

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G 55.505
Issue 3, May, 1938
AT&T Co Standard

REMOVING UNDERGROUND CABLE

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1. CUTTING CABLES

1.01 Cables in manholes will generally be cut by the splicing forces, but special conditions may necessitate that the cutting be done by the cable placing forces.

1.02 When the work is done by the cable placing forces the cable to be removed should first be identified in the manhole by pulling it at an end previously cut by the splicing forces, to avoid the possibility of cutting a working cable. The splice in the designated cable should then be removed and, if the cable is to be reused, the ends of the cable should be sealed as described in Section G55.110. The cable in the remaining manholes should be identified and the splices removed in a similar manner.

1.03 A test pull should be made before cutting any cable that is to be removed in connection with an out-of-service cable transfer, to ensure that the cable can be removed readily after it has been made inoperative.

2. PRECAUTIONS

2.01 The initial force required to move a cable that has lain in a duct for some time will generally be greater than that normally required to keep a cable in motion. The winch line may, therefore, be subjected to severe strains in making test pulls or in starting to remove a length of old cable. In view of this, it is important that the workman leave the man-

hole while the initial pull is made on the cable and at other times when the winch is heavily loaded.

2.02 When the cable removing apparatus has been set up, a slight tension should be put on the pulling line to ensure that the grip will remain in position. The workman shall then leave the manhole before full tension is applied to the winch line. When it is necessary to change the position of the grip on the cable, the line should be slacked off before the man enters the manhole. He shall not remain in the manhole while the cable is being pulled until it is evident that the tension in the winch line is normal, as indicated by the power required to pull the cable or by the behavior of the cable. If the cable pulls in a succession of sharp jerks there is a possibility that the winch line may be strained to the breaking point and the grip attendant should remain out of the manhole and clear of the pulling line during each pull.

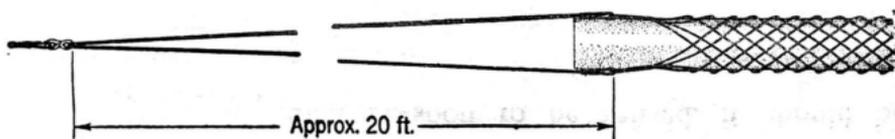
2.03 When a workman is in the manhole, he shall originate the starting and stopping signals for each pull. He shall stay clear of the pulling line after the starting signal is given.

3. REMOVING CABLE TO BE REUSED

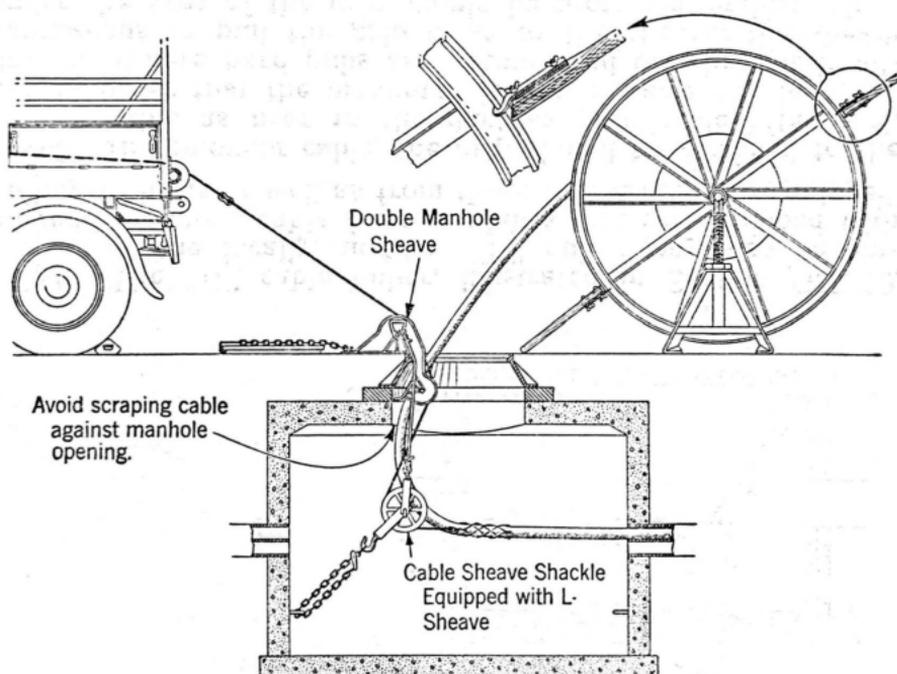
3.01 The cable plan, order or other instruction will indicate whether the cable is to be reused or junked.

3.02 Cable removing grips have been provided to facilitate the removal of cable. A 2-1/2-inch grip is available for removing cables 2 inches to 2-5/8 inches in diameter and a 3-inch size for cables 3-1/8 inches in diameter. The standard 1-1/2-inch split cable grip can be employed for removing cables less than 2 inches in diameter. The cable removing grips have two "U" shaped pulling eyes which lie at diametrically opposite sides of the cable.

