WOOD EXTENSION LADDERS AND ATTACHMENTS

CONTENTS

1. GENERAL

1.01 This practice is reissued to change the title and to specify that the description and procedures apply to **wood** extension ladders and attachments. Due to the major revision of this practice, brackets indicating changes and/or additions are deleted. **Remove from the file and destroy all copies of CTSP 405-700-320, Issue 1, 1971.**

1.02 This practice provides the proper and safe procedures for handling the various types of wood extension ladders and attachments presently used in the Continental Telephone System. Figure 1 shows a standard wood extension ladder.

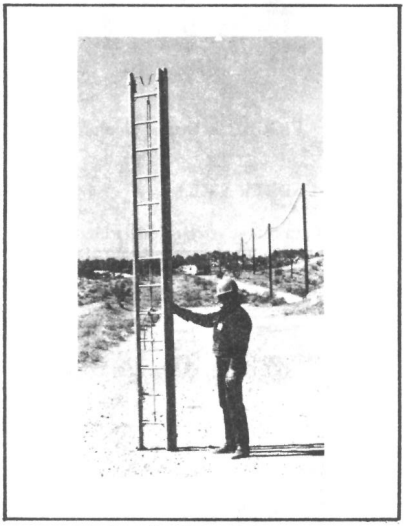

FIGURE 1. Standard Wood Extension Ladder

1.03 The information in paragraphs 4, 10, 11, 12 13, 14, 15, and 16 of this practice also applies to fiberglass ladders. Refer to CTSP 405-700-619 for information on the care and maintenance of fiberglass ladders.

1.04 It is the responsibility of craftsmen to check ladders and attachments to ensure that the equipment is in good working condition.

2. DESCRIPTION

2.01 All ladders referred to in this practice are of the treated wood type. Extension ladders are provided in sizes of 24 feet, 28 feet, and 32 feet. They are equipped with duo safety shoes on the side rails to prevent slipping, and are furnished with strand hooks. Two automatic locks are attached to the side rails of the top section and clasp over the rungs of the bottom section. The top section of the ladder is raised by means of a 3/8-inch manila or synthetic fiber rope. See Figures 2, 3, and 4.

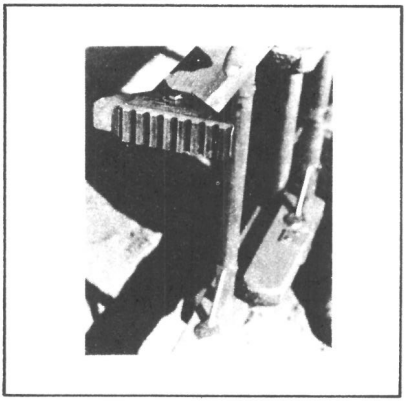

FIGURE 2. Duo Safety Shoes

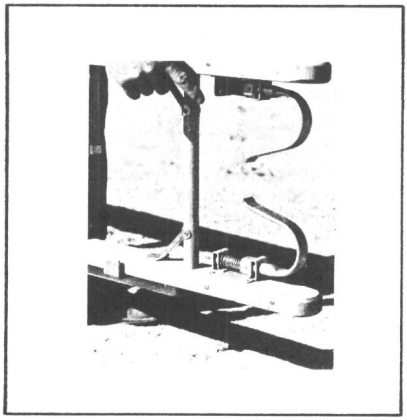

FIGURE 3. Strand Hooks

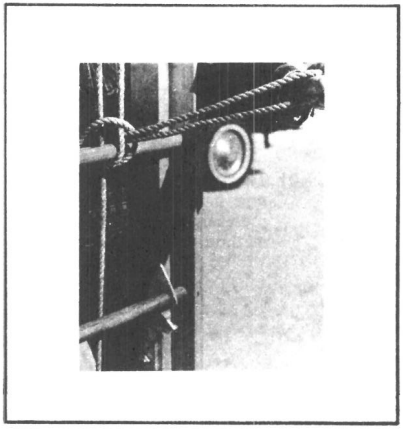

FIGURE 4. Automatic Locks

3. SELECTION OF PROPER SIZE OF WOOD LADDER

3.01 The maximum working length of an extension ladder is from 3 to 4 feet less than the ladder size, depending upon the maximum overlap. See Table A for maximum working lengths of the ladders.

TABLE A

Ladder Size (Feet)	Maximum Working Length (Feet)	Minimum Overlap (Feet)
24	21	3
28	25	3
32	29	3

3.02 Depending upon local conditions, the 24-foot extension ladder will usually meet most requirements for installation and maintenance work. The 28-foot or 32-foot ladders will meet the requirements for construction and splicing operations.

3.03 Always select a ladder of sufficient length for the work to be done. The ladder should be long enough so that the work can be performed when standing no higher than on the fourth rung from the top so that the side rails may be grasped conveniently and safely. Figure 5 shows a ladder of the right length.

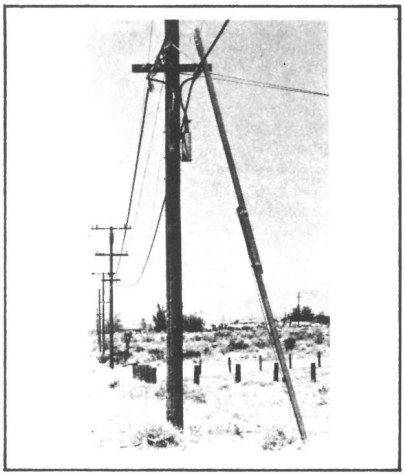

FIGURE 5.

4. SAFETY PRECAUTIONS

4.01 Use only **standard** extension ladders (Figure 1). **Do not use ladders with broken or missing rungs, broken side rails, broken locks, or defective ladder ropes.**

4.02 Do not place ladders on boxes, barrels, or other objects to obtain additional height; use a ladder of sufficient length for the job at hand.

4.03 When the surface on which the base of the ladder is resting is such that the ladder may have a tendency to slip, follow the instructions given in paragraph 11.02.

