

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G53.125.1
Issue 2, June, 1954
AT&T Co Standard

BLOCK AND HOUSE CABLE
RISER CABLES

Contents	Page
1. General	1
2. Preparation	1
3. Apparatus for Placing Riser Cables	2
4. Riser Cables Supported on Strand	6
5. Riser Cables Supported with Cable Grips	10
6. Attaching Hoisting Line to Strand	12
7. Attaching Hoisting Line to Cable	13
8. Feeding Cable in Shaft	15
9. Feeding Cable from an Intermediate Floor	19
10. Transferring Cable from Hoisting Line to Strand	19
11. Strand Supports and Methods of Attachment....	23
12. Riser Cables Attached Directly to Walls	24

1. GENERAL

1.01 This section replaces Issue 1 and covers the methods and materials to be used in placing riser cables in shafts and the manner of fastening them to suspension strand or to the supporting structure. It is being reissued to include detailed information on riser grips.

2. PREPARATION

2.01 The consent of the property owner or his agent is required regarding the methods and equipment to be used in placing riser cables. This matter should be discussed with the property owner or his agent, following a preliminary survey of the premises as it may be the deciding factor in selecting the method and equipment to be used in placing the cable. In making the preliminary survey and in planning the job, the following should be given careful consideration:

- (a) Location of available space for setting up cable reel and preparation of cable

- (b) Weight and length of riser cable.
- (c) Available apparatus for placing riser cables.
- (d) Where cable is to be placed as for example in a pipe or cable shaft, areaway, conduit or elevator shaft.
- (e) Whether cable is delivered in coils, or on a cable reel with the strand tied to the cable or whether the cable is to be tied to the strand on the job.

2.02 The location of available space in a building for the reel setup and preparation of cable, are important for the following reasons:

- (a) If the basement or first floor is not occupied and it provides sufficient space for preparing the cable and passing it in the shaft in a safe manner, it may be advantageous to raise the cable.
- (b) If the basement or first floors are occupied or are not suitable for handling, preparing and passing the cable in the shaft, it may be desirable to lower the cable.
- (c) Where the top or bottom floors are not available or the conditions for handling and placing the cable are not satisfactory, it may be necessary to place it from an intermediate floor where there may be more working space and where obstructions, if any, do not materially interfere with the cable work.

2.03 In connection with placing riser cables it may be necessary to determine their diameter and weight. This information is included in Bell System Practices covering Cable Sizes and Reel Lengths.

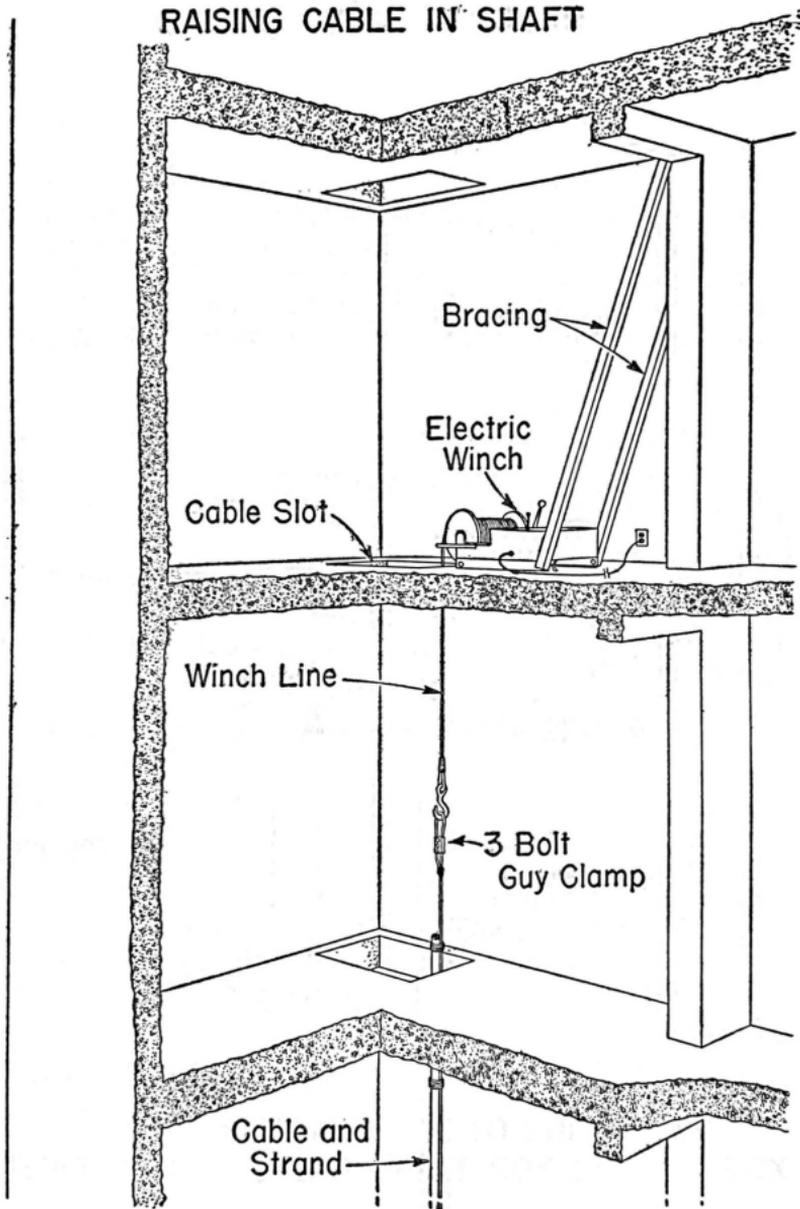
2.04 Before placing a riser cable, clear the shaft or closet of all temporary construction and any obstructions that may interfere with placing cable in a safe and satisfactory manner. If the shaft is occupied by foreign pipes, cables and wires or similar structures, arrange to have these obstructions moved, tied or secured out of the way so as to obtain the greatest clearance for the workmen. It is advisable to obtain space for the riser cable in an inside corner, whenever practicable.

3. APPARATUS FOR PLACING RISER CABLES

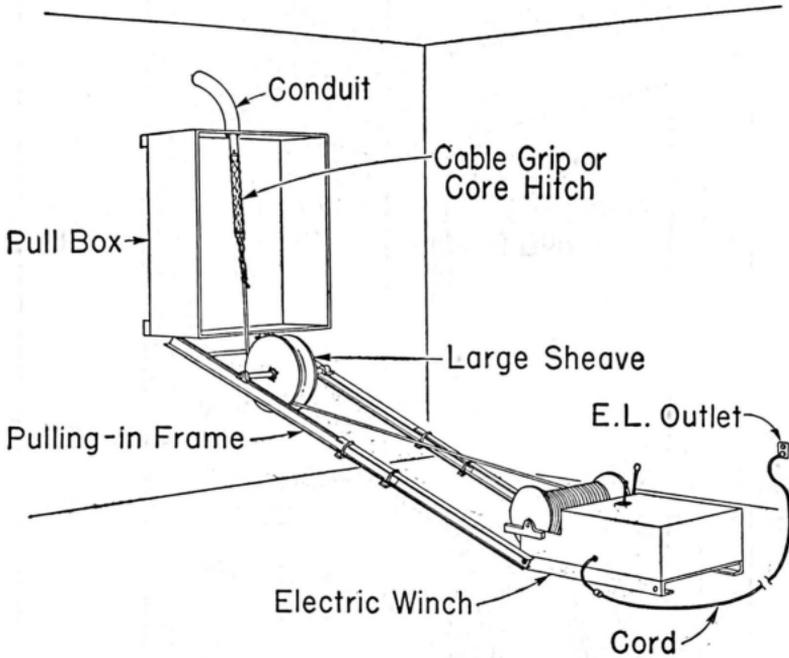
3.01 Where building conditions permit and electric power is available cables may be raised satisfactorily by means of an electric winch. This is particularly the case when long heavy risers are involved. Portable electric winches weighing about 300 pounds and capable of pulls up to 5000 pounds operating on 110-120 volts (a-c) from any convenient electric outlet, are available and can be either purchased or rented. The use

of an electric winch is advantageous in that the apparatus can be quickly set up and the pull on the cable is steady and easily controlled. The following illustrations show a typical setup of the winch and associated apparatus for pulling cable in a shaft. The same general setup can be used for pulling cable from a manhole to pull box in a building or from pull box to pull box.

