BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G83.620.2
Issue 1, January, 1949
AT&T Co Standard

EXTENSION LADDERS
SELECTING LENGTH, FOOTING, AND UPPER SUPPORTS

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1. SELECTING LENGTH OF EXTENSION LADDER

1.01 The maximum working length of an extension ladder is from three to four feet less, depending upon the minimum overlap, than the ladder size. The following table shows the maximum working length of standard extension ladders.

Size of Ladder (Feet)	Maximum Working Length (Feet)	Minimum Overlap (Feet)
16	13	3
20	17	3
24	21	3
28	25	3
32	29	3
36	32	4
40	36	4

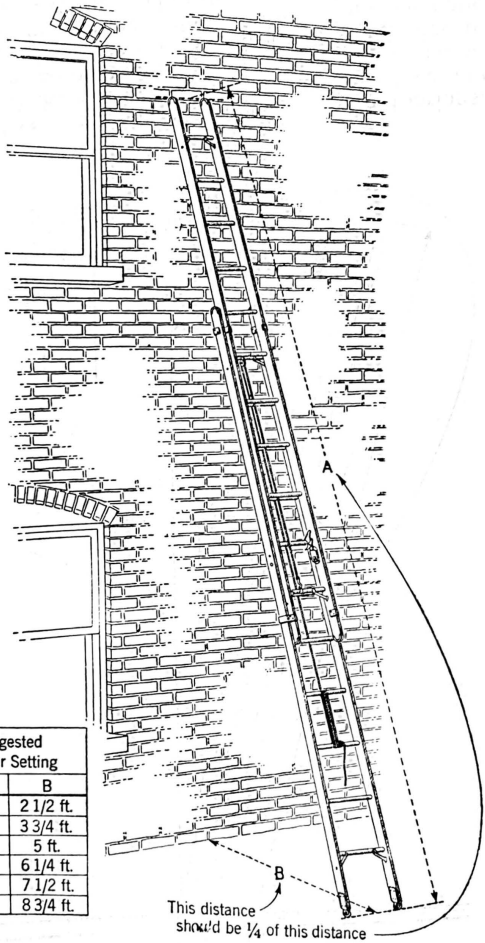
1.02 Local conditions determine the length of ladder to be carried by the plant forces. However, the 20 or 24-foot extension ladder will usually meet the conditions encountered by the installation forces, and the 28 or 32-foot ladder will usually meet the requirements of the construction and splicing crews. The use of strand hooks on 20 and 24-foot ladders will

usually enable the installation forces to perform safely the work that may be required along suspension strand, and eliminates the need for carrying longer ladders. A ladder not equipped with strand hooks may also be used if it is secured to the strand with a rope as outlined in G83.620.2, Part 3.

1.03 A ladder of sufficient length should always be selected for the work to be done. The length of the ladder should be such that the work can be performed when standing not higher than on the fourth rung from the top, thus permitting the side rails to be grasped conveniently. If the ladder is too short for the work at hand, a longer ladder should be obtained.

2. SELECTING FOOTING FOR EXTENSION LADDERS

2.01 Use care in placing ladders before climbing them. Place the foot of the ladder on the ground or other support so that the distance "B" from the base of the ladder to a line dropped vertically from the top support is approximately 1/4 of the length of the ladder "A" measured from top support to bottom support, as given in the following table. If this distance "B" is exceeded, the ladder shall be braced, fastened, or securely held so as to prevent slipping. If the distance "B" is considerably less than 1/4 of the distance "A", the ladder will be pitched so steeply that the work cannot be done with safety and ease.



Suggested Ladder Setting	
A	B
10 ft.	2 1/2 ft.
15 ft.	3 3/4 ft.
20 ft.	5 ft.
25 ft.	6 1/4 ft.
30 ft.	7 1/2 ft.
35 ft.	8 3/4 ft.