4.04 Do not place a ladder inside or opposite an angle formed by wires or cables where loosening of the wire or cable attachments might cause the ladder to move or fall.

4.05 In areas exposed to vehicular traffic, place the ladder on the strand from the field side of the cable whenever possible to avoid danger from passing vehicles. If vehicular traffic is not a problem, the ladder may be placed against the strand from the street side of the cable.

4.06 If a ladder must be placed at a work location where it could be struck by passing vehicles and a Company vehicle is available, the truck should be parked with brakes set to provide maximum protection for the ladder without obstructing traffic. In addition, warning signs, flags, traffic cones, or flashing signals should be placed to divert the flow of traffic from the work area, as instructed in CTSP 490-050-101. See Figure 6.

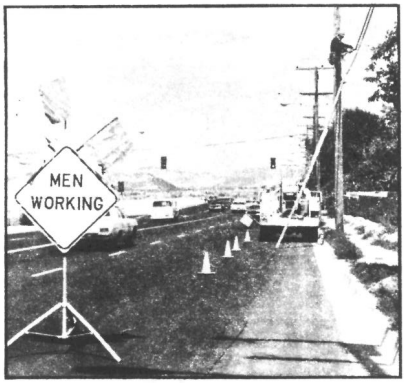

FIGURE 6.

4.07 When raising or lowering the top section of an extension ladder, keep hands and feet off the rungs. When the top section is being lowered, stand clear so that it will not strike the feet. See Figure 7.

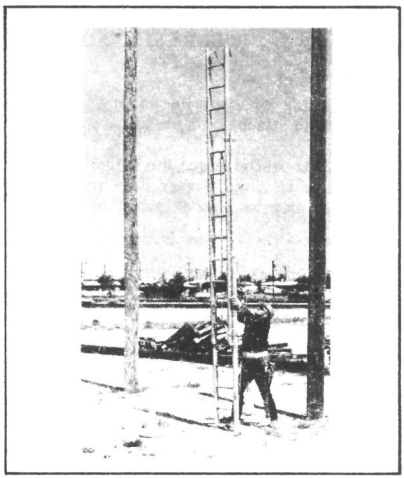

FIGURE 7.

4.08 Avoid spilling or spattering paraffin on a ladder as wood coated with paraffin is very slippery and this could cause an accident.

4.09 Before climbing an extension ladder, make certain that the ladder locks are properly engaged and the ladder rope is securely tied to one of the rungs of the bottom section. See Figure 8.

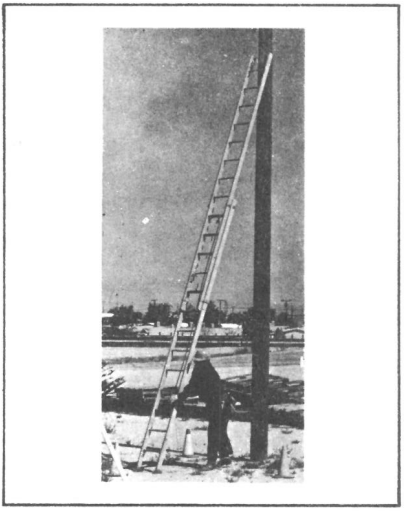

FIGURE 8.

4.10 When the ladder is to be used on aerial cable, turn the hooks to the working position before the ladder is raised. Ladder hooks should be placed on the cable strand as shown in Figure 9, unless the ladder is to be lashed to the strand as covered in paragraph 13.

4.11 Do not hurry when going up or down a ladder; take one step at a time and always face the ladder, being sure to have both hands free to hold the sides of the ladder. See Figure 10. Be especially careful when going up or down ladders in wet or icy weather.

4.12 Do not climb a ladder while wearing climbers.

4.13 Only one person at a time is permitted on a ladder.

4.14 The craftsman should always remember to first make the ladder secure, and then make himself secure on the ladder, so that he will not fall if he slips, loses his balance, or something unexpected occurs. The manner in which the craftsman secures himself to the ladder will depend on the security of the ladder, and the nature of the work to be done.

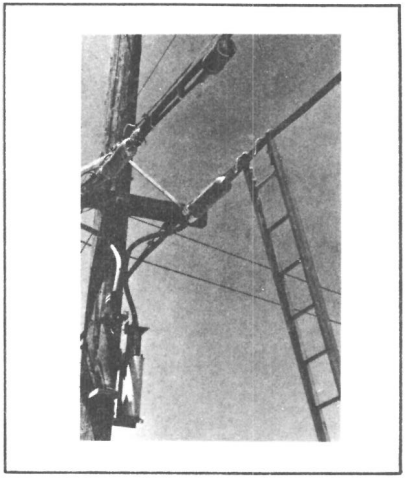

FIGURE 9. Ladder Hooks on Cable Strand

FIGURE 10.

4.15 If the ladder is lashed to the pole, the craftsman may increase his safety by passing his

safety strap around one rung of the ladder, then around the pole and the opposite outer side rail of the ladder and into the D ring of the safety strap. See Figure 11.

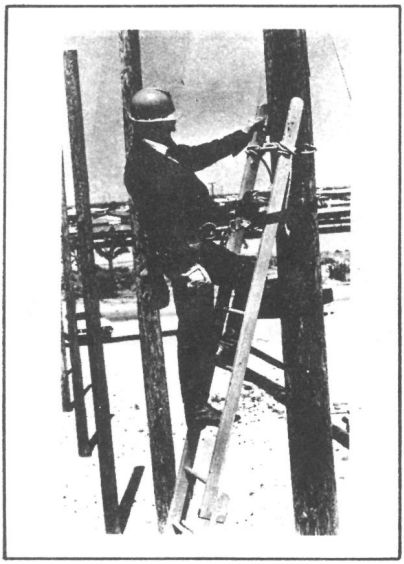

FIGURE 11.

