BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G50.603.1
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AT&T Co Standard

CABLE SPLICING — GENERAL
MULTIPLE UNIT CABLE
MIXED COLOR UNITS

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1. GENERAL

1.01 This section replaces Issue 4 and describes 19 and 22-gauge multiple unit type cables made with mixed color units.

1.02 The 19-gauge pairs may be insulated with either strip paper or pulp insulation. The 22-gauge pairs are pulp insulated.

1.03 This section is reissued to include 19-gauge DNB and FNB cables which are now available in multiple unit construction in 76-pair and larger sizes. DNB cable of layer construction is covered in another section of the practices.

2. MIXED COLOR UNITS

2.01 These cables contain pairs having nine different lengths of twist. Each unit contains a combination of pairs having nine lengths of twist but only three different colors of insulation: white-green, white-red and white-blue. The pair color of the outside layer is used as the identifying color of the unit for the purpose of establishing the pair count.

19-Gauge Units

2.02 Cables containing up to 51 pairs are arranged in layers as illustrated in Part 3. Cables containing 76 and 101 pairs may be either in layers or units, except that FNB cable containing 76 or 101 pairs is layer type. Cable containing 152 pairs or more are arranged in 25 and 26-pair units. The 26-pair units are distinguished by a single white thread in the binder.

2.03 In single gauge cables, the units are so arranged that starting with the white-green unit at the core and counting toward the outside layer in the usual way, each group of four consecutive units contains a total of 101 pairs.

22-Gauge Units

2.04 Cables containing up to 51 pairs are arranged in layers as illustrated in Part 3. Cables containing 76 or 101 pairs may be arranged in either layers or units. Larger cables are arranged in units.

2.05 The units consist of 25, 26, 50 or 51 pairs. The 26-pair and 51-pair units are distinguished by a blue-red tracer pair.

3. ARRANGEMENT OF UNITS

3.01 The arrangement of units, the number of pairs in each unit, colors of insulation and colors of binding strings on each unit, are shown in the following sketches.

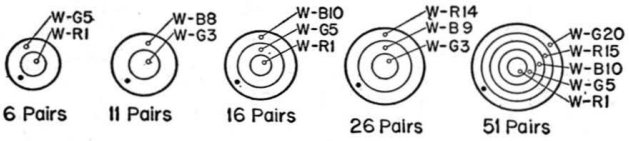
MIXED COLOR UNIT TYPE CABLES
19 GAUGE-DNB

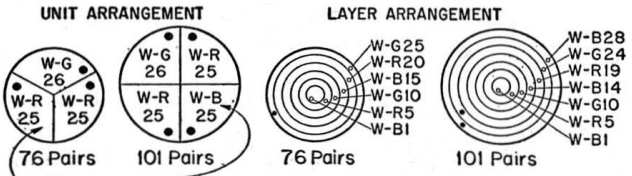
W-G = White-Green
W-B = White-Blue
W-R = White-Red
● = Blue-Red tracer pair

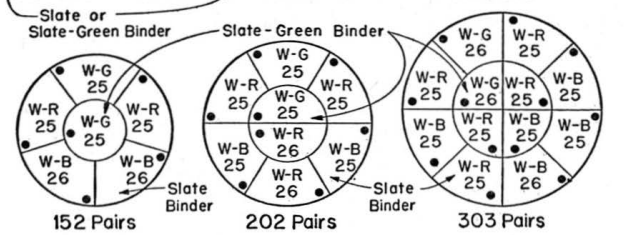
All units in same layer of units have like colored binding strings except the 76 and 101 pair sizes.
The 26 pair units have a single White thread in the binder.

