

**BELL SYSTEM PRACTICES**  
**Outside Plant Construction**  
**and Maintenance**

**SECTION G57.130**  
**Issue 1, August, 1935**  
**AT&T Co. Prov. Std.**

## **SUBMARINE CABLE PLACING**

### **PULLING ACROSS WATERWAY**

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#### **1. GENERAL**

1.01 The method of placing submarine cable by pulling it across the waterway is particularly adapted to short crossings requiring only one length of cable and to crossings where the water is not deep enough to permit the operation of barges or boats or where such equipment is not available.

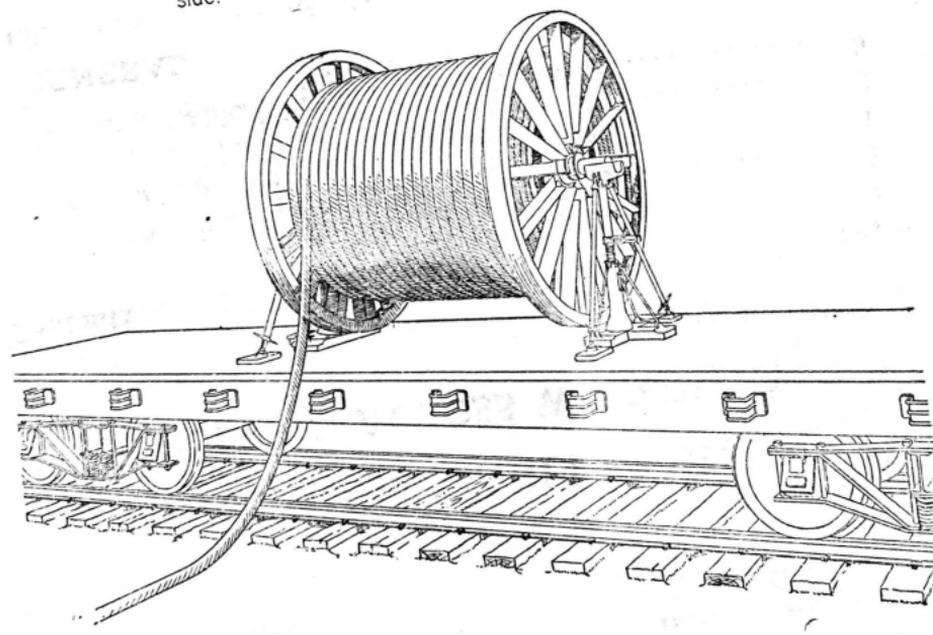
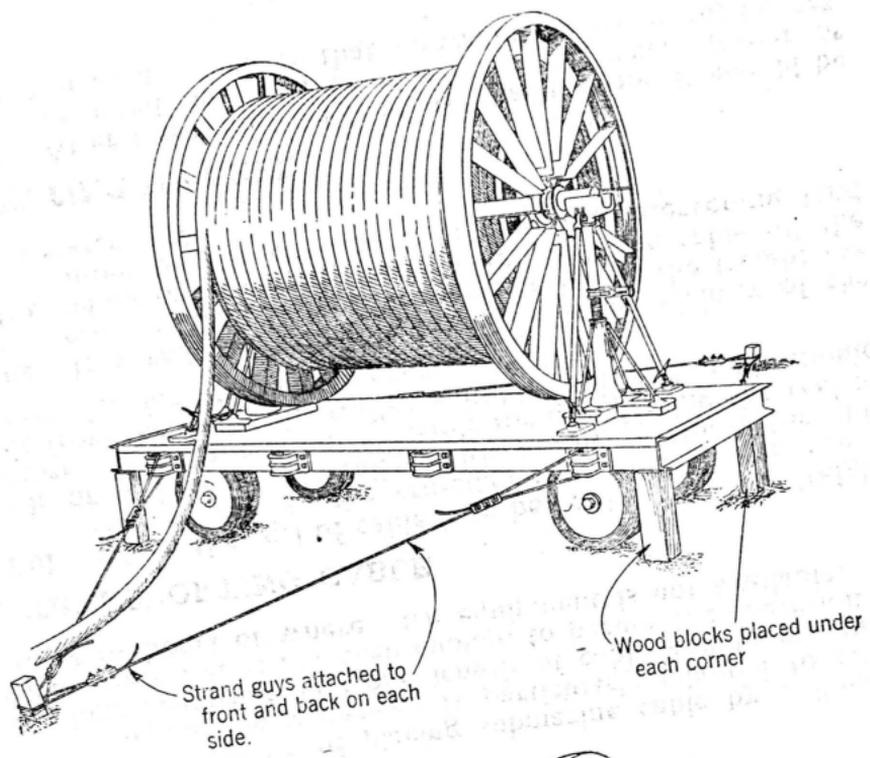
#### **2. TRANSPORTING CABLE**

2.01 When the reel of cable is to be hauled from the freight car or boat to the crossing, it is advisable to use a truck or a four-wheel trailer with a low platform for this purpose. If a crane is not available for transferring the reel of cable from the car to the trailer, suitable skids and tackle should be provided for handling the reel.

