BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G92.350.1
Issue 1, July, 1953
AT&T Co Standard

POLE DERRICKS
EARTH-BORING MACHINE TYPE

Contents **Page**

1. GENERAL

1.01 This section replaces Section J6.142.

1.02 This practice covers the operation of the earth-boring machine derricks which are boom type derricks mounted over the rack shaft and attached to the boring case of an HC or HD earth-boring machine. The derrick for the HC machine is coded HCT and the derrick for the HD machine is coded HD type.

1.03 The primary movement of the derrick is accomplished by changing the position of the boring machine rack shaft which is one of the adjusting operations of the boring machine and is covered in the sections on earth-boring machines. Only the additional procedures pertaining specifically to the derrick are covered in this practice.

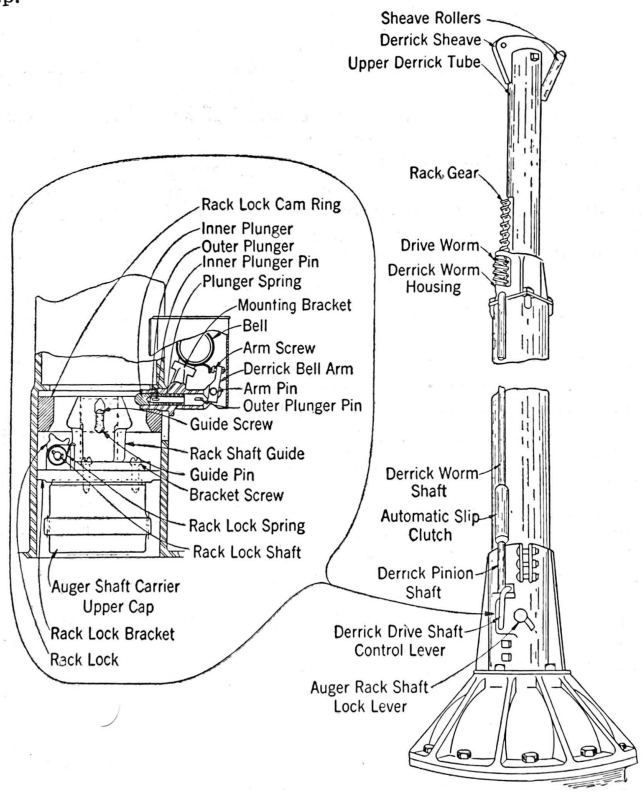
2. SAFETY PRECAUTIONS

2.01 One man shall be assigned to check the proper erection of the derrick.

2.02 Any one who operates these derricks shall be familiar with the precautions and general instructions outlined in the sections on Pole Derricks—General and the practices covering the operation of the earth-boring machine and shall apply them to the work.

3. DESCRIPTION

3.01 The HCT derrick consists of two telescoping sections of steel tubing with the top section telescoping inside the lower section. The boom which is formed by these two sections encloses the rack shaft of the boring machine which is free to travel up and down inside the tube when boring holes. The upper section of the derrick has the derrick sheave mounted on the top and the lower end of the lower section is clamped in a steel footing which is bolted to the boring case cap.



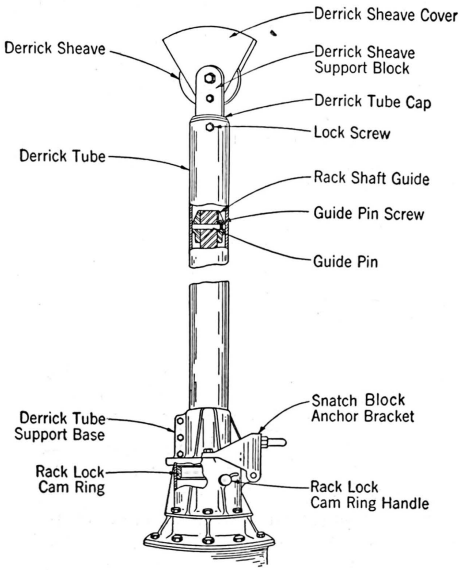
HCT DERRICK

3.02 The upper section of the derrick is equipped with a rack gear and the lower section carries a worm gear and drive shaft. This arrangement provides a drive to extend or telescope the derrick. The worm is of the non-reversible type and serves as a support for the upper section.

3.03 The drive shaft carrying the worm gear is equipped with two clutches, one automatic and one manually operated. The manual clutch is used when it is desired to extend or telescope the derrick. The automatic clutch is a safety feature and slips when the upper section reaches the limit of its travel either up or down. This automatic slip clutch operates with a loud clicking noise and is an emergency feature not designed for continued use. Therefore, the derrick should be stopped before it reaches the extreme position.

3.04 A gong is mounted inside the derrick to warn the operator while digging when the rack shaft approaches the limit of its downward travel since the rack shaft is enclosed by the derrick tube. A cap on the top of the rack shaft also prevents the shaft from being driven down and out of the boring head if the warning signal is not heeded.