4.16 If the ladder is attached to strand, pass the safety strap around one outer side rail of the ladder, over the strand, under and over the rung of the ladder, over the strand again and around the opposite outer side rail of the ladder and into the D ring of the safety strap.

4.17 When a ladder is lashed, or otherwise secured so that it cannot fall, the craftsman may increase his security by placing one leg between two rungs of the ladder.

4.18 Do not throw tools or materials to a craftsman working on a ladder: raise them by means of a handline. See Figure 12. Be careful that tools or materials being used aloft cannot fall on persons passing below.

4.19 When working on a ladder, do not attempt to lean so far to the side that the outside shoulder is more than 12 inches beyond the side rail. Loss of footing in this position may cause loss of balance and

FIGURE 12.

the weight being shifted to one side of the ladder may cause it to slip at the top. Descend and move the ladder to the proper location.

4.20 When working from ladders, **do not allow drop wires, lashing wires, handlines, or ladder ropes to dangle to the ground where they may be struck by passing vehicles.** A wire or rope caught on a passing vehicle may pull the ladder and cause it to fall, or it may pull the craftsman off the ladder. When not in use, the handline shall be tied to the lower portion of the ladder or pulled aloft.

4.21 Do not slide down an extension ladder.

4.22 Never carry an extension ladder from one location to another while it is extended. First lower the ladder and secure the ladder rope, then extend it again at the new location.

4.23 When carrying a ladder on the shoulder, point the safety shoes forward and downward.

4.24 When carrying or removing a ladder from a vehicle, avoid swinging it into the path of passing vehicles or pedestrians.

4.25 Do not place ladders where they may come in contact with power lines.

4.26 Do not tie drop wires or pulling lines to ladders.

4.27 Do not use a ladder in a horizontal position as a platform, runway, or scaffold.

4.28 Do not place a ladder against a suspension strand which is held under tension by a strand puller only.

5. ROUTINE INSPECTION OF WOOD LADDERS

5.01 Each time a ladder is used, the employee shall determine that it is in good condition and that there is no indication of deterioration or damage that may affect its strength. **Ladders not in storage shall be examined visually once each week.**

5.02 Every 6 months (or if a ladder has been dropped or otherwise abused or damaged), all sections of a ladder shall be examined according to the procedures in paragraph 6.

5.03 Definitions of terms used in ladder inspection are:

a. Cracks are fractures across the lengthwise fibers of the wood, usually resulting from mechanical stresses.

b. Decay is disintegration of the wood due to action of wood-destroying fungi.

c. Splits are lengthwise separations of the wood extending in the direction of the grain.

d. Delamination is separation of ply in the laminated side rails of extension ladders.

5.04 Paragraph 7 describes defects in side rails that can be detected visually.

5.05 Extension ladders shall be inspected when the wood is dry as absorption of considerable moisture causes swelling which tends to conceal defects.

5.06 Every 2 months the supervisor shall inspect the ladders used by his forces. Inspection under dead weight load may be omitted.

5.07 The supervisor shall ensure that the craftsmen comply with the inspection routine.

6. METHOD OF INSPECTING WOOD EXTENSION LADDERS

6.01 Examine the ladder to determine the condition of all parts. To facilitate careful inspection, place the ladder at a convenient height in a well lighted area. **If any defects are found that cannot be taken care of by the craftsman, or if the condition is such that there is doubt about the ladder being safe to use, it should be tagged DEFECTIVE and exchanged at once for a ladder in good condition, in accordance with local routine.**

6.02 Separate the ladder sections and place **one section at a time** on two supports located a few inches from the ends of the side rails. These supports should be high enough to permit the craftsman to examine the underside of each rail thoroughly.

6.03 Place a weight of approximately 100 pounds at a point approximately 2 feet from one end support. The weight should be supported evenly by the two side rails. Examine the under edges and the faces of each rail carefully for signs of any defects. Particular attention should be given to the points where the rungs are joined to the side rails, as these are points where fractures are most likely to occur.

6.04 Repeat the procedure in paragraph 6.03 with the weight placed at the midpoint of the ladder section. See Figure 13.

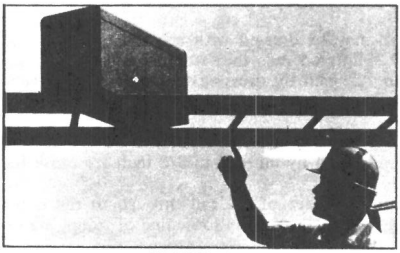

FIGURE 13.

6.05 Turn the section over and repeat the inspections described in paragraphs 6.03 and 6.04. **The suggested loading is not a strength test of the section, but rather a means for disclosing defects and therefore is of no significance unless a careful visual examination is made while the section is under load.** Under no circumstances shall an **extended** ladder be inspected in this manner, nor shall a weight appreciably in excess of the 100 pounds (such as the weight of a person) be applied to a ladder section being inspected.

7. VISUAL INSPECTION OF WOOD EXTENSION LADDER SIDE RAILS

7.01 Look for damage to the side rails which may appear as a fine crack, as a fold or crease in the wood fibers, or as a splintering of the wood fibers. Such defects are usually caused by overloading the ladder or subjecting it to a hard blow by dropping it or through some other accident and may subsequently result in failure of the ladder under normal load. Cracks or fine wrinkles (compression failure) in the wood fibers are most likely to occur at rung positions; a very careful inspection is usually required to detect them. In most instances the wrinkles or creases appear alone, but in some cases there may also be some splintering of the wood fibers in the opposite side of the rail. See Figure 14.