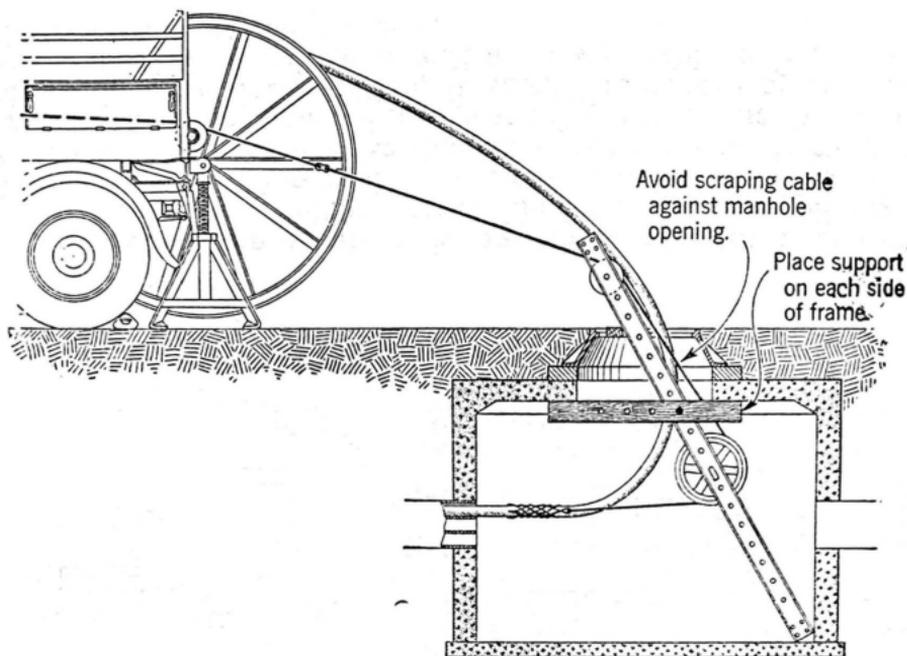
3.03 In withdrawing cable for reuse, a sling should be placed between the cable removing grip and the winch line to minimize damage to the sheath. A sling approximately 20 feet long made of 1/2 or 7/16 inch steel rope will be found suitable for use in manholes of the average depth. The ends of the sling should be spliced into the eyes of the grip by means of a rolled eye splice, or eye splices should be made at the ends of the sling and the sling connected to the grip by means of connecting links. The method of making the splice is covered in the instructions on rolled eyes for winch lines. The sling and cable removing grip are illustrated below. Where the small split grip is employed, the winch line should be connected directly to the grip by means of a connecting link.



3.04 The apparatus to be employed in removing cable will depend on local conditions. Where pulling-in irons are available, the equipment shown in the following sketch may be employed.



3.05 When the manhole is not equipped with pulling-in irons, the pulling frame illustrated in the following figure should be employed. The frame should be braced with 2 inch by 4 inch or heavier timbers at the manhole frame and against the side walls of the manhole. When the frame is placed in a vertical position, it should be braced against an end wall of the manhole as well as at the manhole frame and the side walls of the manhole.



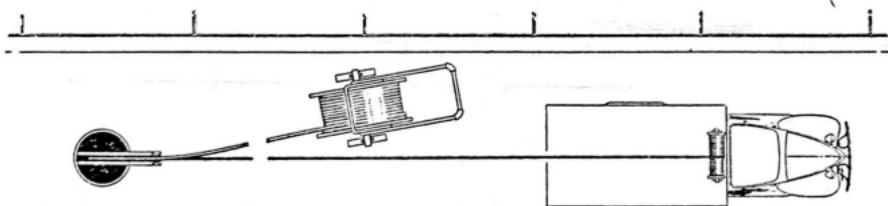
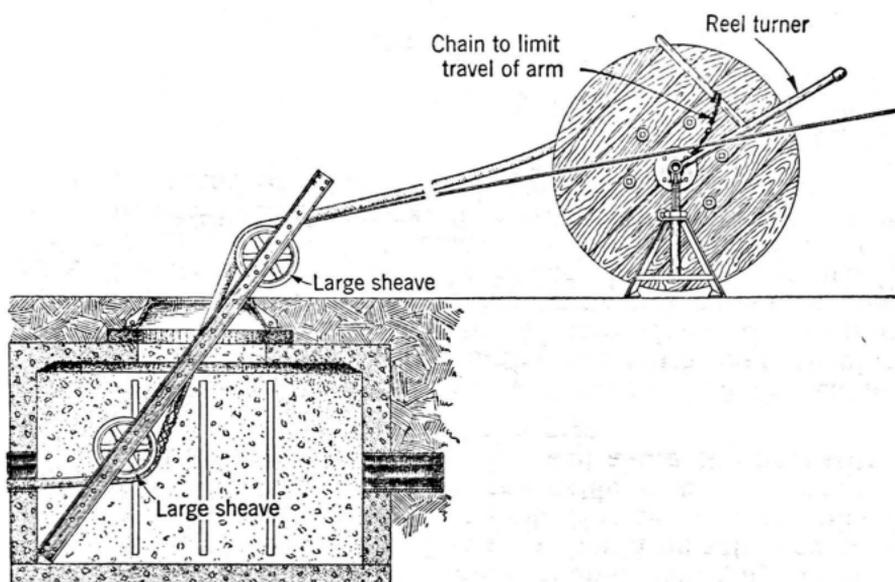
3.06 The "D" cable puller, illustrated in Section G55.110, or the locally modified "D" puller may also be employed to remove cable from manholes that are equipped with pulling-in irons as well as from those that are not so equipped.