The colors shown in the units are those of the pairs in the outside layer of the unit. The colors of the pairs in each unit are as follows:

Outside Layer	First Layer	Center
W-G	W-R	W-B
W-R	W-B	W-G
W-B	W-G	W-R







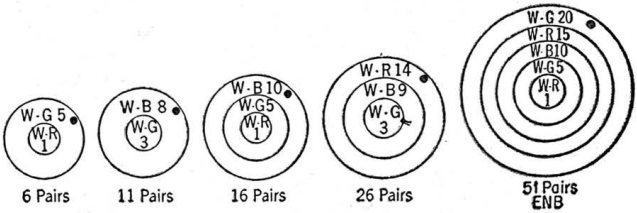
MIXED COLOR UNIT TYPE CABLES
19 GAUGE ENB AND FNB

W-G = White-Green
W-B = White-Blue
W-R = White-Red
● = Blue-Red tracer pair

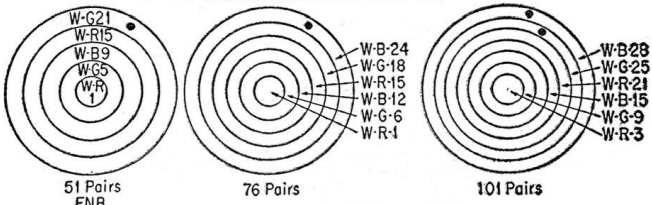
All units in same layer of units have like colored binding strings except the 76 and 101 pair sizes.
The 26 pair units have a single White thread in the binder

The colors shown in the units are those of the pairs in the outside layer of the unit. The colors of the pairs in each unit are as follows:

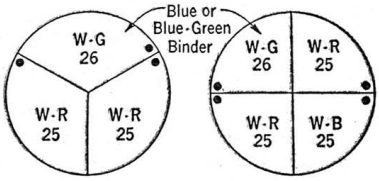
Outside Layer	First Layer	Center
W-G	W-R	W-B
W-R	W-B	W-G
W-B	W-G	W-R

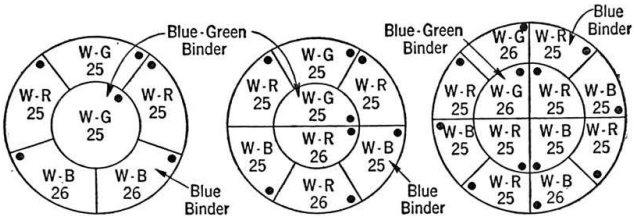


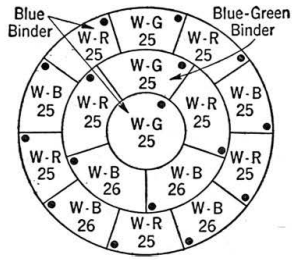
LAYER ARRANGEMENT FNB ONLY

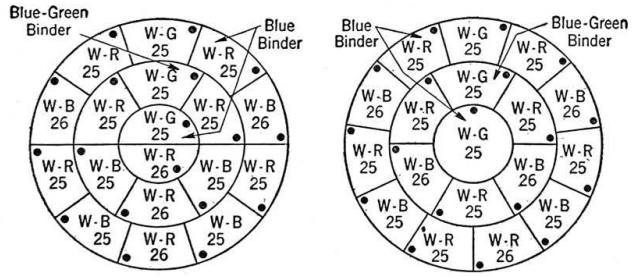


UNIT ARRANGEMENT ENB AND FNB




Blue-Green Binder
Blue Binder
W-G 25
W-R 25
W-B 26
152 Pairs
202 Pairs
303 Pairs


Blue Binder
Blue-Green Binder
404 Pairs


Blue-Green Binder
Blue Binder
455 Pairs
Old Arrangement
455 Pairs
New Arrangement

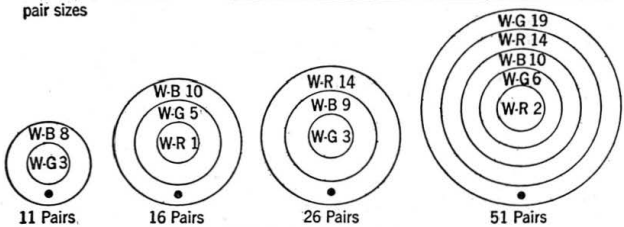
MIXED COLOR UNIT TYPE CABLES
22 GAUGE

W-G = White - Green
W-B = White - Blue
W-R = White - Red
● = Blue - Red tracer pair