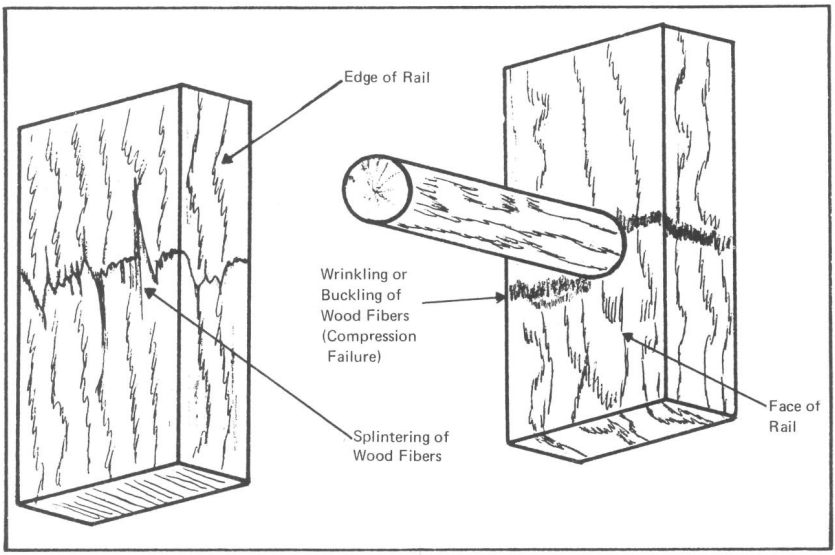

FIGURE 14.

7.02 Slightly splintered rails may be dressed with a wood rasp, file, knife, sandpaper, or other suitable means. Badly splintered rails that would require the original width of the rail to be reduced more than 1/2 inch by dressing to remove the projecting fibers are cause for rejection.

7.03 Splits that extend to an edge of a side rail and cannot be removed by dressing without reducing the original rail width by more than 3/8 inch are cause for rejection.

7.04 Splits that extend from one face of the rail through to the opposite face and are more than 24 inches in length, or that result in loosening of rungs, are cause for rejection.

7.05 Worn, crushed, or excessively indented rails are cause for rejection. (Top or bottom edge of narrow side worn or depressed 3/8 inch or less is permitted.)

7.06 Decay, particularly where rungs join side rails, is cause for rejection.

7.07 Loose rungs and rung braces will cause excessive longitudinal play in side rails, i.e., more than 3/4 inch. This may be checked and measured as shown in Figures 15 and 16. Longitudinal play in excess of 3/4 inch is cause for rejection.

7.08 Check for protruding nails. These shall be driven flush and set with a nail set.

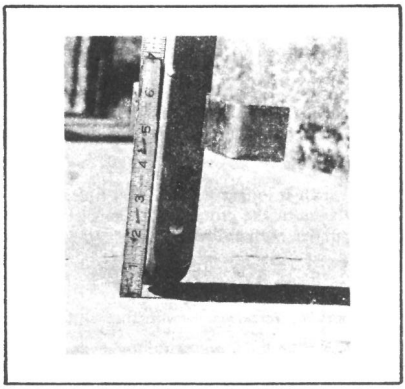

FIGURE 15.

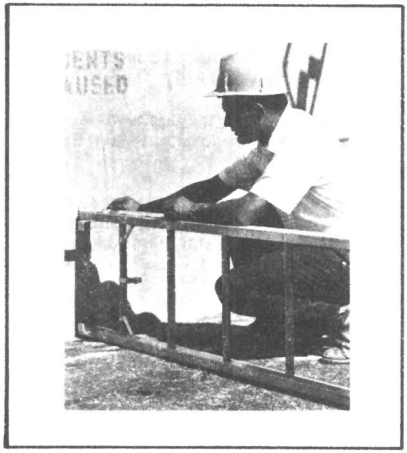

FIGURE 16.

8. VISUAL INSPECTION OF WOOD EXTENSION LADDER RUNGS AND FITTINGS

8.01 Excessively worn rungs, severely bent rungs, loose or missing rungs, are cause for rejection.

8.02 Check for cracked, split, badly splintered, or decayed wooden rungs. Sometimes a break will occur in the portion inside the side rail. Such a defect is not visible but may be detected by rapping the rung with a hammer handle near each side rail and comparing the sound with that obtained from striking other rails. Do not strike rungs with the hammer head.

8.03 The following defects on ladder fittings are cause for rejection:

a. **Broken, badly bent, or cracked guide irons.**

b. **Loose rivets.**

c. **Broken locks or improper action of locks.** (The spring shall function to keep the hook in position to engage the rung.)

d. **Excessively worn, seriously frayed, or rotted ladder rope.** Replace the rope, attaching it to the ladder by means of a rope eye splice.

e. **Broken, cracked, or badly distorted ladder hooks.**

f. **Broken, badly worn, or otherwise defective shoes.**

g. **Broken or defective braces.**

h. **Broken or defective pulley** (the pulley sheave shall revolve freely).

i. **Broken or defective pulley shackle** (never use wire as a substitute for the shackle).

9. CARE OF WOOD LADDERS

9.01 If properly handled and cared for, a ladder can be used for a considerable time without repairs or replacement. Craftsmen using extension ladders shall maintain them in accordance with the instructions given in this practice. Extension ladders that require repairs which cannot be made on the job shall be returned to the storeroom as instructed in paragraph 6.01.

9.02 When lowering the top section of a ladder, check its downward movement with the extension rope to ensure that the top section does not strike the ground or pavement sharply.

9.03 A craftsman shall not attempt to lower a ladder which is longer than 32 feet unless he has assistance. Dropping a ladder for even a short distance to the ground may damage the side rails and subsequently result in the rails breaking under normal loads.

9.04 Never use a ladder as a skid.

9.05 Keep ladder rails free from splinters. Splinters may be removed by dressing with a rasp, knife, sandpaper, or other suitable means (see paragraph 7.02).

10. CARE OF LOCKS AND PULLEYS ON EXTENSION LADDERS

10.01 Keep locks, springs, and pulleys on extension ladders lubricated by applying oil sparingly on the movable parts at least once a month. This will make them operate easier and add to their service life. Ensure that locks are securely fastened to the side rails. Test each spring to see that it is capable of returning the catch to position. Examine the keeper to see that it operates properly. See that the pulley is held securely at the middle of the rung.

