BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G97.530.1
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AT&T Co Standard

D UNDERGROUND CABLE PULLER

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1. GENERAL

1.01 The D underground cable puller is a unit which attaches to the ground leg of a derrick and provides a stationary sheave in a manhole for use when pulling underground cable.

1.02 Since the operation of this unit involves use of standard pole derricks, the operating Practice for the type of derrick used should be considered a supplemental instruction to this Practice.

1.03 Additional information regarding the placing of underground cable is contained in the G55 Series of the Construction and Maintenance Practices.

2. PRECAUTIONS

2.01 All precautions pertaining to the use of the derrick and to placing underground cable shall be observed in connection with the use of this puller.

2.02 All signals that may be used shall be thoroughly understood by all persons having occasion to use them.

2.03 One man shall be assigned the responsibility of setting up the cable puller and he shall be responsible for, and check the work of any men who may assist him.

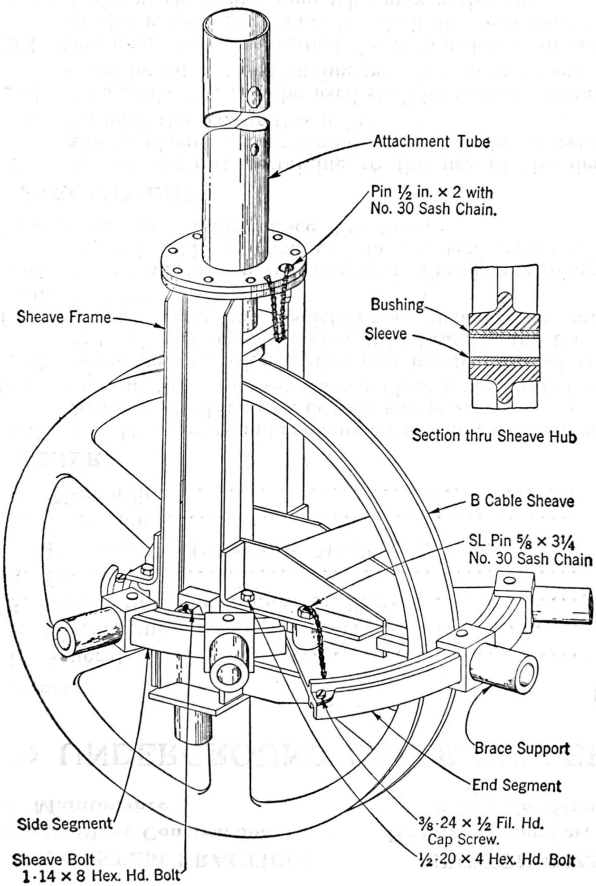
2.04 Care should be exercised when lowering equipment into the manhole to prevent injury to the workmen. Equipment should not be placed around the manhole opening where there is a possibility of it being pushed into the manhole.

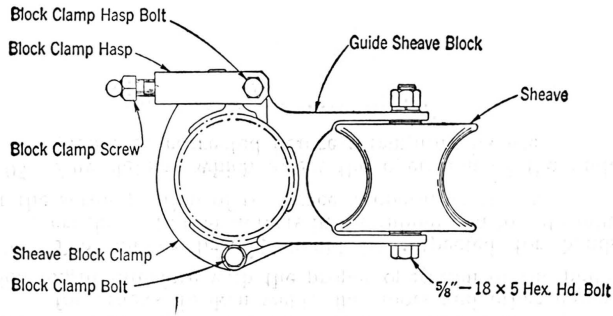
2.05 Before starting any pull, all attachments and braces should be checked and the bracing arrangement reviewed.

2.06 Start every pull with the slowest winch line speed practicable in order to apply the load gradually to the line, the puller and the derrick members.