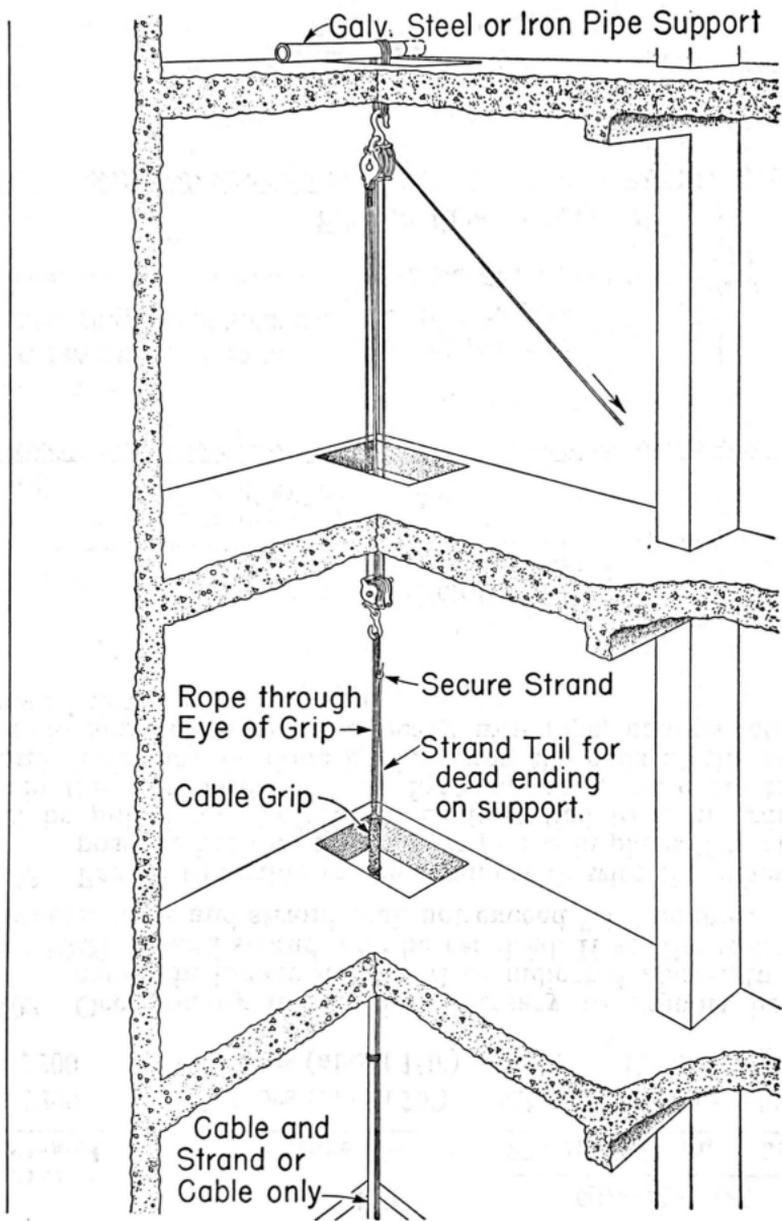
RAISING CABLE IN SHAFT



PULLING CABLE FROM PULL BOX TO PULL BOX OR FROM MANHOLE TO PULL BOX



3.02 When a suitable electric winch is not available or can not be used because of the building layout or lack of electric power, the cable may be raised with block and tackle as indicated below. The rigging used shall be in accordance with the section covering Manila Rope and Blocks.



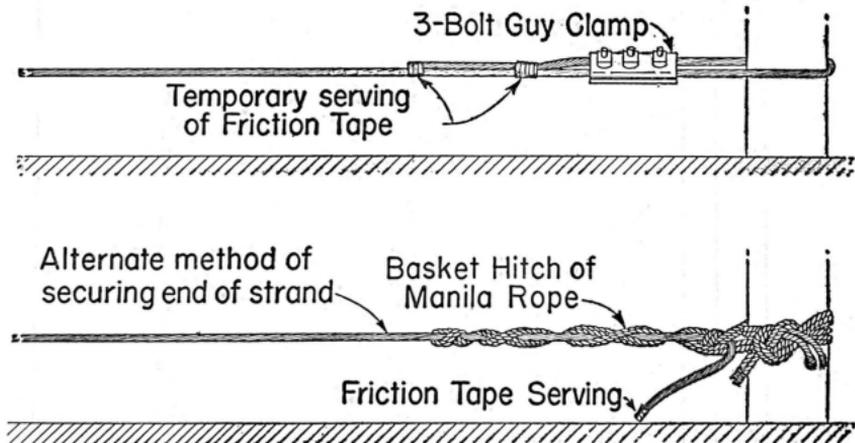
4. RISER CABLES SUPPORTED ON STRAND

4.01 For riser cables that are to be placed in a cable shaft, pipe shaft, or similar location and suspended on strand, 6000-pound suspension strand shall be used to support the cable, with the following exceptions:

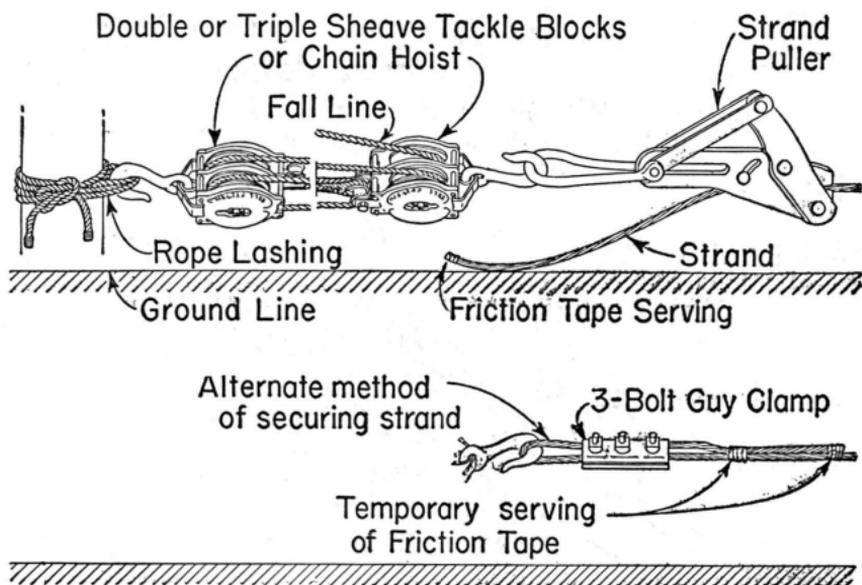
Size of Strand	Not More Than	Riser Cable		
		22 ga.	24 ga.	26 ga.
2200	6 Floors (about 75')	202 prs.	303 prs.	404 prs.
2200	12 Floors (about 150')	101 prs.	152 prs.	202 prs.

4.02 Occasionally it may be necessary to support heavier cables in longer lengths than indicated above. In such cases 10,000-pound strand may be required. If so, the weight of the cable, stubs and strand shall not exceed 5,000 pounds.

4.03 Fasten the cable to the strand with wire ties whenever possible before the strand is pulled in place. The strand shall be pulled taut before the cable is tied to it in order to obtain the most effective hold for supporting the cable to the strand. This may be done by fastening the ends of the strand to solid supports such as a heavy iron pipe, column, etc., as shown below.