3.07 In removing cable, the grip should be attached to the cable as near to the duct as practicable after each pull in order that the maximum length of cable can be withdrawn. Where hard pulls are encountered or where it is advantageous to pull the grip close to the sheave, the sheath under the eyes of the grip should be protected against injury by means of a piece of cable sheath. The cable should be wound on a reel as it is being withdrawn. Care should be exercised to avoid sharp bends or kinks in the cable. The sheath should be carefully inspected for electrolysis pit marks and other defects, to ensure that the cable is satisfactory for reuse. The visual inspection may be supplemented by a gas pressure test during or after removal.

3.08 When the duct is soon to be reused, it should be threaded by attaching a steel rope, if available, or a threading wire to the end of the cable before removal.

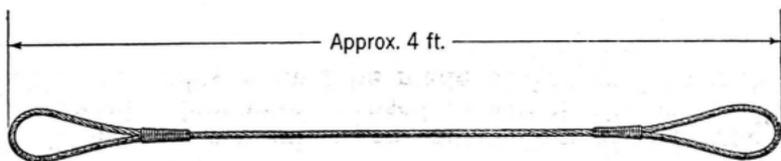
4. REMOVING CABLE TO BE JUNKED

4.01 The work of removing cable to be junked can be facilitated by drawing the cable over two large sheaves in the pulling frame as illustrated below. When the pulling frame is placed in a vertical position, it should be braced at the bottom and at the manhole frame. The apparatus shown in paragraph 3.04 may also be employed in removing cable that is to be junked. The grooves in the sheaves of the double manhole sheave are wide so that cable can be pulled over them.



PLAN VIEW

4.02 The cable removing grip or a sling of the type illustrated below may be used to attach the winch line to the cable. The sling should be made of 1/2 or 7/16 inch steel rope.



4.03 Cable that is to be junked should generally be reeled as it is withdrawn. The grip should be attached to the cable near the duct for the first pull. For subsequent pulls the cable grip should be placed on the cable at a point near the sheave at the manhole frame. This will avoid the necessity of entering the manhole to adjust the grip.

4.04 Where traffic conditions will permit and the cable is to be cut into short lengths, the truck may be placed at a convenient distance (50 to 100 feet) from the manhole. The cable should be pulled to the truck and cut at the manhole. Then the cable should be pulled clear of the winch line and cut into convenient lengths using the standard cable cutter to facilitate the work. The following figure illustrates a suitable method of placing the cable cutter in position.



The cutter should be steadied by placing one foot on the lower handle during the cutting operation.

5. REMOVING SUBSIDIARY CABLE

5.01 Subsidiary cable should generally be removed at the manhole. Where the underground pulling apparatus is not available, the cable may be removed at the pole. If the lateral bend is not firmly imbedded, it should be lashed to the pole to avoid disturbing the bend. The set-up to be employed at a pole is similar to that illustrated in Section G55.130.

6. REELING CABLE

6.01 A reel turner may be employed for turning and controlling the reel. A tool of this type suitable for turning wood reels is shown in paragraph 4.01. A reel check to prevent back motion of the reel may also be employed, if available. The illustration in paragraph 3.04 shows a device suitable for either turning or checking steel cable reels. Two of these tools can be employed simultaneously, as illustrated, when both turning and checking are required. The tools should be mounted on the rim which is not equipped with the hinged section in the flange. For turning, the tool should be placed

on the rim with the thumb nuts facing upward. The tool used as a check can be placed on the rim with the thumb nuts facing downward in which position the jaws will automatically engage the rim whenever any back motion of the reel occurs.

6.02 If the cable is to be reused, approximately 18 inches of the inner end should extend through the opening in the side of the reel to permit testing. Both inner and outer ends of the cable should be lashed securely to the reel.