10.02 One type of lock with which standard extension ladders are equipped is shown in Figure 17.

11. LADDER FOOTING

11.01 Use care in positioning ladders before climbing them. Place the foot of the ladder on the ground or other firm support so that distance A (as shown in Figures 18 and 19) is approximately 1/4 of distance B. If distance A is greater than 1/4 of distance B, there is danger of imposing excessive

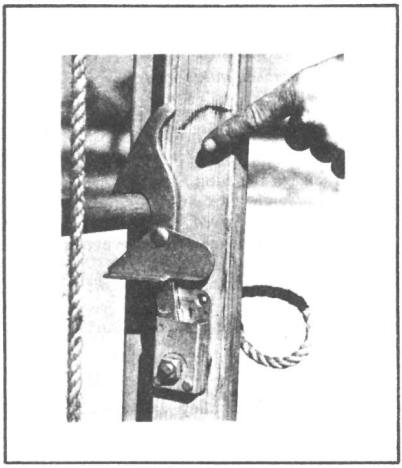

FIGURE 17.

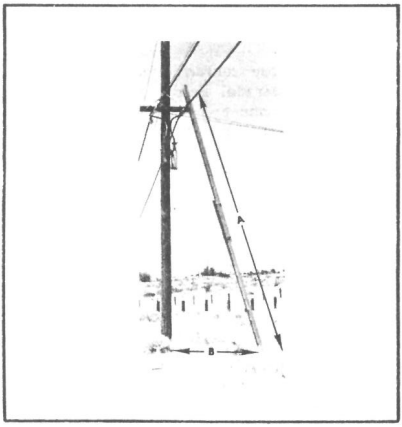

FIGURE 18.

stresses on the ladder. If distance A is considerably less then 1/4 of distance B,the ladder will be pitched so steeply that the work cannot be done safely. In any case, if the base of the ladder is likely to slip, the ladder shall be braced, fastened, or securely held.

11.02 Set a ladder only on secure footing. Set both feet of the ladder at the same level and on a line

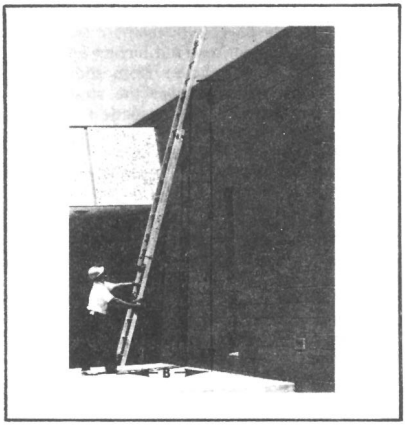

FIGURE 19.

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. **Never increase the length of a side rail by nailing a board to it.** If a ladder leans to either the right or the left, it is not properly placed. If the ladder cannot be leveled, select another location. Always place an extension ladder with the top section to the front. A well placed ladder is shown in Figure 20.

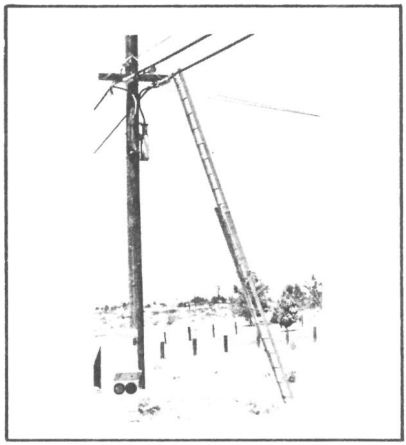

FIGURE 20.

11.03 When it is impossible to avoid placing the base of the ladder on the surface where it might slip, such as on wet or oily pavement, a smooth floor, or icy or metal surfaces, tie the base of the ladder securely in place. If this is impractical, the ladder must be held by another craftsman. The person holding the ladder shall be on the alert at all times to protect the person on the ladder and anyone passing below him. Never leave a raised ladder unattended under these conditions. The ladder might slip and cause injury, damage, or both.

11.04 Avoid placing a ladder in front of a doorway, especially where the door opens toward the ladder. Avoid placing a ladder near passageways, near moving machinery, or at locations where vehicles or pedestrians may strike or displace it. When these conditions cannot be avoided, or when a door cannot be secured in the open position or locked with no possibility of its being opened inadvertently, make arrangements to have the ladder guarded by another craftsman. Also, use warning devices to alert people to activity beyond a closed door.

12. SUPPORTING THE TOP OF EXTENSION LADDERS

12.01 Objects against which the top of the ladder will be placed shall be sufficiently rigid and have ample strength to support the ladder and the craftsman on it. Certain work operations performed from a ladder (for example, moving a cable manually) will increase the load on the ladder; this shall be taken into account when judging the strength of the upper support for the ladder.

12.02 Before placing a ladder against suspension strand, test the strength of the suspension strand and its supports. See CTSP 490-360-700.

12.03 When using a ladder on a strand having a fairly steep slope, secure the ladder with rope to prevent the top of the ladder from sliding along the strand. Before raising the ladder, throw or place a handline over the strand and secure one end on the handline to the second rung from the top of the section of the ladder.

12.04 After placing the ladder on the strand, pull the other end of the handline taut and secure it to an adequate support on the uphill side of the ladder, such as a pile, tree, or digging bar firmly placed in the ground. If no such anchorage can be obtained, the ladder may be secured to the cable and strand by throwing or placing the handline over the strand again (so that the rope passes twice around the cable and strand), and then tying the rope securely to a rung on the lower section of the ladder.

12.05 When a ladder is placed against the strand and heavy work such as pulling or lifting is to be done, lash the ladder to the strand with a short length of rope. Where the cable is supported in rings, pass the lashing rope around the strand only; where the cable is lashed, pass the lashing rope around the strand and cable. **Do not move the base of the ladder after the upper end has been secured to the strand.**

NOTE: When pushing or pulling heavy loads from a working position on a ladder, take care not to place undue stress on the ladder.