3.05 The HD type derrick consists of a single non-adjustable tube with a swivel mounted sheave at the top.

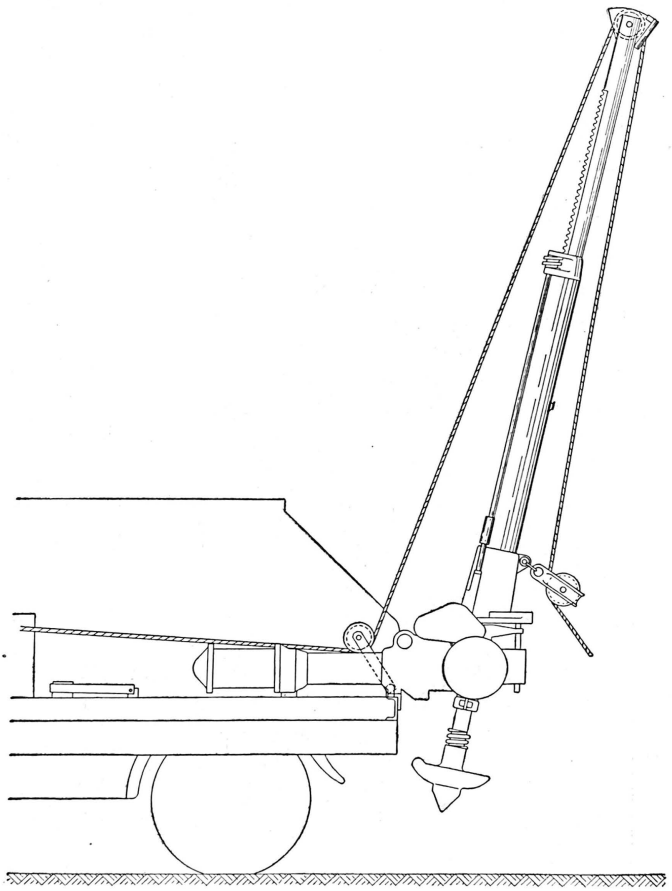


HD DERRICK

4. OPERATION

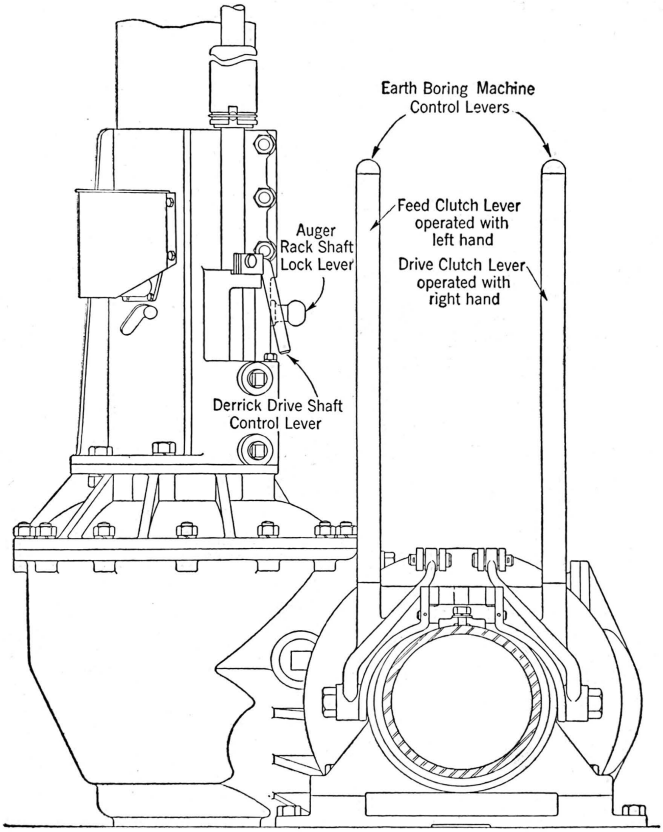
4.01 The winch line can be threaded into the derrick and left in the working position at all times. Changing the length of the boom on the HCT derrick is the only adjusting operation of the derrick alone. It can be tilted or returned to the vertical by swinging the rack shaft (Paragraph 1.03).

4.02 The winch line should be threaded under the sheave at the base of the derrick and then over the sheave at the top of the boom from the front toward the rear of the truck. Threading the winch line into the derrick can be done most readily when the derrick has been raised only a small distance from its carrying position so that the sheaves are readily accessible. When snaking poles, the line should be threaded from the top sheave down through a snatch block attached to the rear of the boring machine.