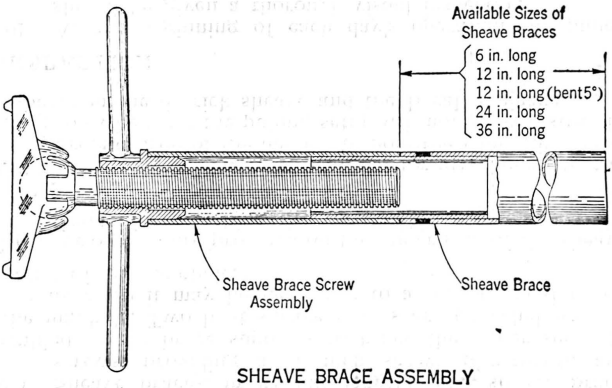
3. DESCRIPTION AND NAMES OF PARTS

3.01 The following figures give the names of the parts which may be required for repair or replacement.





ROPE GUIDE SHEAVE



SHEAVE BRACE ASSEMBLY

3.02 The D underground cable puller consists of a B cable sheave mounted in a steel frame. The frame is equipped with an attachment tube which fastens to the ground prop of a pole derrick.

3.03 The attachment tube will slide over the prop extension of the T-45 pole derrick and inside the middle section of the middle leg of the M type derrick. The puller assembly is fastened to the derrick member with a bolt or a locking pin.

3.04 The sheave frame may be turned through a complete circle in increments of four degrees. This adjustment is provided so that the sheave may be aligned with the desired direction of pull.

3.05 Two side segments and an end segment are fastened to the frame. The brace supports are attached to, and may be moved on these segments, making possible a large variety of bracing arrangements. The end segment is readily removable to allow the puller to be lowered into a manhole without interference.

3.06 Sheave braces, in various lengths, and sheave brace screws, providing a six-inch screw adjustment, are assembled to the brace supports to brace the puller securely in the manhole. Two bent sheave braces are provided for the occasions when it may be necessary to avoid obstructions on the wall of the manhole.

3.07 Two plugs are provided on the under side of the sheave frame for attaching the vertical brace to support the puller.

3.08 A rope guide sheave is provided for attachment to the ground prop of the derrick to hold the winch line clear of the prop whenever the pulling setup will not allow a straight lead between the derrick sheave and the B cable sheave.

4. INSPECTION

4.01 At the beginning of each day's operation the puller should be given a thorough visual inspection.

4.02 Examine the sheave for rough or broken spots on the rim liable to cause damage to the cable and to determine that it turns freely on the spindle.

4.03 The castings and tubing members should be inspected for cracks, broken welds, flat spots and other defects which might interfere with the proper operation of the puller.

4.04 The sheave braces should be inspected for bends, cracks and other defects in the tubing and to determine that the screw portion of the brace is operating freely.

4.05 Any defects which affect the operation of the puller should be corrected before attempting its use.

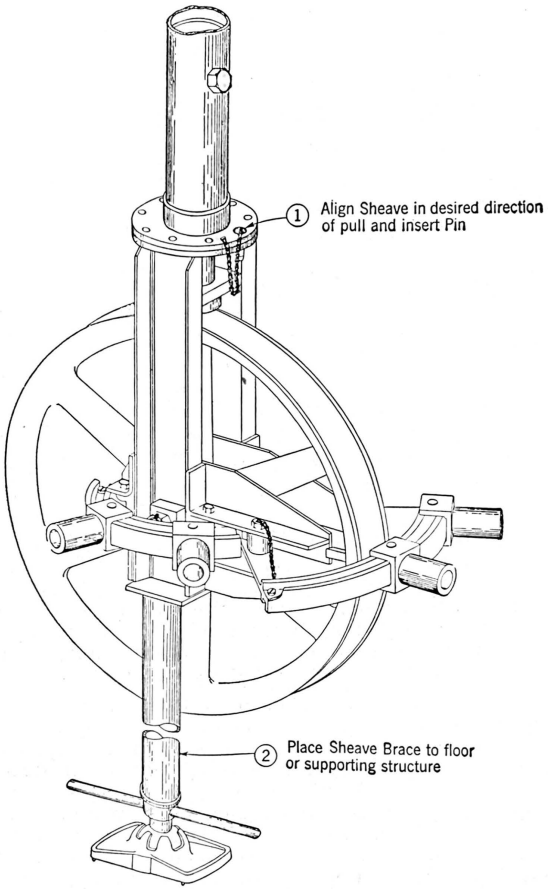
5. ERECTING THE PULLER IN A MANHOLE

5.01 Locate the truck as near to the final pulling location as practicable.

5.02 Erect the derrick in the ground position in accordance with the operating Practice for the particular type of derrick being used.