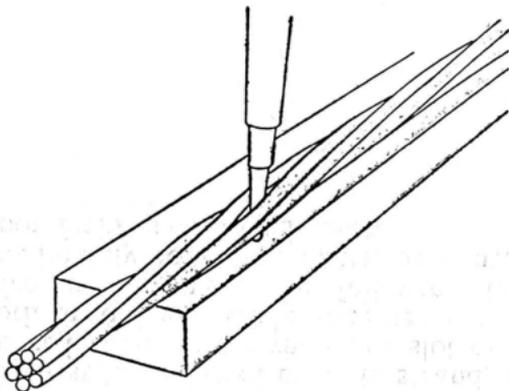
Next, tension the strand with blocks or chain hoist as shown below.



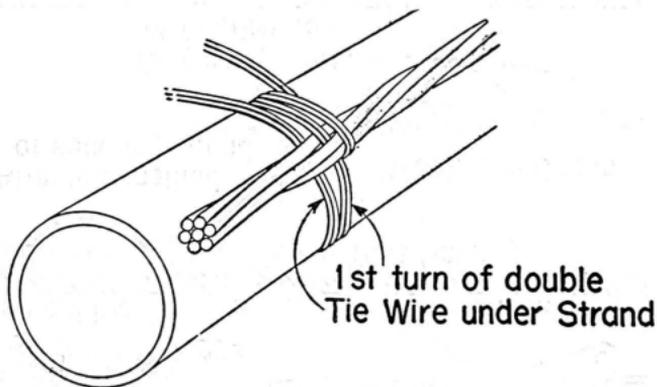
Only sufficient tension shall be imposed on the strand to straighten out the long bends. The strand shall be kept close to the floor to facilitate attaching the cable to it.

4.04 After straightening the strand, the cable shall be run out beside it. Provide sufficient strand beyond the end of the cable or the first fastening of cable to strand, for attaching it to the support located across the cable slot or open steel structure. Tie both strand and cable together with 049 Steel Construction Wire as shown in the following illustrations. Locate ties approximately four feet apart, at center of each splice and one foot from each wiped joint.

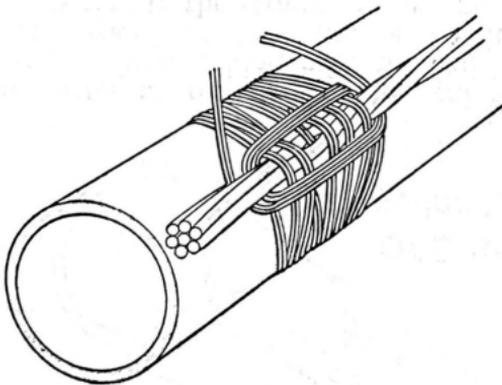
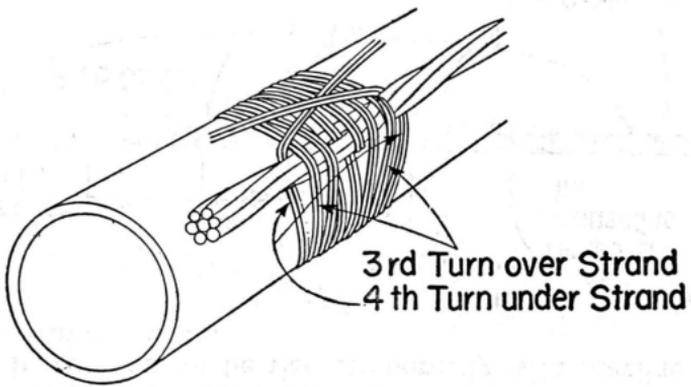
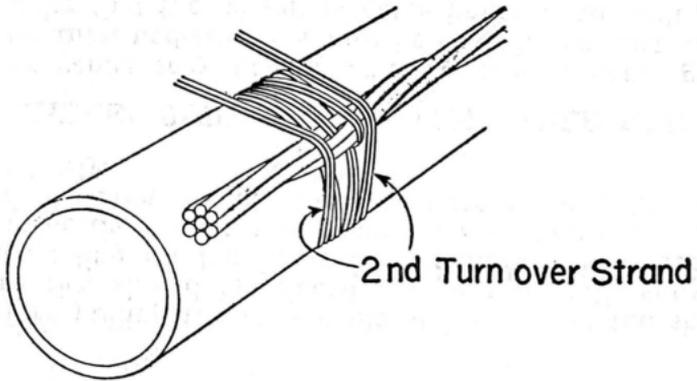
METHOD OF TYING CABLE TO SUPPORT STRAND



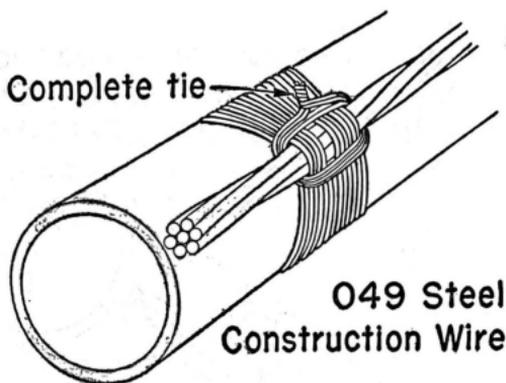
Separate wires of strand by means of a center punch or approved tool in the manner shown.



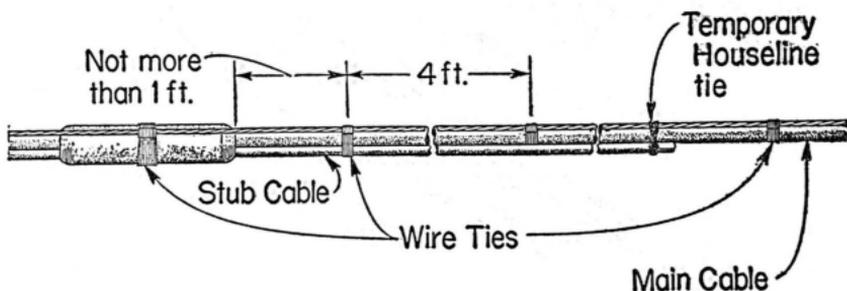
5 Wires of Strand on the Cable side and 2 Wires of Strand on the opposite side.



Insert each end of double tie wire between strand and cable for 1 complete turn as shown.



4.05 Begin tying at top end of the cable. Make ties as illustrated above taking care that all kinks and bends in the cable are straightened out before the tie is made. After the main cable is tied to the strand, tie that portion of the floor stub paralleling the main cable when in place, as shown below. The portion of the floor stub that does not parallel the main cable when in place, shall be tied temporarily with marline as a protection while placing.



4.06 Before pulling the riser cable and strand in the shaft, wire ties should be placed in the wall with suitable anchors, depending on the backing encountered, in order to fasten the cable tight against the wall. At least two ties should be provided per floor, two to three feet from the ceiling and floor, respectively.