All units in same layer of units have like colored binding strings except the 76, 101, 152 and 202 pair sizes

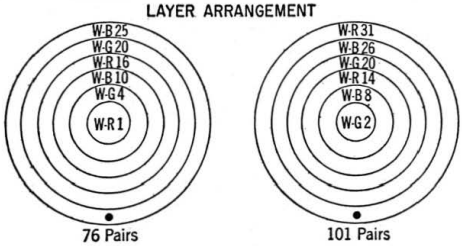
The colors shown in the units are those of the pairs in the outside layer of the unit. The colors of the pairs in each unit are as follows:

No. of Pairs in Unit	Outside Layer	Third Layer	Second Layer	First Layer	Center
25 or 26	W-G			W-R	W-B
	W-R			W-B	W-G
	W-B			W-G	W-R
50 or 51	W-G	W-R	W-B	W-G	W-R
	W-R	W-B	W-G	W-R	W-B
	W-B	W-G	W-R	W-B	W-G



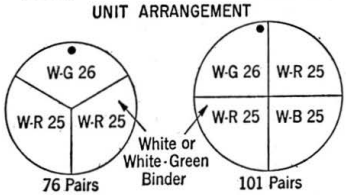
11 Pairs 16 Pairs 26 Pairs 51 Pairs

LAYER ARRANGEMENT

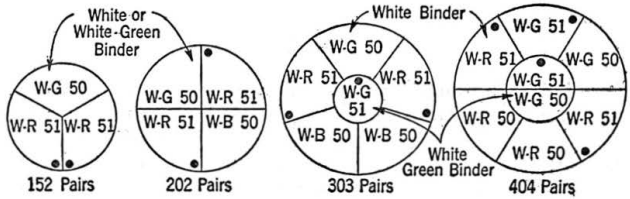


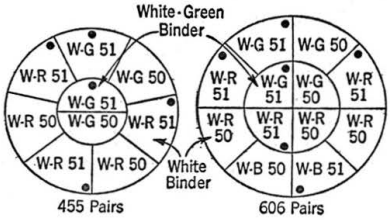
76 Pairs 101 Pairs

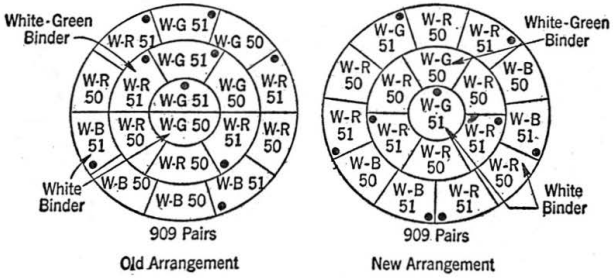
UNIT ARRANGEMENT



76 Pairs 101 Pairs







4. PAIR COUNT IN CABLE

4.01 The pair count of the units of multi-unit cables (containing 76 or more pairs) is determined in the following way:

(a) The white-green unit in the center is the starting unit and has the lowest count.

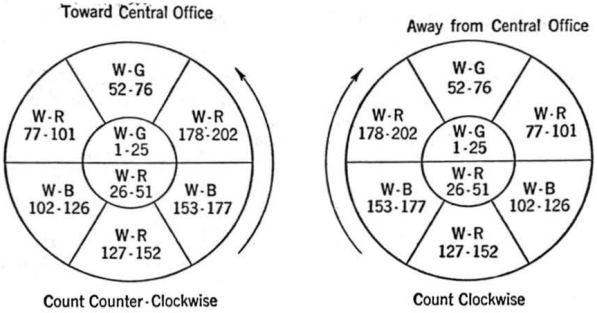
(b) The white-green unit in any layer is the marker unit for the layer and has the lowest count in the layer.

(c) Looking away from the central office, the count proceeds in a clockwise direction from the white-green unit.

(d) Looking toward the central office, the count proceeds in a counter-clockwise direction from the white-green unit.

(e) The tracer pair in a unit generally takes the last pair number in the count of the unit.