2.02 If a railroad siding is available in the vicinity of the crossing, it may be practicable to locate the freight car on the siding opposite the crossing and pull the cable off the reel mounted on the car and then over the intervening land to the waterway.

#### **3. SETTING UP REEL**

3.01 After the cable reel is at its final location it should be mounted on jacks or blocks on the truck, trailer or car, in a manner similar to that shown in the following figures.



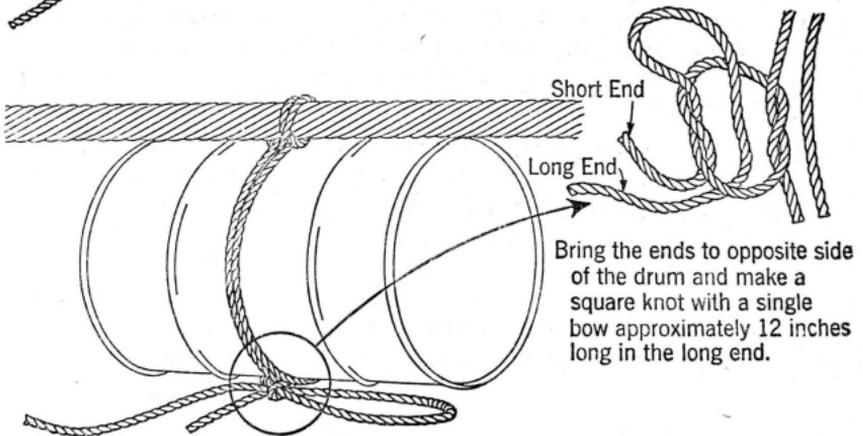
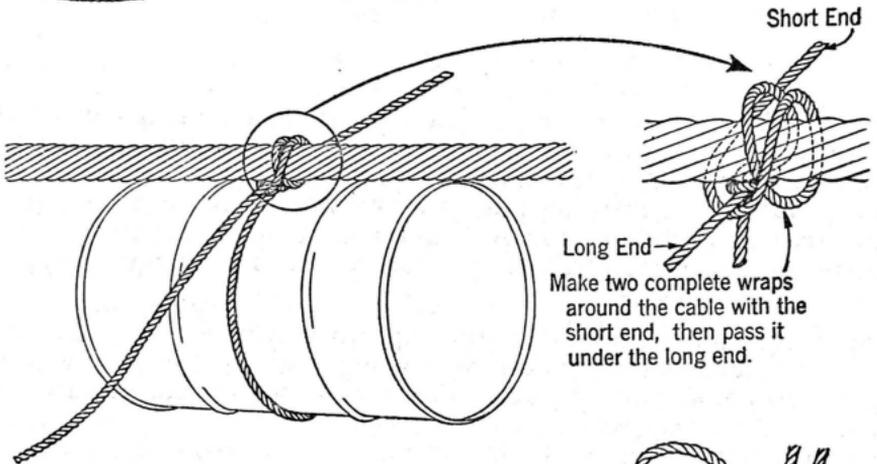
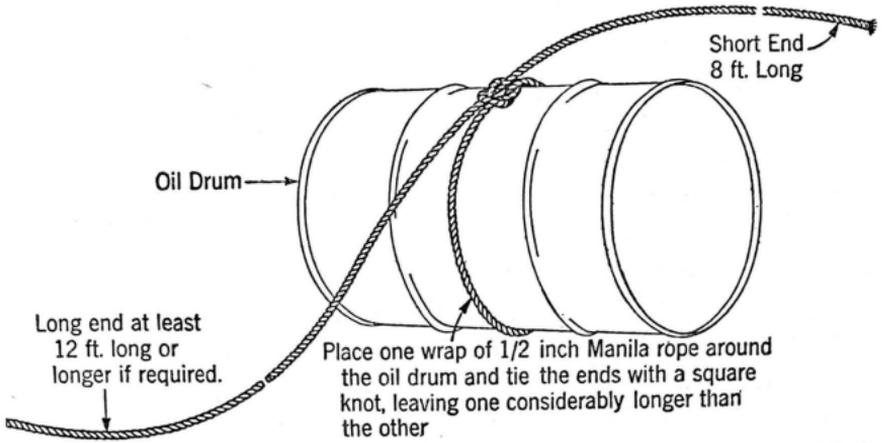
#### 4. PULLING CABLE

4.01 Ordinarily the cable can be pulled with one truck stationed on the opposite side of the crossing. The pulling line from the truck should be run across the waterway and attached to the cable.

4.02 Where the distance between the mounted reel and the waterway is several hundred feet, it may be advisable to employ a second truck stationed near the cable reel to assist in pulling the cable. The pulling line from the second truck should be run through a sheave located near the edge of the waterway and then back to the cable reel where it should be attached to the cable. To facilitate pulling the cable over the land, sheaves or rollers should be set up as required to avoid excessive friction between the cable and the ground.