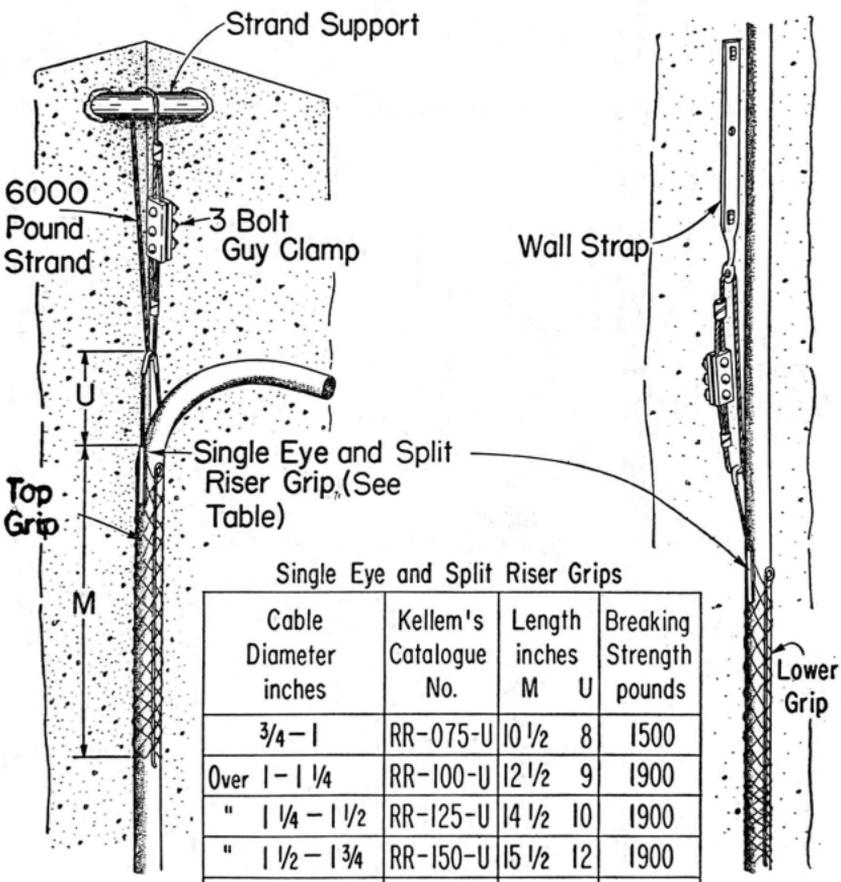
5. RISER CABLES SUPPORTED WITH CABLE GRIPS

5.01 Riser cables may be supported with split cable grips alone. Intermediate grips must be provided at least every 35 feet, in order that the weight of cable imposed on each grip

is not in excess of the amount specified in the section on Supporting Riser Cables in Conduit. The cable shall also be fastened to the wall with a wire tie or clamp at each floor.

5.02 To place cable grips, proceed as follows:

1. Raise and hold cable in position with hoisting rope.
2. Place all the required cable grips in position as shown below.
3. Release hoisting line slowly.
4. Fasten cable to wall.

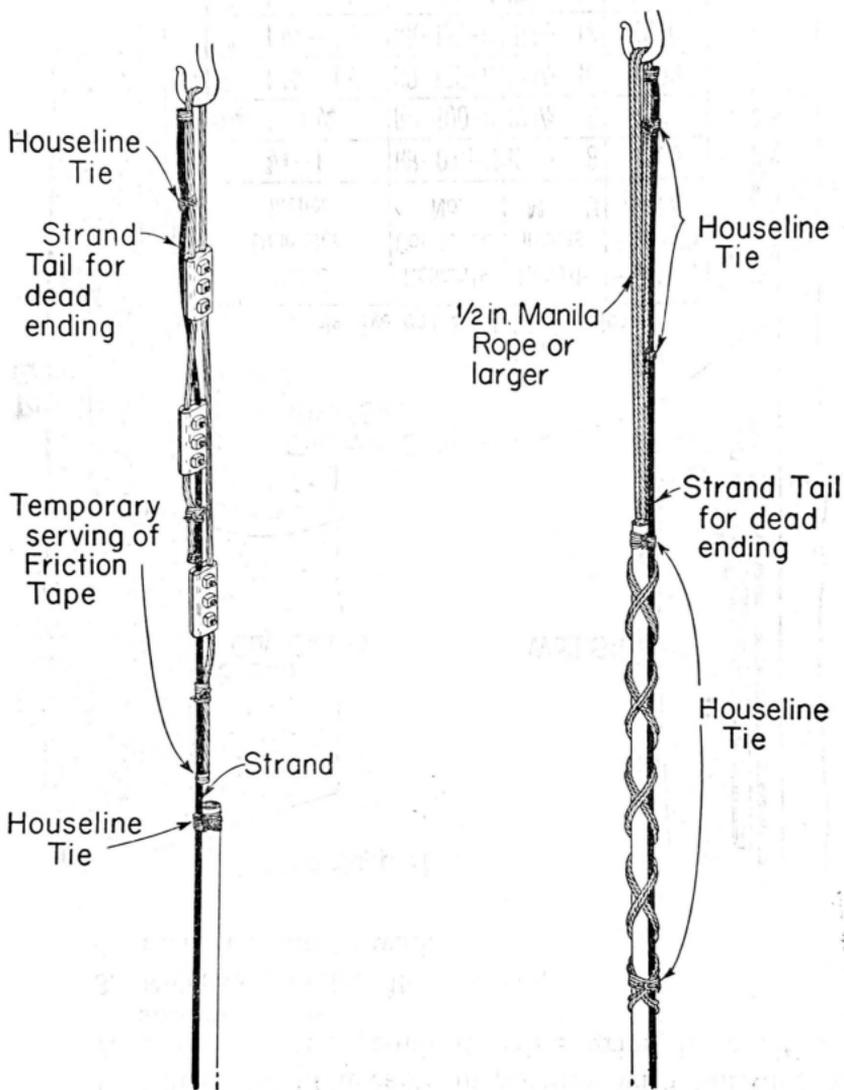


Single Eye and Split Riser Grips

Cable Diameter inches	Kellem's Catalogue No.	Length inches		Breaking Strength pounds
		M	U	
3/4 - 1	RR-075-U	10 1/2	8	1500
Over 1 - 1 1/4	RR-100-U	12 1/2	9	1900
" 1 1/4 - 1 1/2	RR-125-U	14 1/2	10	1900
" 1 1/2 - 1 3/4	RR-150-U	15 1/2	12	1900
" 1 3/4 - 2	RR-175-U	16 1/2	14	2000
" 2 - 2 1/2	RR-200-U	19 1/2	16	4000
" 2 1/2 - 3	RR-250-U	21 1/2	18	4000

6. ATTACHING HOISTING LINE TO STRAND

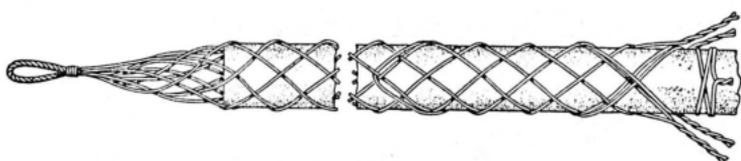
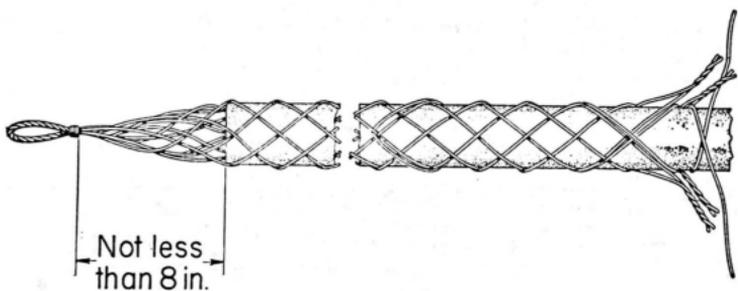
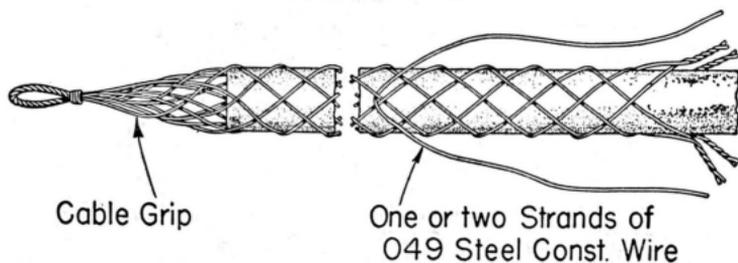
6.01 Attach hoisting line to suspension strand for raising a cable as shown below.