4.02 The following diagram shows the count at a typical straight splice between two 202-pair 19-gauge cables.



5. COMPOSITE CABLES

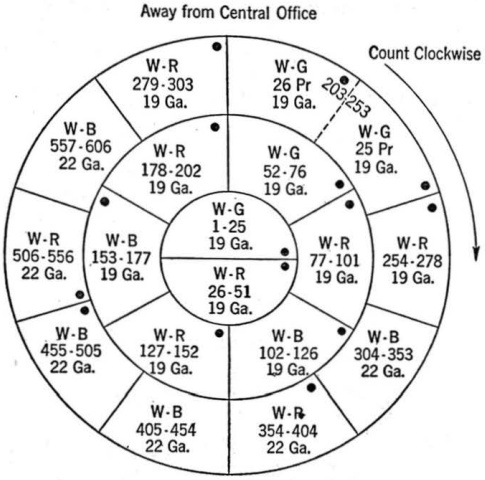
5.01 In composite cables containing units of conductors of more than one gauge the method of counting is as follows:

(a) Count the larger gauge conductors from the core, starting with the white-green unit, in the usual manner.

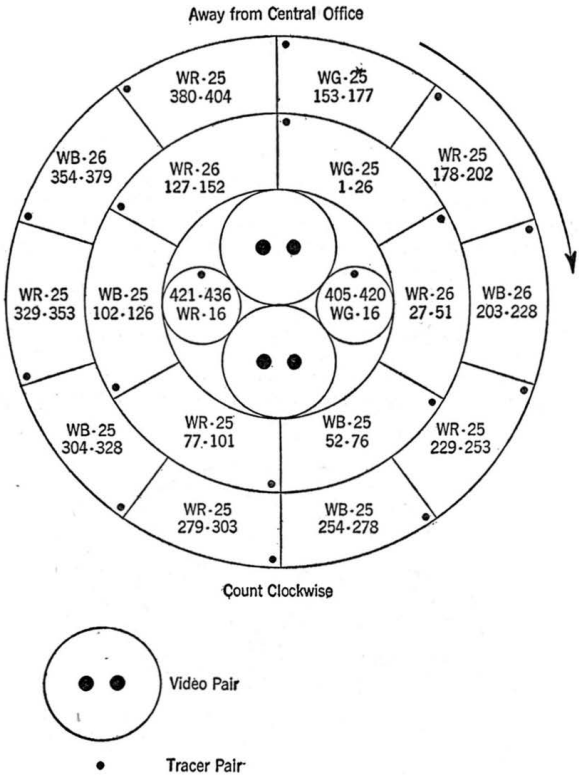
(b) In layers containing pairs of two gauges start with the white-green larger gauge marker unit and continue around the layer counting only the units of larger gauge conductors. If, in order to make the lay-up symmetrical, a layer contains two white-green units, they shall be considered as one group for counting purposes.

(c) The count of the small gauge units is found by proceeding around the layer in the same direction.

5.02 A typical example is illustrated below. This shows a 606-pair cable made up of 303 pairs 19-gauge (25 and 26-pair units) and 303 pairs 22-gauge (50 and 51-pair units).



5.03 In composite cables containing video pairs and 19-gauge pairs it may be necessary to arrange some of the 19-gauge conductors in units of less than 25 pairs in order to obtain a satisfactory lay-up. In such cables, the units of less than 25 pairs are counted as the highest numbered pairs in the 19-gauge complement regardless of their location in the cable. The remainder of the cable is counted as outlined in Paragraph 5.01 starting with the 25 or 26-pair white-green unit nearest the core. The method of counting a cable containing two video pairs and 436 pairs of 19-gauge arranged in 26, 25 and 16-pair units is illustrated on the following page.



6. RANDOM SPLICING PROCEDURE

6.01 The method of splicing the cable is similar to that used in splicing any multiple unit cable. The units should be kept intact throughout the length of the cable except as required to care for the occasional defective conductors. In splicing the individual unit, the pairs within the unit should be picked at random with no attempt being made to match the colors of insulation. When it is necessary for transmission reasons, the pairs within a unit can be bunch random spliced as outlined in the section covering Random Splices in Toll Cables.