5.03 Assemble the puller to the derrick ground prop by supporting the puller on the ground with the attachment tube up and lowering the derrick slowly, engaging the ground prop with the attachment tube. On a T-45 pole derrick use a 3/8" x 4-1/2" bolt to secure the puller to the derrick ground prop and on an M type derrick use a 1" x 4-1/2" L connecting pin. Remove the end segment casting to reduce the over-all dimension of the puller to a minimum so that it can be readily lowered through the manhole opening.

5.04 Lower the puller to the desired depth in the manhole and align the sheave with the desired direction of pull by removing the pin (1) and turning the puller on the supporting assembly to the desired position and replacing the pin.



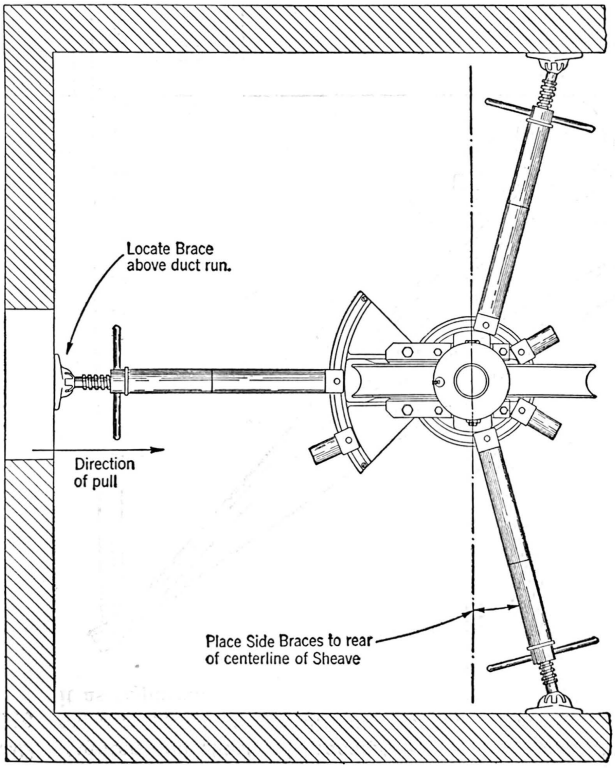
5.05 Replace the end segment casting.

5.06 Place a sheave brace between the puller and the lower supporting structure or floor of the manhole by slipping the brace over either one of the plugs on the bottom of the sheave frame. Adjust the brace to bring the sheave to the proper height for making the pull. Release the tension in the

derrick boom line just enough so that the weight of the derrick and puller is supported by the vertical brace under the puller.

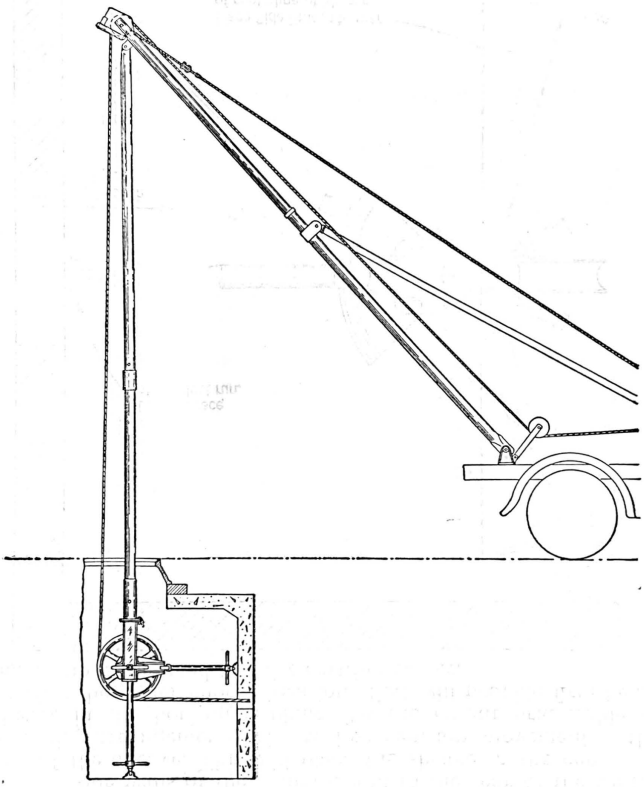
5.07 Place one or more supporting braces from the end segment to the wall of the manhole from which the pull will be made.