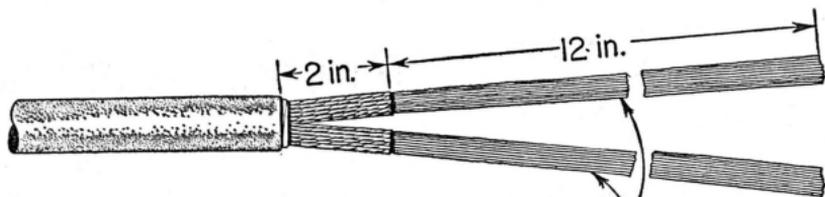
7. ATTACHING HOISTING LINE TO CABLE

7.01 Where the riser cable is to be pulled in separately from the strand, the hoisting line shall be attached to the cable by means of a cable grip. Should the pulling conditions result in heavy strains being imposed on the cable, a core hitch shall be used. Both the wire grip and core hitch are illustrated below. The method of attaching the Cable Grip to the pulling line is covered in Bell System Practices—Underground Cable Placing. The swivel is not required in placing cable in buildings.

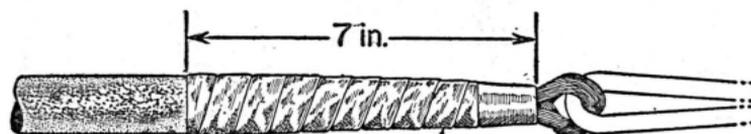
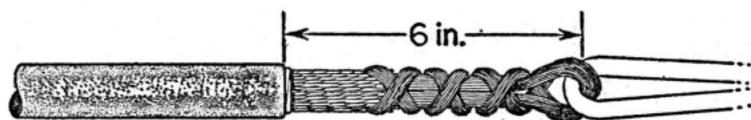
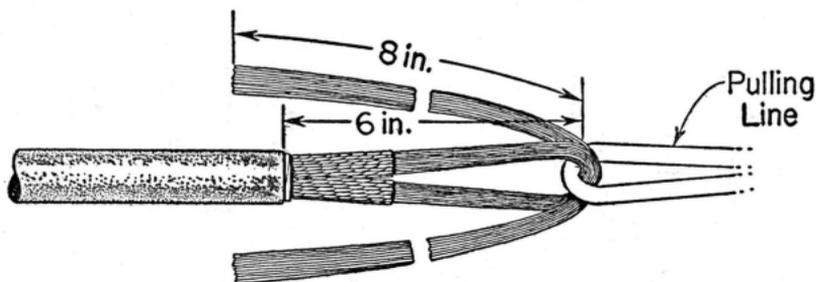
CABLE GRIP



CORE HITCH



Bare Copper Wire
(Burn off Paper Insulation)



Cover Hitch with 2 in. Black Friction Tape and coat with proper Cable Lubricant.

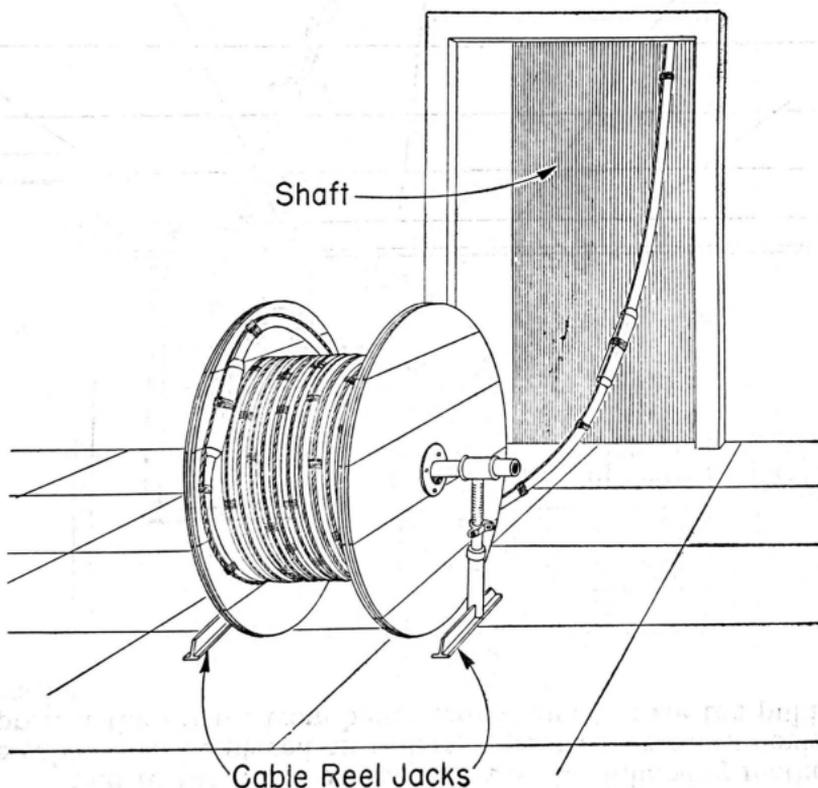
8. FEEDING CABLE IN SHAFT

8.01 When cable is to be placed in a shaft, use Warning Signs, Warning Flags, Guards or other approved devices so located as to provide ample protection for the public from coming in contact with the cable, reels and other telephone equipment.

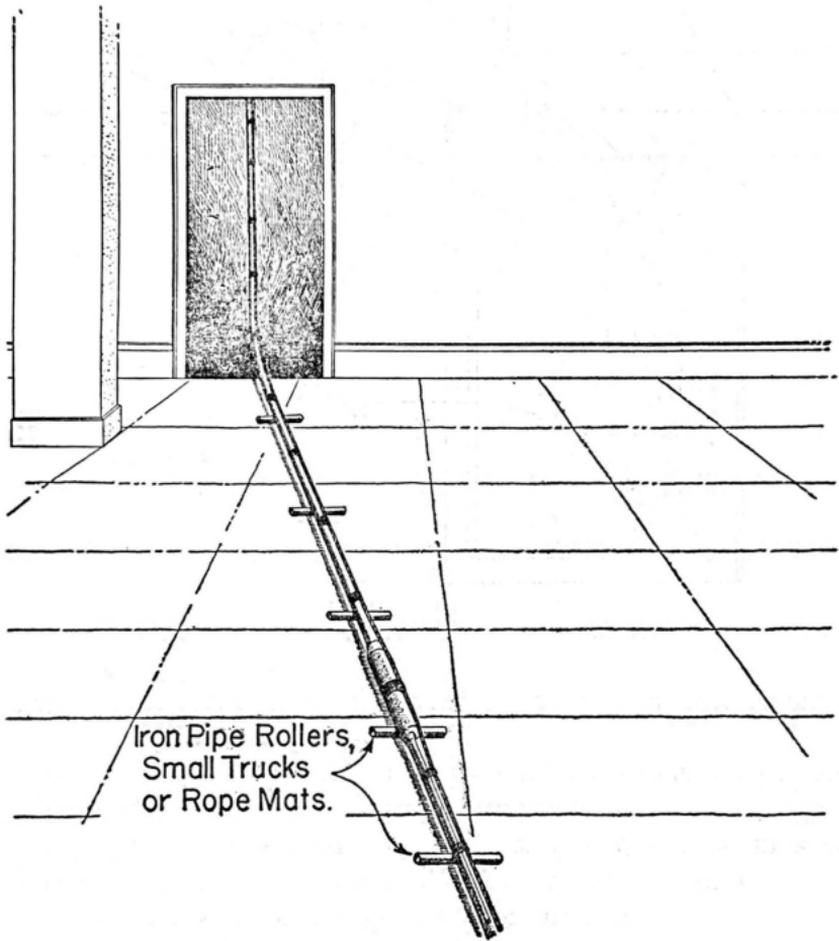
8.02 In raising a cable in a shaft, the method to be used depends on the following conditions:

- (a) Cable delivered on reel with strand tied to it.
- (b) Cable and strand tied together and delivered in a coil.
- (c) Cable tied to the strand on the job.
- (d) Cable with no strand, to be attached to walls with cable clamps or wire ties.

