

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

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MANILA ROPE AND BLOCKS

SERVING AND SPLICING ROPE

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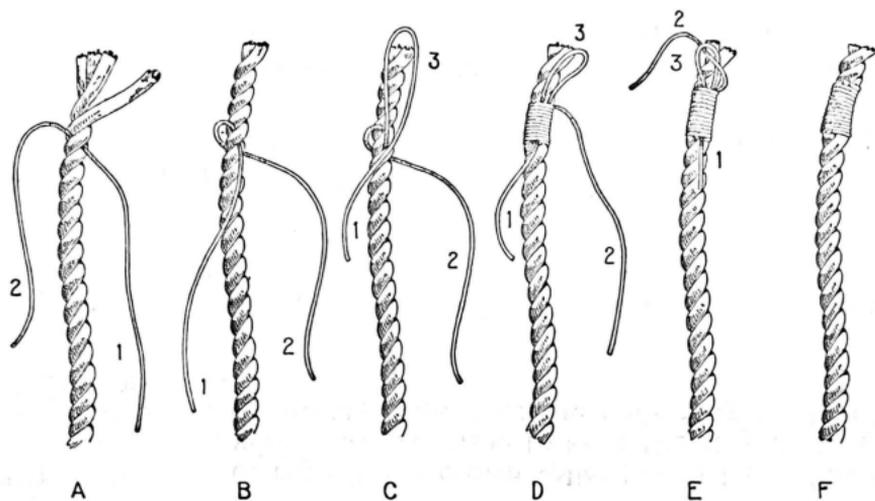
1. GENERAL

1.01 This section describes the methods of serving and splicing rope.

2. SERVING END OF ROPE

2.01 The ends of rope if not crown spliced shall be whipped or served with a strong twine to keep the strands from untwisting. As a temporary expedient the ends may be taped with friction tape.

2.02 The operations required to serve end of rope are as follows:



(a) Unlay one strand of the rope back a little more than one turn, to a point where the whipping is to begin. Under this strand lay the twine, leaving the end marked 1, 8 or 10 inches long as shown in (A). Then relay the strand into the rope, keeping it tightly twisted and firmly held in place.

(b) Let the short end of twine 1 hang down the rope. Wind the long end marked 2 once around the rope, just above the short end as shown in (B).

(c) Lay end of twine 1 along the rope toward its end and there bend it back, thus forming the open bight 3 as shown in (C) which can be pulled in under the whipping when tucking the ends.

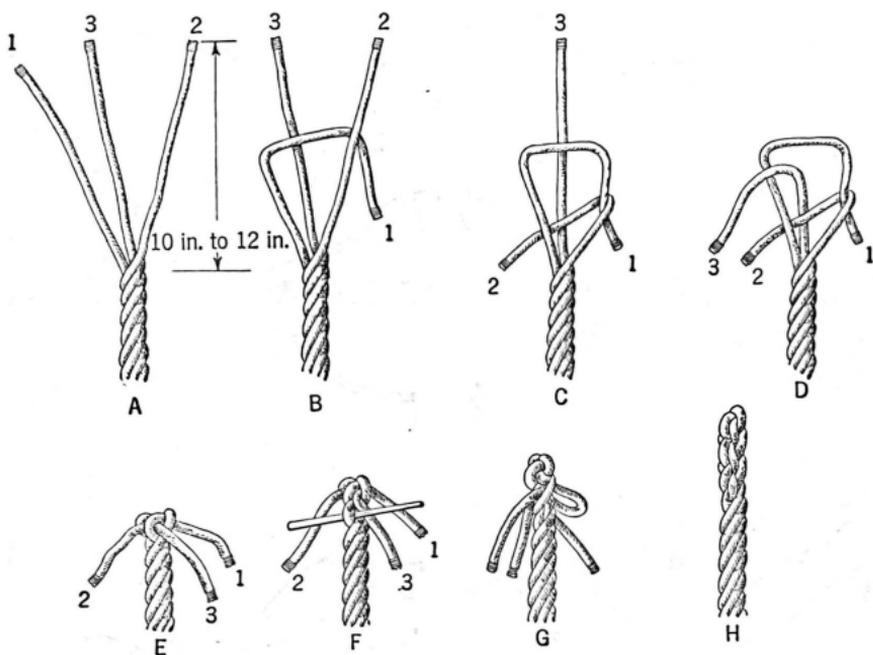
(d) Lay the sides of the bight 3 in a groove of the rope. Wind the long end 2 around the rope and the doubled twine, being careful to pull it up tightly and to leave no vacant spaces between the turns as shown in (D).