5.08 Place the side braces from the side segments to the side walls of the manhole and to the rear of the center line of the sheave. This will place the sheave in the center of a bracing arrangement which will prevent any movement of the sheave in the horizontal plane. To the extent practicable in bracing the puller choose locations that will provide firm bearing without the need to shift existing cables.



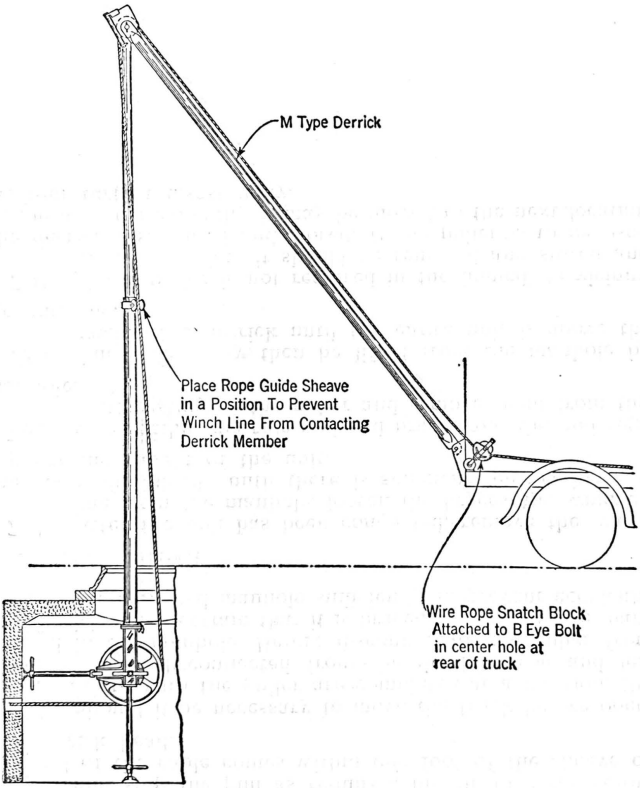
5.09 Tighten and check all bracings.

5.10 Thread the winch line through the sheave and connect it as required.



5.11 When it is necessary for the winch line to cross over the ground prop, place a rope guide sheave on the derrick ground prop about midway between the head of the derrick and the puller to guide the winch line.

5.12 When using the M type derrick, it is necessary to run the winch line through a standard wire rope snatch block fastened to the rear of the truck. This is required to balance the forces in the derrick members and thereby make the pulling assembly stable in the vertical plane.



6. OPERATION

6.01 After the puller has been set up, the entire pulling arrangement should be checked for alignment.

6.02 Start the pull very slowly so that the load will be applied gradually to the various members of the assembly.

6.03 Proceed with the pull as required by the work involved and stop the pull as required, but in all cases before the end of the cable comes within one foot of the sheave on the derrick head.

6.04 Should it be necessary to move the truck before operations with the puller are completed at a location, the puller may be disconnected from the derrick prop and left erected in the manhole. Before disconnecting the puller from the derrick make certain that it is braced securely in the manhole. Cover or guard manhole sufficiently to prevent accidents.

7. DISMANTLING

7.01 After the pull has been completed, remove the winch line from the manhole, loosen the braces and wind up the boom line slowly until there is sufficient tension in it to support the weight of the unit.

7.02 Disassemble the side and end braces and the end segment casting of the puller and remove them from the manhole.

7.03 The puller may then be lifted from the manhole by raising the derrick until the entire unit is above the ground line.

7.04 If the puller is not required in the immediate vicinity of this location, it should be removed and stored and the derrick dismantled and stored. If the puller is to be used in the immediate vicinity it may be moved to the next location without further disassembly.