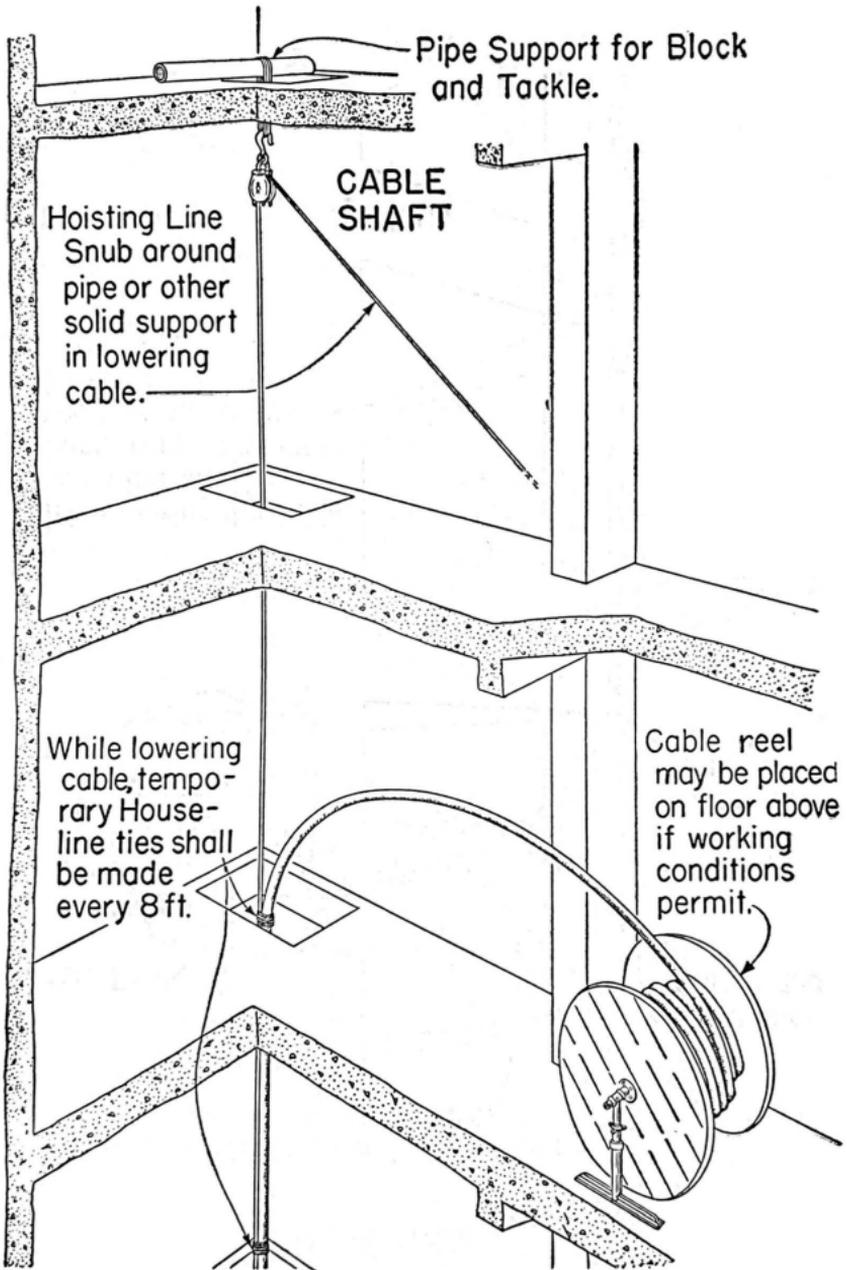
8.03 When the cable is delivered on a reel pay it out as shown below.



8.04 When the cable is delivered in a coil or the strand is tied to the cable on the job, use the following method. The cable must be placed on rollers, rope mats or other devices to protect the sheath from being scored and to ease the pulling operation.



8.05 When it is necessary to lower a cable in a shaft, the following setups may be used.



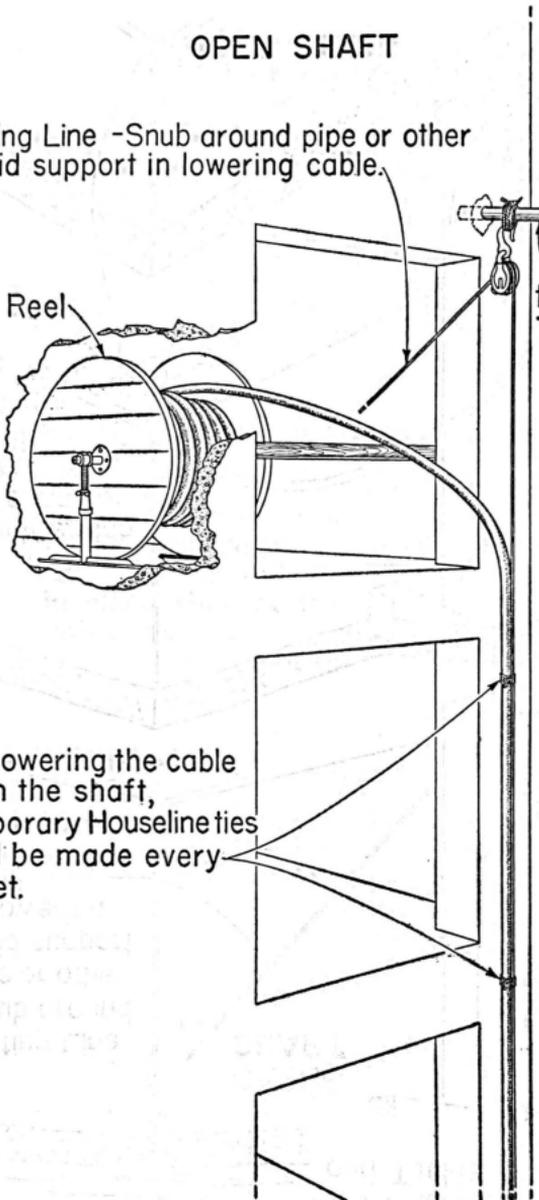
OPEN SHAFT

Hoisting Line - Snub around pipe or other solid support in lowering cable.

Cable Reel

Pipe Support for Block and Tackle.

While lowering the cable down the shaft, temporary Houseline ties shall be made every 8 feet.



9. FEEDING CABLE FROM AN INTERMEDIATE FLOOR

9.01 When placing a cable from an intermediate floor, the upper section shall be raised first and secured, and the bottom section should then be lowered into position. Every effort shall be made in handling the cable to see that all bends are of as large a radius as possible. Splices should be handled with the utmost care.

10. TRANSFERRING CABLE FROM HOISTING LINE TO STRAND

Pulling Cable up from Lower Floor

10.01 In some cases, it may not be practicable to attach the cable to the strand either in the shop or on the job. Therefore, it becomes necessary to place them separately. When conditions require raising the strand and the cable, proceed as follows:

- (1) Raise strand with an electric winch or block and tackle and permanently fasten it to the support. Before raising or while being raised, insert in the strand the wires for tying the cable.
- (2) Attach hoisting line to the cable in accordance with Paragraph 7.01. Pull the cable carefully to the desired height and permanently lash it to the strand with wire ties as covered in Paragraph 4.04.
- (3) Remove hoisting apparatus.

- (4) Insert end of cable in entrance hole and pull it into the building as illustrated below.

Place strand and dead end it on support.

Hoisting Line

At least 12 inches between cable and block.