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

12.07 When placing a ladder against a tree, select the tree trunk or its larger limbs for support. When it is necessary to place a ladder so the top rung rests against a tree trunk or similar object, a handline may be thrown or placed with a wire raising tool or tree pruner handle over a tree limb, tied to the top rung of the ladder, and used to assist in raising the ladder. After the ladder has been placed, tie the free end of the handline to one of the lower rungs, thereby holding the ladder until a more secure lashing is made. The ladder shall be lashed securely at one or two points in a manner which will prevent the ladder from twisting or sliding when the craftsman's weight is put on one side. The lashing can be performed in the following manner with a second rope.

a. Make a slip noose about 15 feet from the free end of the rope so that the noose will tighten when the free end of the rope is pulled.

b. Place the slip noose over the top end of one side rail.

c. 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 then to the back of the tree or pole.

d. 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.

e. Reverse the direction of wrapping and make two half-hitches on the rail so that the ladder is lashed tightly to the **tree** or **pole.** See Figure 21.

NOTE: Never place an extension ladder against a window sash. If it is not possible to avoid placing a ladder in front of a window, lash a board to the

FIGURE 21.

ladder to provide support on each side of the window frame.

13. LADDER HOOKS

13.01 The ladder hooks provided on extension ladders are shown in Figure 22.

13.02 When not in use, turn the hooks in between the rails. To rotate a hook, push it toward the lower end of the ladder, turn it 90°, then release it. The coil spring locks the hook in either of two positions. Turn ladder hooks in between the rails when the ladder is to be placed against a building wall or other flat surface.

13.03 Ladder hooks on extension ladders should be used on lashed, ring-supported, and self-supporting cable when the ladder is not lashed to the strand.

CAUTION: When using ladder hooks on aerial cable, make certain the ladder is placed on firm and level footing to prevent the ladder from twisting or sliding along the strand.

13.04 When using a ladder (even if the ladder is lashed to the strand), and especially when placing and removing the ladder, a greater margin of safety is provided with the hooks in the working position.

14. TRANSPORTING LADDERS ON MOTOR VEHICLES

14.01 When transporting ladders on trucks or other motor vehicles, always fasten them securely in their proper position, using the straps or other devices provided for the purpose. Never use wire for securing a ladder to the brackets of a truck. A ladder hanging loosely on the brackets of a truck will soon be marred, cracked, and weakened by road shocks.

15. ONE-MAN METHOD OF CARRYING A LADDER

15.01 Carry extension ladders in the closed position with the shoes pointed downward and to the front and the ladder hooks turned in between the side rails. Secure the end of the ladder rope by tying it with a clove hitch around one rung of the top section and the adjacent rung of the bottom section.

15.02 To carry an extension ladder, first place it in the vertical position with the side rails of the bottom section on the outer side. Tilt the ladder until the bottom section side rail rests against the chest and shoulder; then lift the ladder to the shoulder until the exact point of balance is obtained. The proper carrying method is shown in Figure 23.

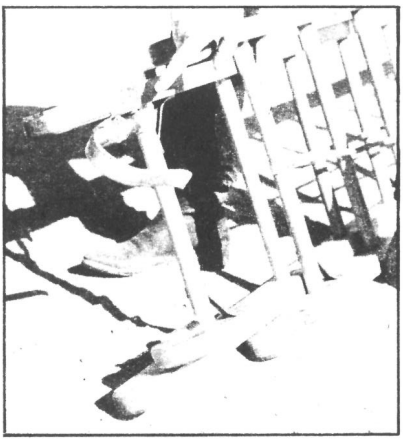

FIGURE 22.

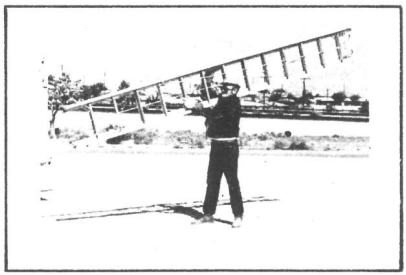

FIGURE 23.

15.03 Do not lift or carry a ladder by grasping the ladder rope.

16. TWO-MAN METHOD OF CARRYING A LADDER

16.01 First, secure the free end of the ladder rope with a clove hitch around one rung of the top section and the adjacent rung of the bottom section, and turn the ladder hooks in between the side rails.

16.02 To pick up a ladder, the two men take positions at opposite ends and, lifting together, lift the ladder as shown in Figure 24. Carry the ladder with the shoes forward.

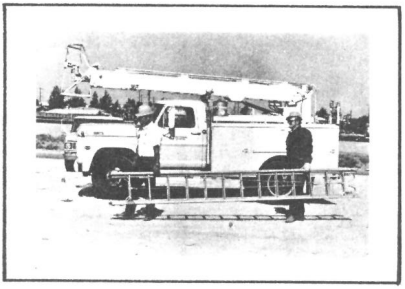

FIGURE 24.

17. METHOD OF RAISING AND LOWERING WOOD EXTENSION LADDERS

17.01 The following is a one-man method of raising a 24-foot or 28-foot ladder to suspension strand. (When two craftsmen are available, this method may also be used for raising longer ladders to the strand.) This method of handling ladders keeps the ladder under control at all times and provides a temporary lashing to the strand before climbing.

17.02 Where ground conditions allow, place the ladder on the ground at a right angle to the suspension strand, with the base of the ladder directly under the location of the work.

17.03 While they are lying on the ground, 24-foot and 28-foot ladders can be extended to within a few feet of the vertical height of the strand before raising the ladder.

NOTE: Ladders of greater length should be extended only two rungs.

17.04 Where ground conditions do not permit placing the ladder as described above (for example, where the end of the ladder would interfere with traffic on a road or street), the base of the ladder can be moved back from its position under the work location as required. It can also be placed parallel to the suspension strand, with the base directly under the work location. In either of these positions, extend the ladder only two rungs.

17.05 Throw a handline over the strand at the location where the ladder is to be supported. If there is a possibility of the handline becoming involved with tree branches, power wires, etc., place the handline over the strand with tree pruner handles, taking care to avoid contact with power wires. In doing this, take care that the free end of the handline does not interfere with passing vehicles.