4.03 To extend or telescope the HCT derrick, raise the auger to clear the ground and engage the rack shaft lock by moving its lever to the left and down. Place both clutch levers of the boring machine in neutral. Turn the derrick drive shaft control lever to the engaged position. The derrick can then be extended or telescoped by operating the drive clutch lever of the boring machine. Use the low speed of the boring machine

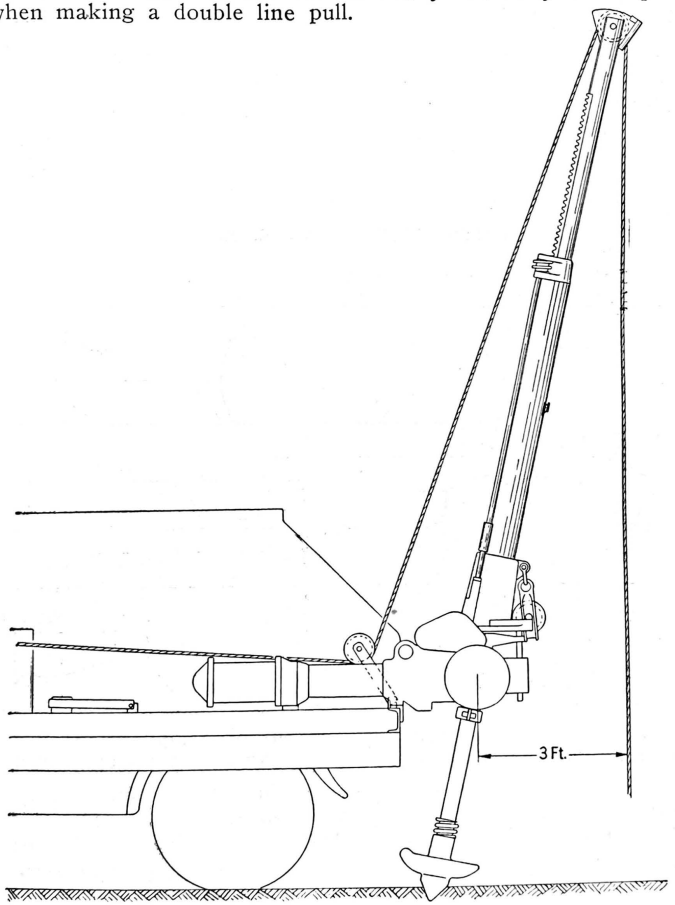
drive to extend the derrick. It can be telescoped only by using the truck transmission reverse. While the derrick is being extended or telescoped the auger will rotate at full driving speed.



5. OPERATING POSITION

5.01 When operating the derrick it is usually necessary to tilt the derrick slightly back from the vertical. Tilt or straighten the derrick using low or reverse speed.

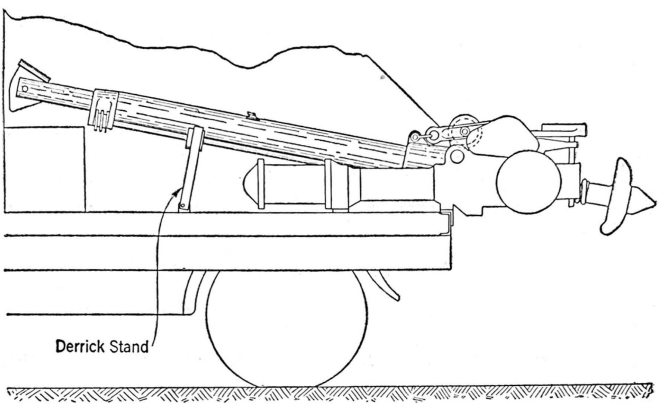
5.02 Do not operate the derrick with an overhang of more than three feet from the center of the boring machine case. Whenever practicable and in all cases where a double line pull is to be made, run the auger down firmly onto solid ground or a ground support and lock it in place by applying both of the clutch brakes of the boring machine and holding or locking the control levers in this position before a load is lifted on the derrick. The HCT derrick should always be fully telescoped when making a double line pull.



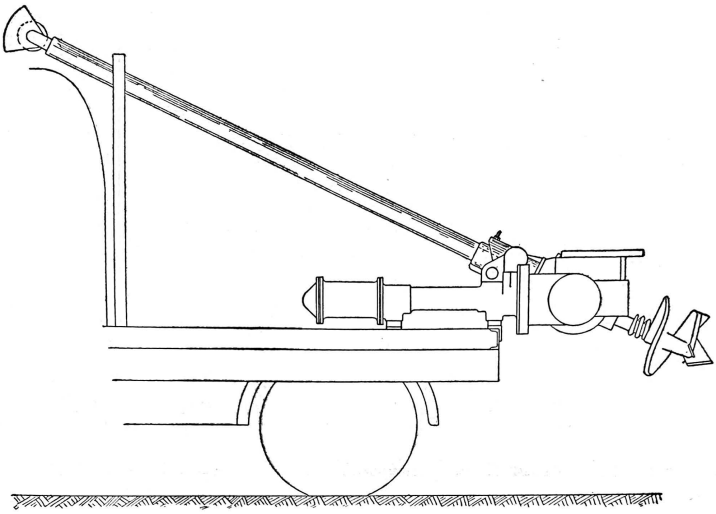
6. CARRYING POSITION

6.01 Carry the derrick tilted forward into the truck body taking the same position as the rack bar of the earth-boring machine when not equipped with the derrick.

6.02 The HCT derrick shall be fully telescoped before it is moved down to the carrying position.



HCT DERRICK IN CARRYING POSITION



HD DERRICK IN CARRYING POSITION