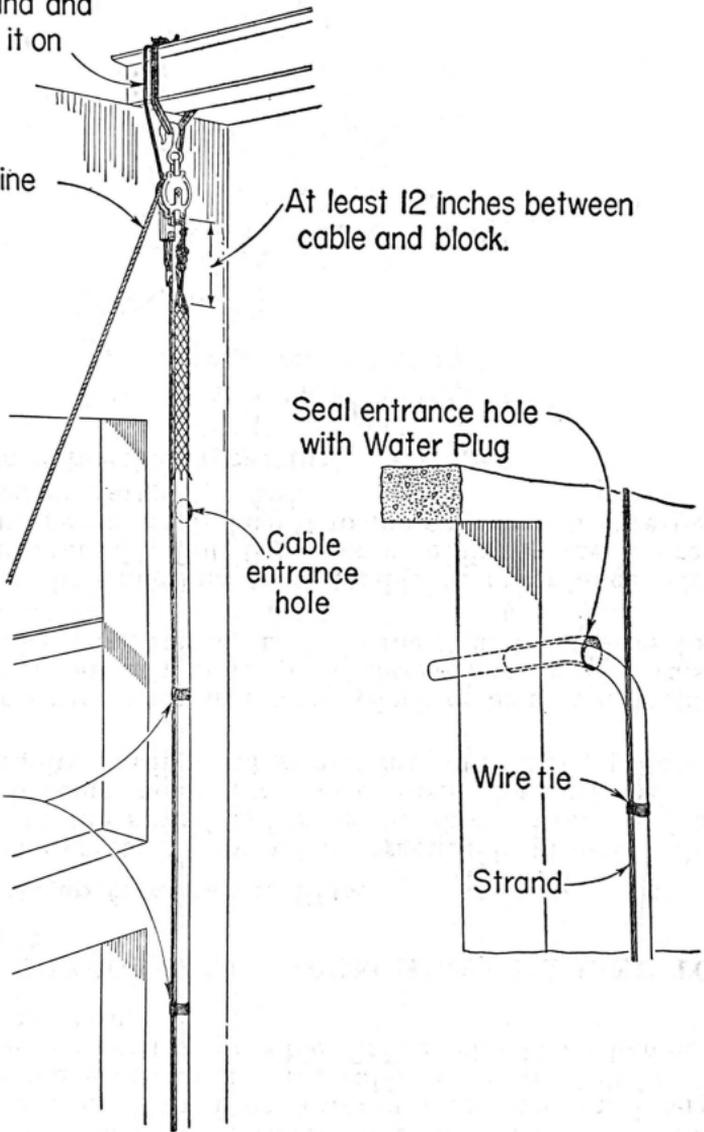
Seal entrance hole with Water Plug

Cable entrance hole

Wire ties

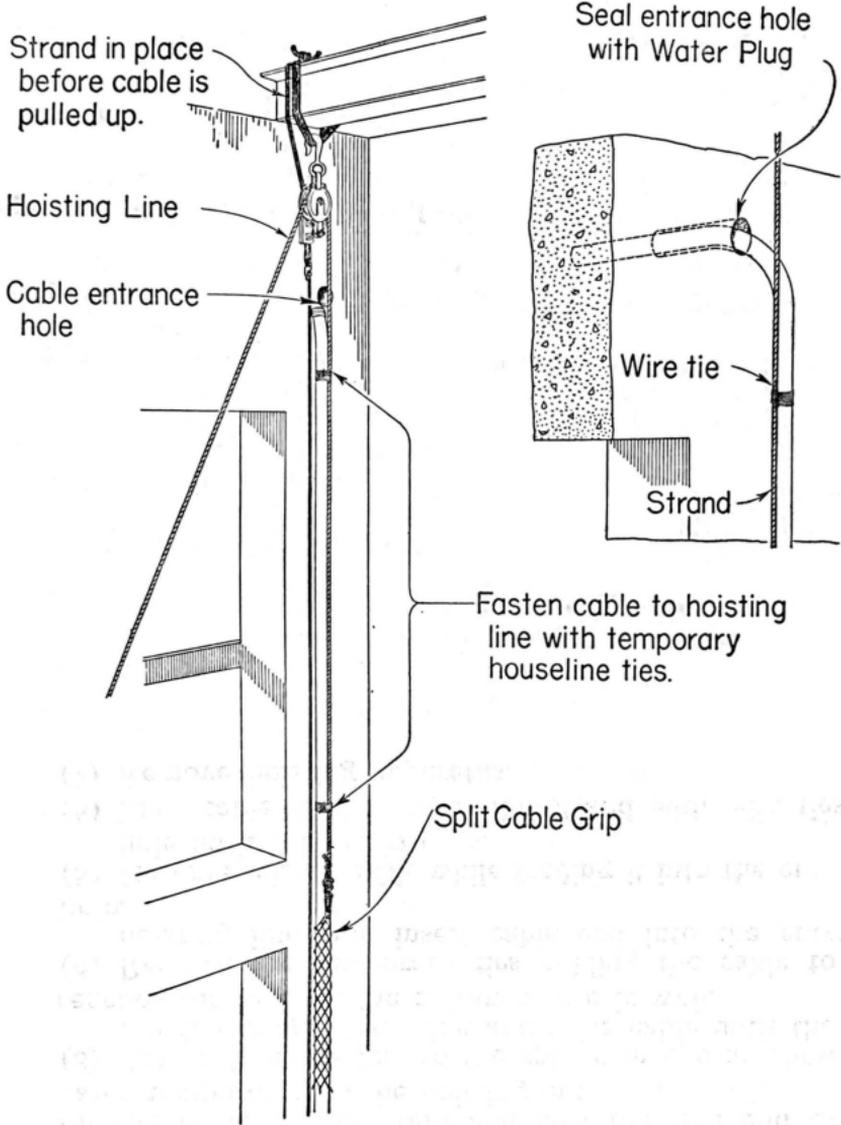
Wire tie

Strand



10.02 Where the upper end of cable required in the building is longer than can be obtained by the method covered in Paragraph 10.01, proceed as follows:

- (1) Raise strand and permanently fasten it to support. Provide the strand with wires for ties.
- (2) From the reel pull out the cable required to be pulled through the wall at the upper end. Place a split grip on the cable at this point and lash the free end of the cable temporarily to the hoisting line.
- (3) Attach hoisting line to the split grip eye as shown in the following illustration and raise cable until the end reaches the level of the entrance hole in wall.
- (4) Remove the temporary ties holding the cable to the hoisting line, and insert cable end into the entrance hole.
- (5) Resume raising cable while feeding it into the entrance hole until it is all in place.
- (6) Lash cable to the suspension strand with wire ties.
- (7) Remove hoisting apparatus.