17.06 Tie the near end of the handline to the bottom rung of the ladder, using a clove hitch and two half-hitches. Take the other end of the handline to the top of the ladder. Check the handline where it passes over the strand to be sure it does not cross over itself, and pass the free end behind the second rung from the top, and then out on the top side of the ladder. See Figure 25.

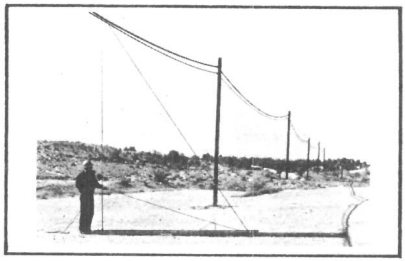

FIGURE 25.

17.07 Pull the handline hand over hand. As the top end of the ladder is raised off the ground, keep both feet in position to block any movement of the base of the ladder to the rear. See Figure 26.

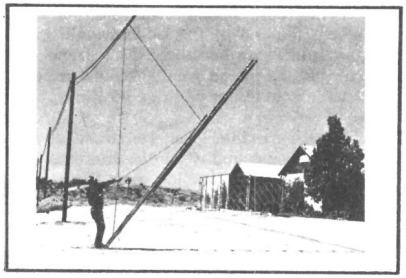

FIGURE 26.

17.08 Continue pulling the free end of the handline until the ladder is in a vertical position under the strand as shown in Figure 27.

17.09 As mentioned in paragraph 17.04, if the ladder base was not placed under the strand, the base should be moved directly under the strand. To do this, tie the free end of the handline to a ladder rung with a clove hitch and two half-hitches and move the base of the ladder in position under the strand. Untie the free end of the handline and pull on the handline until the ladder is vertical as shown in Figure 27.

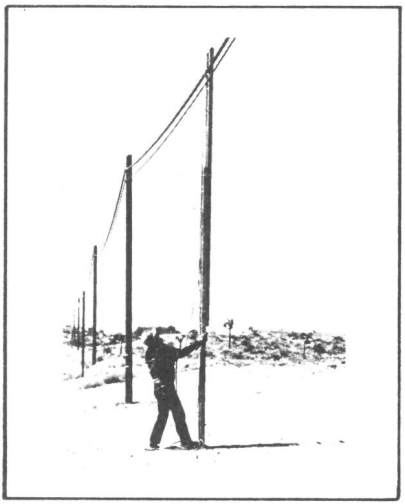

FIGURE 27.

17.10 With the ladder positioned vertically under the strand, hold the ladder in this position with one hand on the side rail. Allow about 1 foot of slack in the free end of the handline, and hold this slack with the same hand on the side rail. Use the other hand to tie the rope around the second or third rung with a clove hitch and two half-hitches. (If desired, the rope may be doubled or the tie may be made around two rungs to avoid having excess rope lying on the ground.) The ladder is secured to the strand and cannot fall as long as the handline is tied to the ladder.

17.11 Untie the ladder extension rope, taking care not to untie the handline. Pull on the ladder extension rope and extend the ladder until the top section is above the strand, perferably with the second rung level with the strand, and engage the ladder locks. See Figure 28.

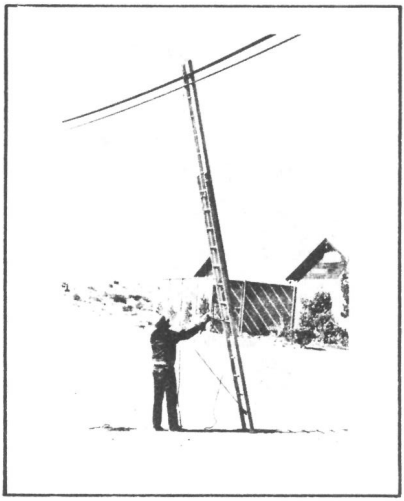

FIGURE 28.

17.12 To lock the top section after it has been raised to the desired height, continue raising it until the ends of the lock hooks are just above the rung to be engaged; then lower the top section until the inside curve of the lock hooks rests directly on the rung. Make sure that both locks are engaged.

17.13 Move the foot of the ladder out to its working position, allowing the top of the ladder to rest on the strand. It should not be necessary to extend the ladder further. However, if necessary to do so, untie the handline, extend the ladder, and retie the handline.

17.14 To lower the ladder, move the foot of the ladder back under the strand. Leaving the handline over the strand tied at both ends, untie the ladder extension rope. Lower the top section until it is extended two rungs above the bottom section and secure the ladder locks. Untie the upper end of the handline and lower the ladder gently to the ground by slowly paying out the handline. If the top end of the ladder tends to swing, move the foot of the ladder back while holding the handline securely.

17.15 A 28-foot extension ladder may be raised or lowered by one man in the manner shown in Figure

29, if the foot of the ladder is securely embedded in earth or is placed against the base of a wall, a pole, or other secure object.

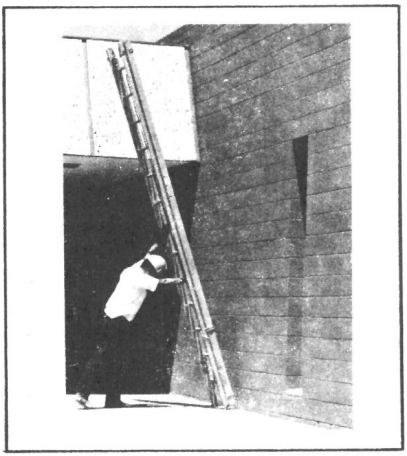

FIGURE 29.

17.16 A 32-foot extension ladder should be raised with the foot of the ladder held securely by one craftsman, while a second craftsman walks the ladder up to a vertical position similar to that shown in Figure 30. As an alternative, if the foot of the ladder can be placed against the base of a wall, one craftsman can raise the ladder as described in paragraph 17.15.