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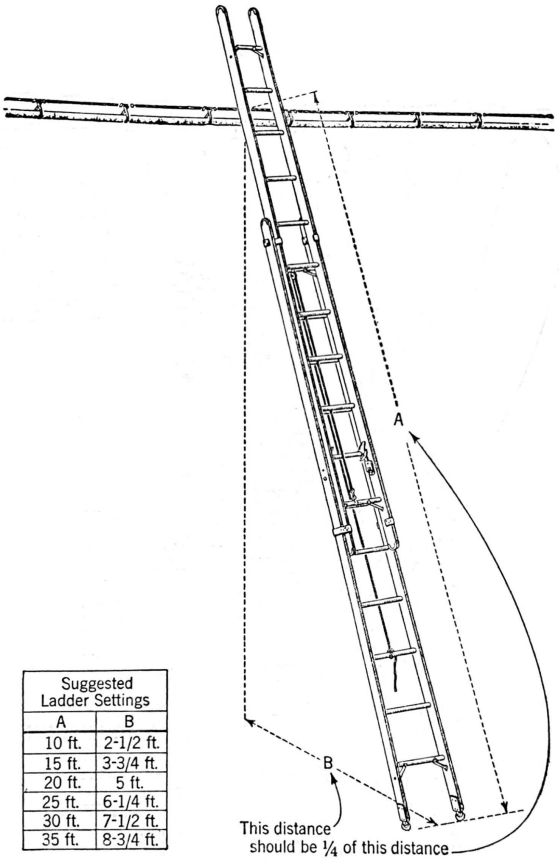
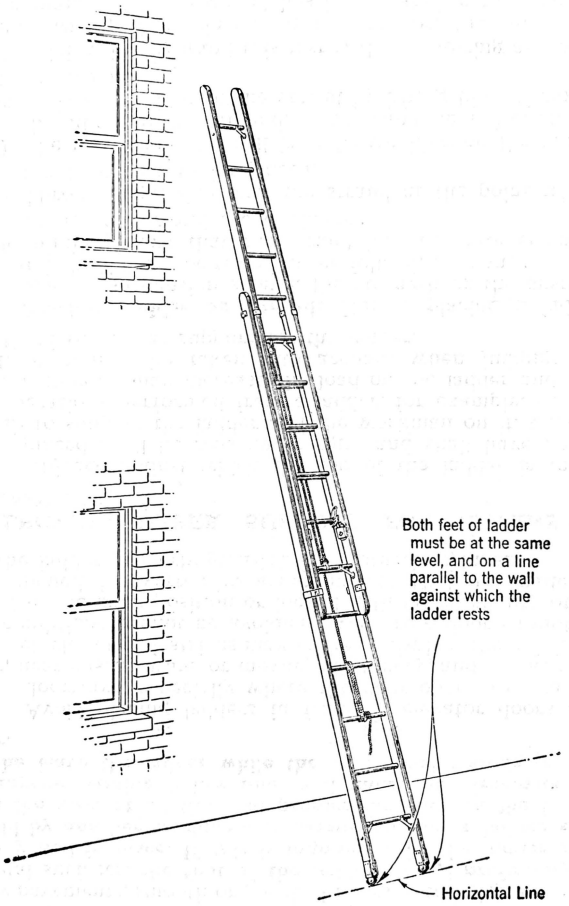


Suggested Ladder Settings	
A	B
10 ft.	2-1/2 ft.
15 ft.	3-3/4 ft.
20 ft.	5 ft.
25 ft.	6-1/4 ft.
30 ft.	7-1/2 ft.
35 ft.	8-3/4 ft.

2.02 Ladders should be set only on secure footings. **Both feet of the ladder should be at the same level and on a line parallel to the surface on which the top of the ladder rests.** If necessary, remove earth from beneath the high side to bring it to the level of the lower side; if this cannot be done block up the lower side to the level of the other, using a wooden wedge

or planking of sufficient stability. Never increase the length of a side rail by nailing a board to the end. A properly placed ladder should not lean to the right or left.



2.03 When it is impossible to avoid placing the foot of the ladder on surfaces where it might slip, such as on wet or oily pavements, smooth or polished floors, wet or icy surfaces, or metal surfaces, **the foot of the ladder should preferably be securely tied in place. If this is impracticable, the ladder shall be held by another workman. A person holding a ladder shall be on the alert at all times to protect the man on the ladder and anyone passing below him, and under no circumstances shall he leave the ladder while the other workman is on the ladder.**

2.04 Avoid placing ladders in front of elevator doors and doorways, especially where the door opens toward the ladder, near passageways or moving machinery, and at locations where vehicles or pedestrians may strike or displace them. Where these conditions cannot be avoided, or where a door cannot be secured in the open position or locked with no possibility of its being opened inadvertently, arrangements shall be made to have the ladder properly guarded by another workman.

3. SELECTING UPPER SUPPORT FOR EXTENSION LADDERS

3.01 Objects against which the top of the ladder is to be placed shall be reasonably rigid and shall have ample strength to support the ladder and the workman on it. Certain work operations performed from a ladder, for example, raising a cable manually, may increase the load on the ladder and this should, of course, be taken into account when judging the strength of the upper support for the ladder.