(e) Continue winding, or whipping, as far as desired, then pass the long end 2 up through the bight 3 as shown in (E). By pulling on the free end 1 of the bight 3, draw the long end of the twine 2 downward underneath the whipping, to about the center, not all the way through.

(f) Finish the whipping by cutting off both protruding ends of the twine as close as possible as shown in (F). Cut off excess rope.

3. CROWN SPLICE

3.01 Crown splice is used to keep the ends from permanently untwisting.



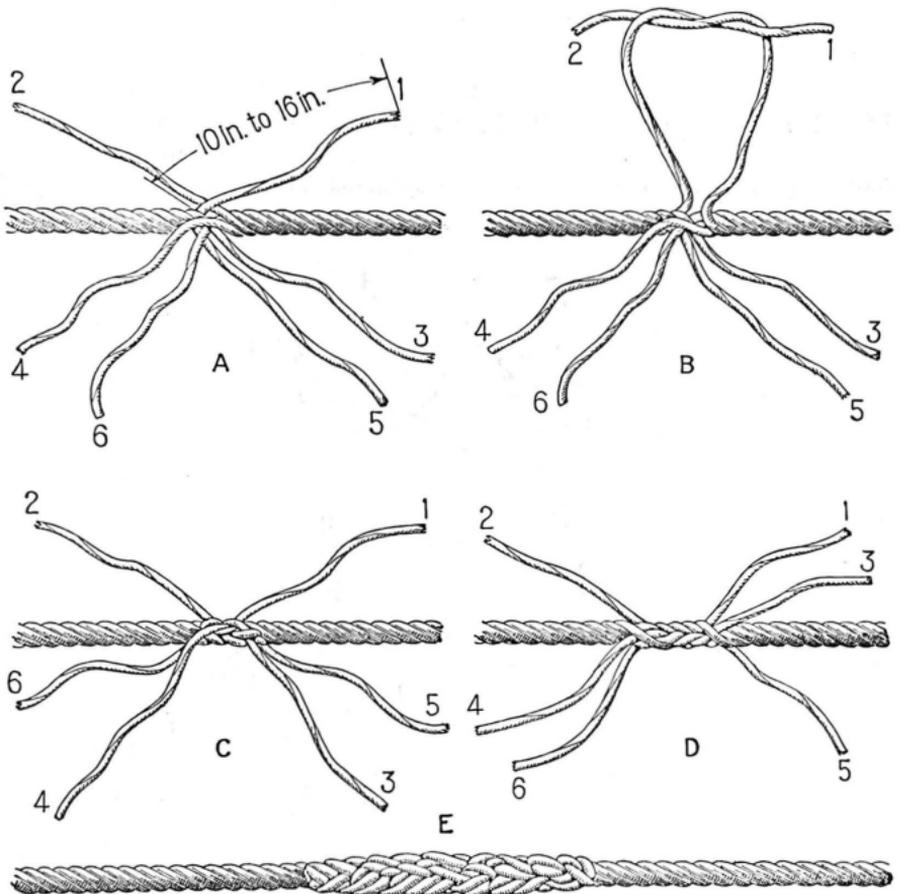
3.02 The operations required to make a crown splice are as follows:

- Unlay the rope for 10 to 12 inches and hold it in one hand with the loose ends up.
- Take strand No. 1 on the left and lay it across the end of the rope between the other two strands as shown in (B).
- Take strand No. 2 back and down over strand No. 1 as shown in (C).
- Take strand No. 3 across No. 2 through bight in No. 1 as shown in (D).
- Pull all ends tight as shown in (E).
- Continue tucking each successive strand over the nearest strand and under the next strand of the main rope as shown in (F).
- Tuck until about four complete operations are made.

(h) Roll between two surfaces, under pressure, as between foot and floor, to smooth out, then cut off surplus ends flush with the outside strands. (H) shows the splice when completed.

4. SHORT STRAIGHT SPLICE

4.01 Short straight splice is used to untie the ends of rope by interweaving strands and when properly made it has 80 per cent of the strength of the rope.