4.03 In general, it is advisable to buoy the end of the cable to keep it off the bottom of the waterway and thus prevent the possibility of its snagging on projections such as rocks, sunken logs, etc. A flat bottom rowboat may be used for this purpose or a buoy or raft may be constructed of planks and empty oil drums. The cable should be securely lashed to the rowboat or raft with the end extending about three feet over the front.

4.04 Where the use of floats is necessary, attach oil drums to the cable at a number of points spaced so that they will float the cable. The cable should be attached to the drums as it enters the water and at sufficient intervals to float it across the waterway. The method of attaching an oil drum to the cable is shown in the following figure.



4.05 Where due to deep water or other conditions there is a possibility of some of the floats being submerged during the process of lowering the cable to the bottom, the long end of the rope should be attached to a small float such as a piece of wood to hold it at the surface. The long end of the rope should in this case be of sufficient length to reach the surface of the water when the float attached to the cable is on the bottom.

4.06 When floats are employed to place the cable, sufficient slack should be pulled on the pulling side of the crossing to permit lowering the cable to the bottom of the waterway after it has been freed from the floats. This slack should be formed in a smooth bend on the shore. The cable should then be snubbed or anchored temporarily at the shore end of this bend so as to prevent the end of the cable from being pulled back when the cable is released from the floats and allowed to settle to the bottom. The end of the cable on the other side of the crossing should also be snubbed or anchored temporarily for the same reason.

4.07 The cable should be freed from the floats, one at a time, starting with the float nearest the shore on the reel side of the crossing. This can usually be done by men crossing the waterway in a rowboat or launch. When releasing floats that are submerged, the boat or launch should be held several feet away from the line of crossing and on the upstream side if there is any current at the crossing to avoid the possibility of the boat being struck by the float as it rises to the surface.

4.08 Additional slack may be required across the lowland on either side of the crossing to provide for the possible future shifting of the shore line. Such requirements should be considered in connection with the pulling operations and the slack cable should be formed in long radius bends across the lowland.

## **5. PLACING CABLE THROUGH ICE**

5.01 When a cable is to be placed in cold weather, the placing may often be simplified by taking advantage of ice and snow conditions. Relatively long sections of cable can be pulled over ice and snow and this is advantageous where there is low or swampy land included in the crossing. Placing the cable on the ice across the waterway should not be attempted unless the ice is thick enough to support the cable and the men required to place it.

5.02 Ordinarily the cable can be pulled across the waterway and any adjacent land with one truck stationed on the opposite side of the crossing. Where, however, a fairly long

length of cable will be required for the crossing, it may be desirable to employ a second truck stationed near the cable reel to assist the first truck in pulling the cable, as outlined in paragraph 4.02. If the ground is deeply covered with snow, it will not be necessary to employ rollers, as the cable will slide readily over the snow and ice.

5.03 The end of the cable should be supported on a sled to prevent the possibility of snagging it on uneven ground, or projections.

5.04 Sufficient slack should be provided in the cable across the waterway to ensure that it will rest on the bottom and become buried in the sand or silt. Slack should also be provided in the cable across any lowland on either side of the waterway to care for shifting in the channel of the stream or for washouts during flood periods. This slack should be provided in the cable in the form of long radius bends.

5.05 The location of the bends, as shown on the detail plans, should be determined and indicated across the lowland and waterway.

5.06 The method of making the bends in the cable is as follows: The cable should be pulled in a straight line from one side of the crossing to the other. The cable should be pulled past the terminal point far enough to provide the slack required to make the bends between this point and the center of the waterway. The slack for bends in the other half of the crossing can be obtained by pulling additional cable off the reel. The bends should then be made, starting at a point near the center of the waterway and progressing toward the ends. The additional cable required to make the bends should be obtained by pulling slack from the end toward the center, with the winch line from a truck stationed on the opposite side from where the bends are being formed.

5.07 Across the lowland the cable should be buried in a trench sufficiently deep to afford the required protection. The line of the trench should follow that of the cable so that when the cable is placed in the trench, the bends will correspond to those in which it was formed on the ground.

5.08 A slot about 12 inches wide should be cut in the ice across the waterway through which the cable can be lowered into the water. The line of the slot should follow that of the bends placed in the cable so that the cable can be lowered in the slot. The slot should be cut with saws designed for cutting ice. The men engaged in cutting the ice should be secured to a strand stretched across the waterway by means of rope loops passed through their safety belts and over the

strand or protected by other means, to safeguard them from being carried under the ice should they fall into the water.

5.09 The cable should first be placed in the trench on either side of the waterway and then snubbed or anchored temporarily on each shore. After this has been done, the cable should be slid into the slot in the ice by prying it with bars. The operation of sliding the cable into the slot should be started at one side of the waterway, working across the ice to the other side.

5.10 The temporary snubs or anchors should then be removed. The trench across the lowland should be back-filled and the cable permanently anchored.