3.02 **Placing Ladder on Strand:** Before placing a ladder against suspension strand, the strength of the suspension strand should first be tested in the following manner, unless it is definitely known that the strand has adequate strength to support the ladder and the workman:

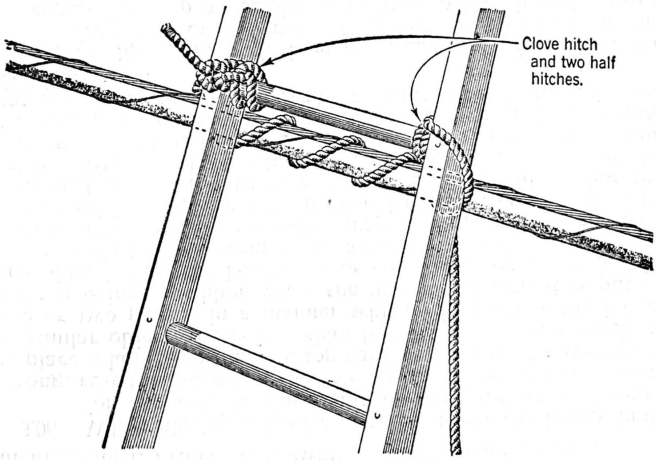
(1) Throw a handline over the strand at the point where the ladder is to be placed.

(2) The workman who will later be working on the ladder should grasp the two ends of the handline and gradually apply his full weight to the strand by lifting himself slowly off the ground.

Strand which will withstand this test without showing any signs of failure will have ample strength to support the ladder and the workman. After the strand has been tested in this manner, it may often be advantageous to leave the rope on the strand for raising and lowering the ladder as outlined in G83.620.3, Part 3 and for securing it to the strand, as outlined in the following paragraph.

3.03 When using a ladder on strand having a fairly steep slope, the ladder shall be held by a workman or secured with a rope so as to prevent the top of the ladder from sliding along the strand. The rope should be thrown over the strand, and one end secured to the second rung from the top end of the top section. After the ladder has been placed on the strand, the other end of the rope should be drawn taut and held by a workman or secured to an adequate support on the up-hill side of the ladder, such as a pole, a tree, or a digging bar firmly placed in the ground. If no such anchorage is available, the ladder may be secured to the cable and strand by throwing the handline over the strand again, so that the rope passes twice around the cable and strand, and then tying the rope securely to one of the lower rungs.

3.04 When a ladder is placed against cable suspension strand, and heavy work, such as pulling or lifting, is to be done, the ladder should be lashed to the strand with a short length of rope, as shown in the following sketch. Where the cable is supported in rings, the lashing shall be passed around the strand only; where the cable is lashed, the lashing shall be passed around strand and cable.



Lashing Ladder to Strand.

3.05 When using a ladder on suspension strand that is attached to a building wall, the ladder should be placed, wherever possible, so that it will tend to push the wall attachment against, rather than away from the building wall.

3.06 When placing a ladder in trees, select the larger limbs for support. If the limbs do not appear sufficiently strong, rest the ladder on the tree trunk. Where it is necessary to place a ladder so that the top rung rests against a tree trunk or similar object, the ladder shall be held or lashed securely at one or two points, in a manner which will prevent the ladder from twisting or sliding when the workman's weight is put on one side. While the lashing is being placed, or removed, the ladder shall be held securely by another workman. If no other workman is available, a handline may be thrown, or placed with a wire-raising tool or tree pruner handle, over a tree limb, then tied to the top rung, and used to assist in raising the ladder. After the ladder has been placed, the free end of the handline should be tied to one of the lower rungs, thus holding the ladder until a more secure lashing is placed. The lashing may be made in the following manner with a second rope (3/8-inch).

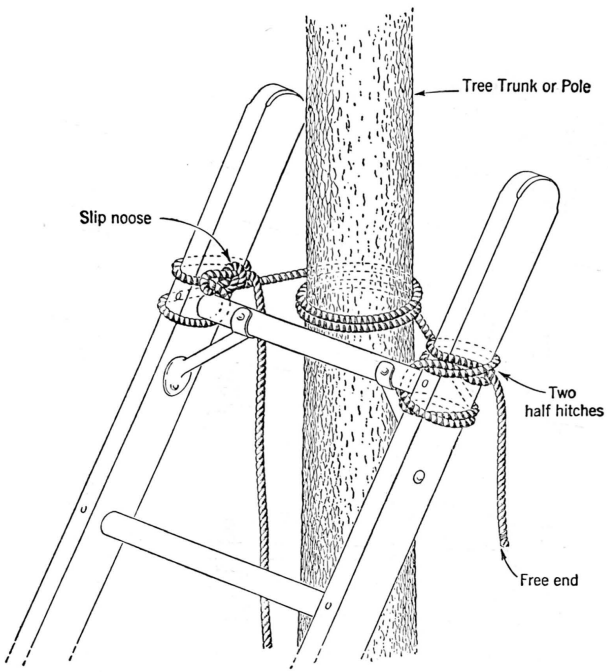
(1) A slip noose should be made about 15 feet from the free end of the rope. (See section covering manila rope.) The slip noose should be tied so that it will tighten when the free end of the rope is pulled.