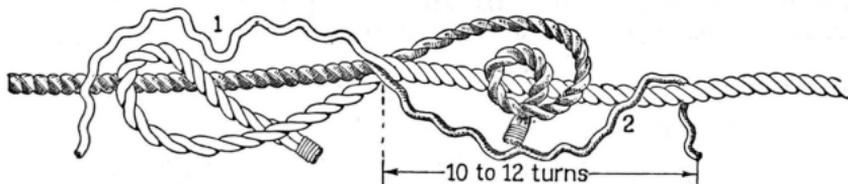
4.02 The operations required to make a short straight splice are as follows:

- (a) Untwist the strands at one end of each rope for a length of 10 to 16 inches. Butt the ends of the rope tightly together as in (A) laying the strands of each rope alternately between the strands of the other rope, that is strand 1 is between 2 and 4; strand 3 is between 4 and 6 and strand 5 is between 2 and 6. This process is called locking the strand.
- (b) Tie each strand of one rope to the corresponding strand of the other rope with a regular overhand knot as in 1 and 2 of (B), complete tying 3 to 4 and 5 to 6 in a similar manner.
- (c) Pull all knots down tight as in (C).
- (d) Carry each end over the adjacent strand of the rope and tuck it under the next strand. Start with 1 and proceed to 6 in progressive order. This will produce an arrangement as in (D). Repeat this operation until the total length of the interweaving strands extends through a distance of four inches for 1/4-inch rope, and add an additional tuck for each next larger standard size rope.
- (e) Roll splice between two flat surfaces, under pressure, as between foot and floor, and trim off the surplus ends flush with the outside strands. (E) shows the splice when completed.

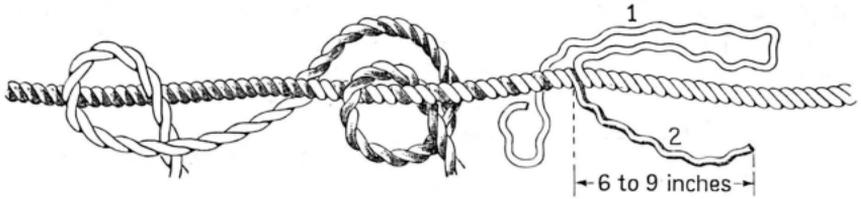
5. LONG STRAIGHT SPLICE

5.01 Long straight splice is used to unite the ends of rope required for passing over sheaves by interweaving strands, and when properly made it has 90 per cent of the strength of the rope and therefore it is stronger than the short straight splice.

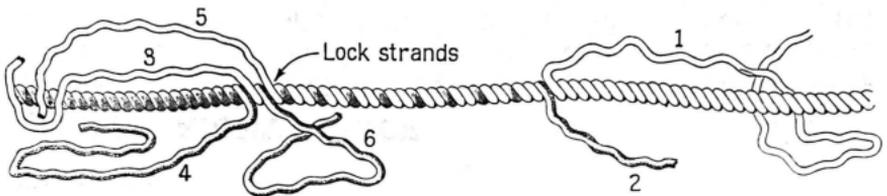
5.02 The operations required to make a long straight splice are as follows:



- (a) Unlay only one strand of each rope for ten or twelve turns. Lock and draw ends of the rope tightly together, having the single strands 1 and 2 side by side as shown above.

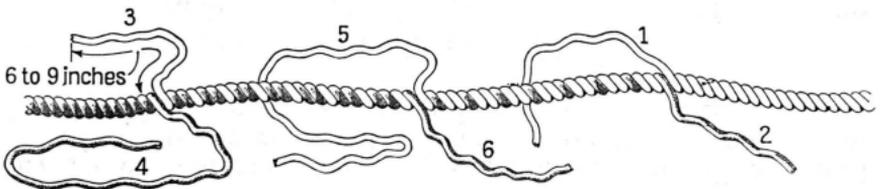


(b) Taking care not to let the ends of the ropes separate, unlay strand 1 from its rope one turn, and follow it with strand 2. Keep 2 twisted up tightly and pulled down firmly into its place. Continue this procedure until only 6 to 9 inches of strand 2 is left out, depending on the size of the rope.

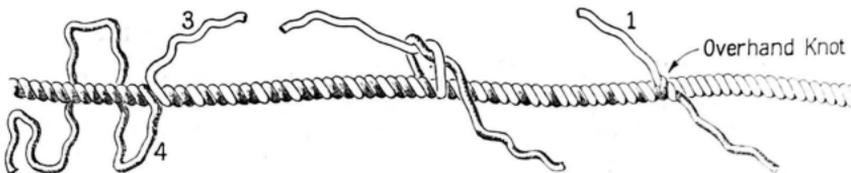


(c) Untwist the two pairs of strand left at the center and lock them as shown above, 3 between 4 and 6 and 6 between 3 and 5. Unlay toward the left strand 4 and follow it with 3, as was done toward the right with strands 1 and 2.