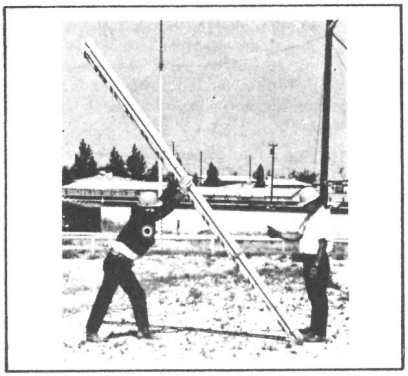

FIGURE 30.

17.17 When raising or lowering extension ladders, it is imperative that the craftsman handling the ladder maintain a secure footing at all times.

17.18 When lowering ladders, follow the reverse of the procedures for raising ladders.

18. HANDLING AND RAISING TOP SECTIONS OF 24-FOOT AND 28-FOOT WOOD LADDERS

18.01 After the ladder has been raised to an upright balanced position, stand in front of the ladder with one foot against the base of the ladder to prevent it from kicking out. Place the other foot in a bracing position to the rear of the ladder to provide a firm stance. See Figure 31. Untie the ladder extension rope and raise the ladder.

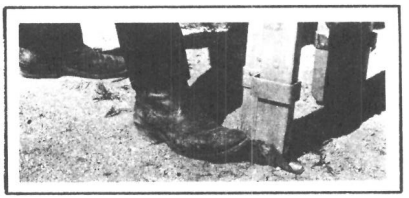

FIGURE 31.

18.02 After locking the top section, allow the top of the ladder to move slowly toward the support. When the ladder is in place against the support, tie the ladder rope securely to one of the rungs of the bottom section with a clove hitch and two half-hitches.

18.03 As an alternate method, after the ladder has been raised to an upright balanced position on a firm footing, balance the ladder with one hand and move behind the ladder in a position to operate the ladder rope with the other hand.

18.04 Pull the ladder rope to raise the top section two or three rungs at a time, engaging the locks after each pull. Take care to prevent the lower guide iron from striking the hand holding the side rail. Lock in place as instructed in paragraph 17.12.

19. LOWERING TOP SECTION OF 24-FOOT AND 28-FOOT WOOD LADDERS

19.01 Stand at the base of the ladder and raise the upper section about 6 inches by means of the ladder rope to release the ladder locks. Allow the upper section to descend slowly by applying the necessary drag on the rope. The drag on the rope should hold the ladder in the balanced position. See Figure 32. Take care to prevent injury to the hand holding the side rail. Do not allow the top section to strike the ground or pavement sharply.

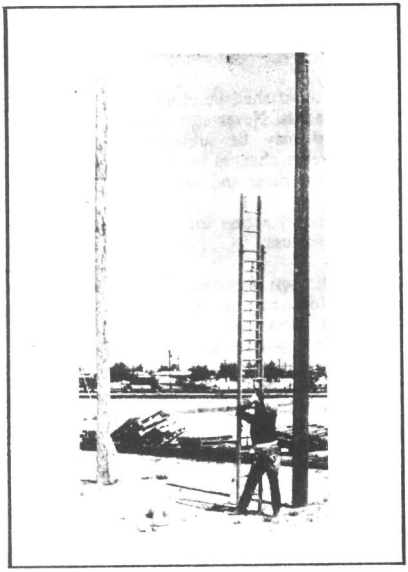

FIGURE 32.

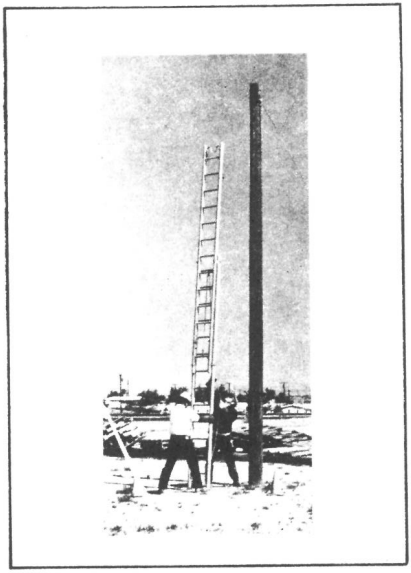

FIGURE 33.

20. RAISING AND/OR LOWERING TOP SECTION OF 32-FOOT WOOD LADDERS

20.01 One craftsman shall hold the side rails of the lower section on the front side of the ladder during the raising and lowering of the upper section by another craftsman. Take care to prevent the ladder guide irons from striking and injuring the hands of the craftsman holding the side rails. The ladder is raised by the second craftsman as described in paragraph 18.04 and shown in Figure 33.

20.02 The craftsman holding the ladder shall keep his feet and legs clear of the side rails and bottom rung of the lower section while the upper section is being lowered. The craftsman lowering the top section shall check its downward movement with the ladder rope so that the top section does not strike the ground or pavement sharply.

21. STORAGE OF WOOD LADDERS

21.01 Ladders that are **not being used** shall be stored in a well-ventilated area, where they will not be exposed to the elements. Never store ladders near radiators, stoves, steampipes, or in places where the wood may be subjected to excessive heat or dampness. Such conditions bring about extreme changes in the moisture content of the wood, causing the wood to split or crack and the rungs and hardware to become loose.

21.02 Store ladders to provide ease of access for inspection and to prevent danger of accident when withdrawing a ladder for use.

21.03 Where ladder racks have not been provided, store ladders in a vertical position. Where this is not practical, lay the ladders in a horizontal position, one on top of the other. Place wooden spacers between the floor and the lower ladder and between ladders to prevent side rails from becoming damaged by guide irons. Do not store ladders in any position where there is a chance of pressure being placed on them that might cause warping or twisting. Not more than six ladders should be placed in one stack. Heavy objects shall not be permitted to rest on ladders in storage.

21.04 Ladders stored in a horizontal position should be supported at a sufficient number of points (at least 3 points for 24-foot ladders and 4 points for the longer ladders) to avoid sagging and permanent set.