(2) Place the slip noose over the top end of one side rail as shown in the following illustration.

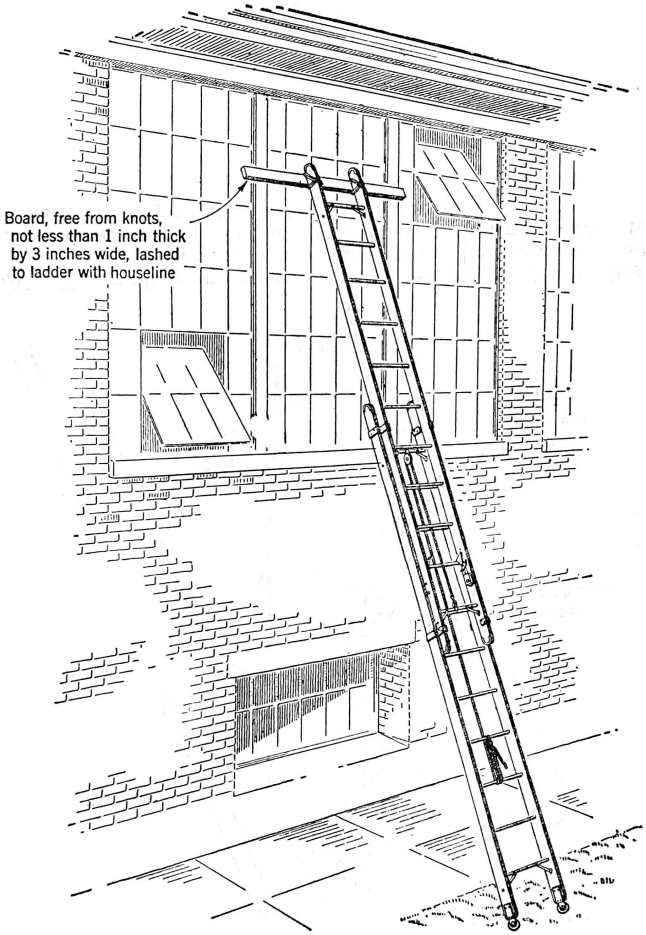
(3) Pass the free end of the rope down behind and under the top rung, then toward the front of the ladder, around the rail, and back to the tree or pole.

(4) Make two complete wraps around the tree or pole, then pass the rope twice around the opposite rail below the first rung, and then up behind the rung.

(5) Reverse the direction of wrapping and make two half hitches. The rope should be applied so that the ladder is lashed tightly to the tree or pole.

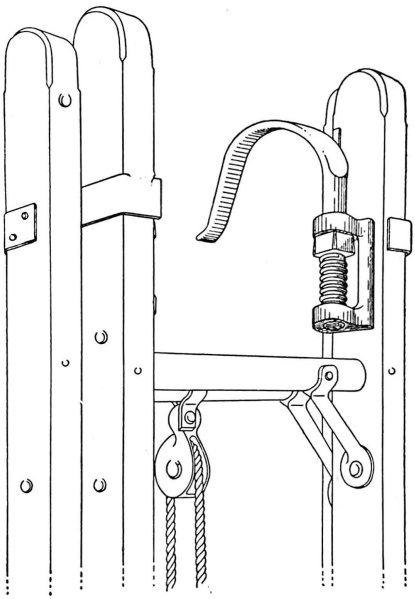


3.07 Never place an extension ladder against window sashes. If it is impracticable to avoid placing the ladder in front of a window, lash a board to the ladder as shown in order to provide a bearing at each side of the window.


Board, free from knots,
not less than 1 inch thick
by 3 inches wide, lashed
to ladder with houseline

4. USE OF STRAND HOOKS ON C EXTENSION LADDERS

4.01 The strand hooks provided on C Extension Ladders are shown in the following illustration.



When not in use, the hooks should be turned in between the rails. To rotate a hook, it should be pushed toward the lower end of the ladder, turned 90 degrees, and then released. The coil spring locks the hook in either of its two positions.

4.02 The strand hooks on C Extension Ladders may be used on both lashed and ring supported cable. Their use permits working with a shorter ladder than might otherwise be required.

4.03 Strand hooks should be turned in between the rails when the ladder is to be placed against building walls or other flat surfaces.