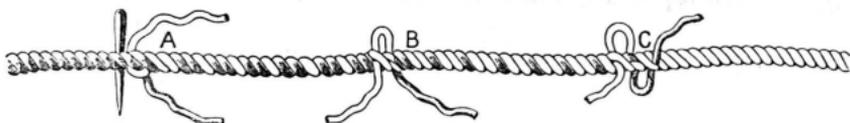
Note: Do not unlay 6 instead of 4 and follow it with 3:



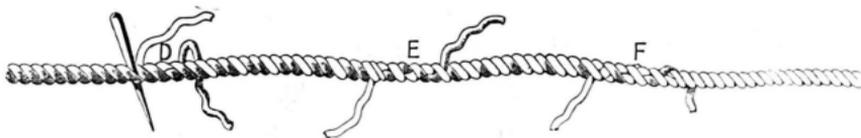
(d) Continue until strand 3 is only 6 to 9 inches long. The breaks in the strand are now separated as shown above.



(e) Each pair of strands is now to be tied together, and the end of each strand tucked. Cut all strands to the length of the shortest, that is, 6 to 9 inches. Arrange each pair so that the strand from the left is in front of the strand from the right; or, in other words, arrange the strands so that they can not untwist from the rope without first uncrossing. Tie each pair of strands together with an overhand knot and pull it down tightly into the rope as shown.



(f) Tuck each strand as shown above at (A), (B) and (C). See crown splice.



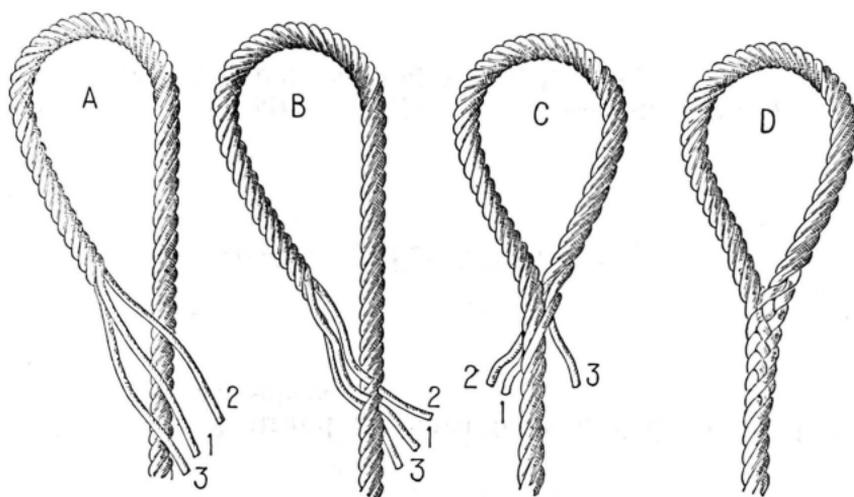
(g) Tuck each strand twice more, tapering the ends if desired and cut the end 1/2-inch long.



(h) With a round stick pound down each part of the splice and roll it between two flat surfaces under pressure as between foot and floor.

6. EYE SPLICE

6.01 Eye splice is used to form a permanent loop or eye in the end of the rope. This splice has 90 per cent of the strength of a straight rope. When heavy wear will take place on the inside of the eye, it is advisable to splice an oval thimble in the eye.



6.02 The operations required to make an eye splice are as follows:

- (a) Untwist the strands of the rope for a length of 10 to 16 inches. Throw a bight into the rope of a size to correspond with the size of the eye required. Select as 1 the strand that is on top of the rope and between the other two loose strands.
- (b) Raise a strand on the top of the main rope and tuck 1 under it at right angles as in (B). Raise the adjoining strand in the main rope and tuck 2 under it as in (B). Raise the remaining strand in the main rope and tuck 3 through.
- (c) When all the ends have been tucked through for the first time, pull them down tight as in (C). Proceed to interweave the strands as in a short splice. (See Part 4.)
- (d) Roll the splice between two flat surfaces under pressure as between foot and floor and trim off surplus ends, flush with the outside strands. (D) shows the splice when completed.