quads or pairs which shall be spliced straight unless substituted for a defective quad or pair.

(2) Adjacent quads or pairs in one section shall not be spliced to adjacent quads or pairs in the other section.

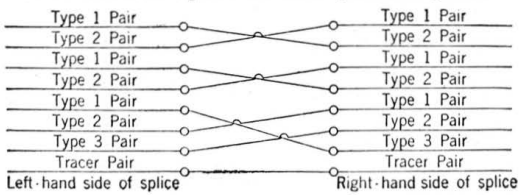
(3) In addition, the rules outlined in Paragraph 2.01 shall be followed.

3.02 Following are examples of the methods of joining quads and pairs in color random splices. Short pair twist cables will contain more types of pairs but the method of mixing them is essentially the same.

(1) Color random splice of quadded pairs.

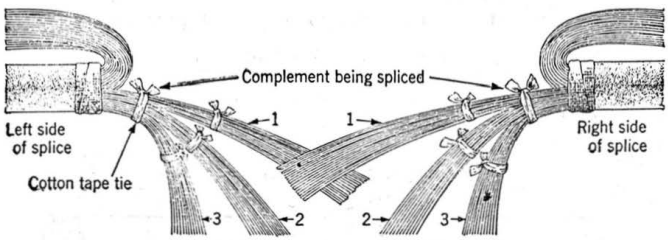


(2) Color random splice of non-quadded pairs.



4. BUNCH RANDOM SPLICE

4.01 On both sides of the splice divide the wires in the first complement to be spliced into three approximately equal groups. Select one side of the splice as the reference end; in the example illustrated below, the left side is used for this purpose.



4.02 Proceed with the splice as follows:

(1) Splice a pair picked at random from group 1 on the left side to a pair picked at random from group 1 on the right side of the splice.

(2) Splice a 2nd pair picked at random from group 1 on the left side to a pair picked at random from group 2 on the right side.

(3) Splice a 3rd pair picked at random from group 1 on the left side to a pair picked at random from group 3 on the right side.

Repeat splicing operations 1, 2 and 3 until all the pairs in group 1 on the left side have been joined.

4.03 Splice all the pairs in groups 2 and 3 on the left side of the splice to group 1, 2 and 3 on the right side in a similar manner joining all the pairs in group 2 on the left side before starting on the pairs in group 3.

4.04 In the above example pairs were used. The procedure for joining quads in a bunch random splice is identical.

5. NUMBER RANDOM SPLICE

5.01 In making a number random splice the following sequence of operations should be followed:

(1) Board the K carrier quads at each end in accordance with the quad count furnished with the job specification.

(2) Splice the K carrier quads as shown on the splicing plan.

(3) If the cable contains other quads, not intended for K carrier use, they shall either be color random or bunch random spliced as called for in the job specification.

5.02 Following is an example of a number splicing instruction for a cable containing 18 K carrier quads and 12 2-wire quads.

ARRANGEMENT OF CORE - 32 QUADS 19 GA.

CENTER 1 QD. 19 GA.	1ST LAYER 6 QDS. 19 GA.	2ND LAYER 10 QDS. 19 GA.	3RD LAYER 15 QDS. 19 GA.	OUTER LAYERS
7( )32 C	5( )26 W 1( )27 K 2( )28 W 3( )29 K 4( )30 W 2( )31 K	10( )16 W 6( )17 K 7( )18 W 8( )19 K 9( )20 W 6( )21 K 7( )22 K 8( )23 W 9( )24 K 7( )25 K	5( )1 G 1( )2 K 2( )3 W 3( )4 K 4( )5 W 1( )6 K 2( )7 K 3( )8 W 4( )9 K 1( )10 K 2( )11 W 3( )12 K 4( )13 K 1( )14 W 2( )15 K	COMPLEMENT OF NON - QUADDED PAIRS

Numbers to left = Type of Quad
Numbers to right = Quad Count
G = Gas Pressure Quad. Splice straight through, color to color and load Red pair H88N. Use Orange pair for contactor.
C = K order circuit loaded H44N.
W = 2-wire, 12 Quads H88-50.
K = K carrier, 18 Quads

SPLICING PLAN FOR K CARRIER QUADS

SOUTH	TO	NORTH
2		24
4		15
6		7
7		31
9		22
10		13
12		6
13		29
15		21
17		12
19		4
21		27
22		19
24		10
25		2
27		25
29		17
31		9

SPLICING PLAN FOR VOICE FREQUENCY QUADS

Twelve 2 - Wire quads (W) to be Color Random Spliced.