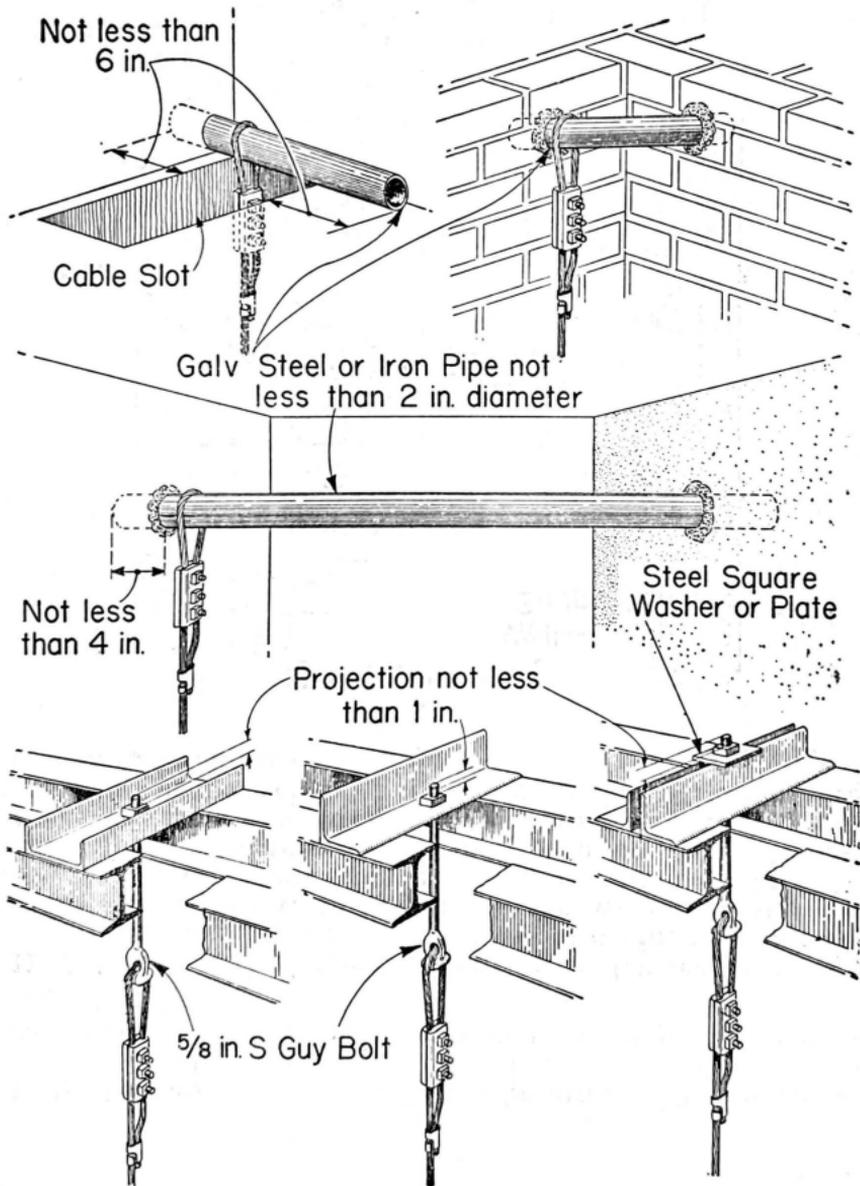


Pulling Cable down from Upper Floor

10.03 Should it be necessary to lower the strand and the cable, lower the strand first and fasten it to the support. Lower the cable next, in accordance with Paragraph 8.05 and fasten it to the strand. Remove hoisting apparatus.

11. STRAND SUPPORTS AND METHODS OF ATTACHMENT

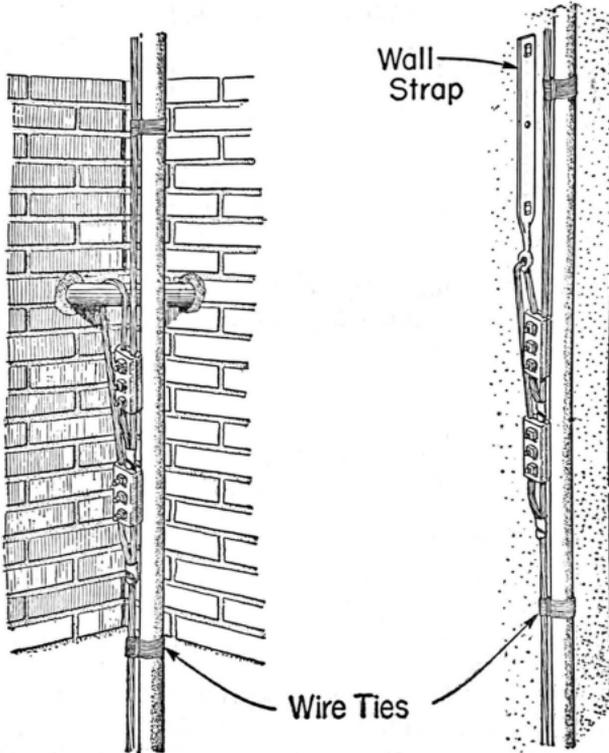
11.01 Where the riser cable is placed in a pipe shaft or cable shaft and is fed through floor slots, the support for the strand shall consist of a piece of galvanized steel or iron pipe of suitable length placed as shown below. Where the riser is in an open shaft, use an I beam in the building that may be suitably located for the purpose. When an I beam is not available, a support shall be installed at the top of the shaft. Various types of supports are illustrated below.



G53.125.1

11.02 The suspension strand shall be attached to the support as illustrated in 11.01. One-bolt clamps shall be used for 2200-pound strand and 3-bolt guy clamps for 6000-pound and larger strand.

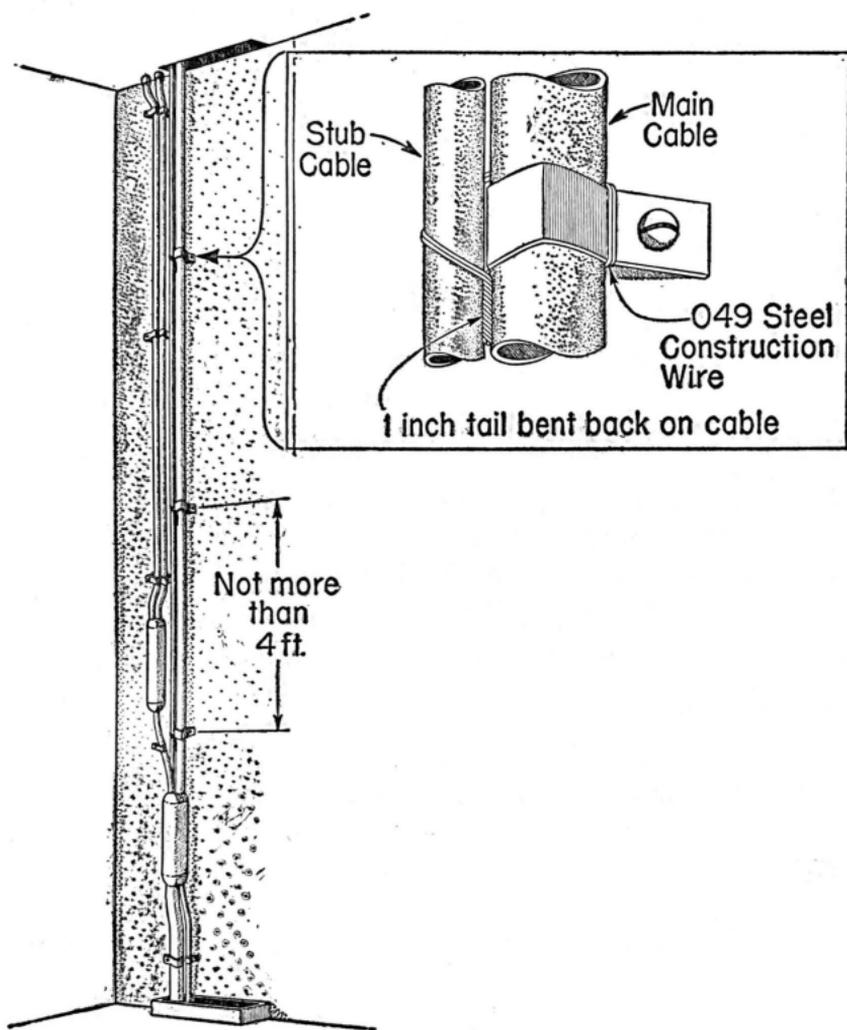
11.03 Where a riser cable is longer than 150 feet, consideration should be given to the use of an intermediate support as shown below. In placing it, the weight of the cable below the intermediate support shall be raised slightly. The intermediate supporting strand shall then be clamped to the suspension strand so as to relieve the stress on the upper section of cable when the weight of the lower section is released from the hoisting apparatus.



12. RISER CABLES ATTACHED DIRECTLY TO WALLS

12.01 Occasionally, building layouts may not permit suspending riser cables on strand because of offsets in the cable run due to structural details or other conditions which prevent

cable being placed in a continuous straight line. When such is the case, the cable may be fastened directly to the wall. The backing encountered will determine the method of fastening the cable, and shall be in accordance with Bell System Practices covering "Anchoring Devices for Attaching Cables to Walls."



12.02 Riser Cables should be so located that ample clearance is provided from foreign construction and particularly movable objects. Where such clearance can not be obtained, select another location for cable.

G53.125.1

Page 25
25 Pages

**BLOCK AND HOUSE CABLE
RISER CABLES**