

**BELL SYSTEM PRACTICES**  
**Outside Plant Construction**  
**and Maintenance**

**SECTION G83.620.6**  
**Issue 2, January, 1958**  
**AT&T Co Standard**

## **EXTENSION LADDERS** **INSPECTION AND MAINTENANCE**

<b>Contents</b>	<b>Page</b>
1. General .....	1
2. Inspection Routine .....	1
3. Inspection and Maintenance of Ladders.....	2
4. Care of Ladders .....	5
5. Disposition of Ladders Requiring Repairs.....	8

### **1. GENERAL**

- 1.01 This section replaces Issue 1. It covers the inspection<sup>↑</sup> and maintenance of extension ladders.
- 1.02 The section has been reissued to call for a semiannual instead of a weekly dead-weight loading test in inspecting ladder sections for splits, checks, cracks, etc. in side rails unless the ladder is dropped or otherwise abused, in which case the ladder shall be examined in accordance with Paragraph 3.02 as soon as practicable.
- 1.03 The load employed does not determine the strength of the ladder; it merely facilitates locating defects in the side rails such as cracks, splinters, checks, etc.

### **2. INSPECTION ROUTINE**

2.01 Each employee using a ladder shall determine that it is in good condition and that its appearance indicates neither deterioration nor injury sufficient to affect its strength. The ladder shall be examined visually once each week as outlined in Paragraphs 3.03, 3.04, and 3.05. Should such an examination reveal a split, check, splinter, etc., in a side rail, the sections shall be loaded during inspection as outlined in Paragraph 3.02. The sections shall also be inspected under the prescribed dead-weight load test at six-month intervals or in the event the ladder has been dropped or has otherwise been abused or damaged. ↙

2.02 The inspection of side rails and rungs shall be made when the wood is dry, for absorption of considerable moisture causes swelling which tends to conceal any defects such as check, crack, split, etc., that may be in the side rails.

2.03 The supervisor shall inspect, omitting the weight test, the ladders used by his forces at least every two months and shall see to it that the workmen are complying with the instructions contained herein.

### 3. INSPECTION AND MAINTENANCE OF LADDERS

3.01 The ladder shall be examined to determine the condition of all its parts, as suggested in the following. In order to facilitate careful inspection, the ladder shall be well lighted and placed at a convenient height for inspection. **If any defects are found which can not be taken care of by the workmen or if the condition is such that there is doubt about the ladder being safe to use, it shall be exchanged at once, in accordance with local routine, for one in good condition.**

3.02 The procedure outlined below shall be followed in loading the ladder sections for examination.

(1) 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 of a height which will permit the workman to examine the under side of each rail thoroughly.

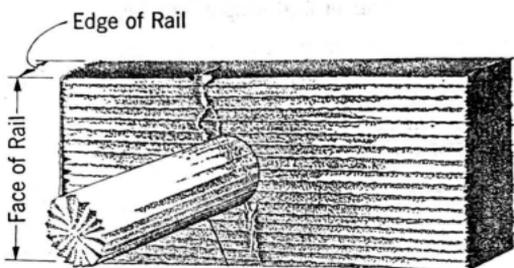
(2) Place a weight of approximately 100 pounds at a point about two feet from one end support. The weight should be supported approximately evenly on the two side rails. Examine the under edge and the sides of each rail carefully for signs of the defects described in subparagraphs (a) and (b) of 3.03. Particular attention should be given to the rung locations, inasmuch as these are points where fractures are most likely to occur.

(3) Repeat the operation in (2) with the weight placed in the middle of the ladder and again with the weight placed about two feet from the other support.

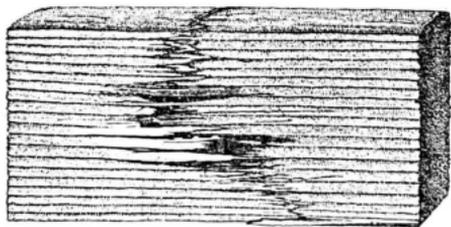
(4) Turn the section over and repeat the inspections outlined in (2) and (3). It should be clearly understood that the suggested loading is not a strength test of the section, but rather means for disclosing defects and, therefore, is of no significance unless a careful visual examination is carried out while the section is under load.

3.03 The defects to look for on the side rails are :

- (a) Damage to rails which appear as a fine crack or 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 either by dropping or through other accident and may subsequently result in breakage of the ladder under normal load. Cracks or folds in the wood fibers are most likely to occur at rung positions and a very careful inspection is usually required to detect them. In most instances the folds or creases appear alone, but in some cases there may also be some splintering of the wood fibers on the opposite side rail.



Folding or Buckling of Wood Fibers



Splintering of Wood Fibers

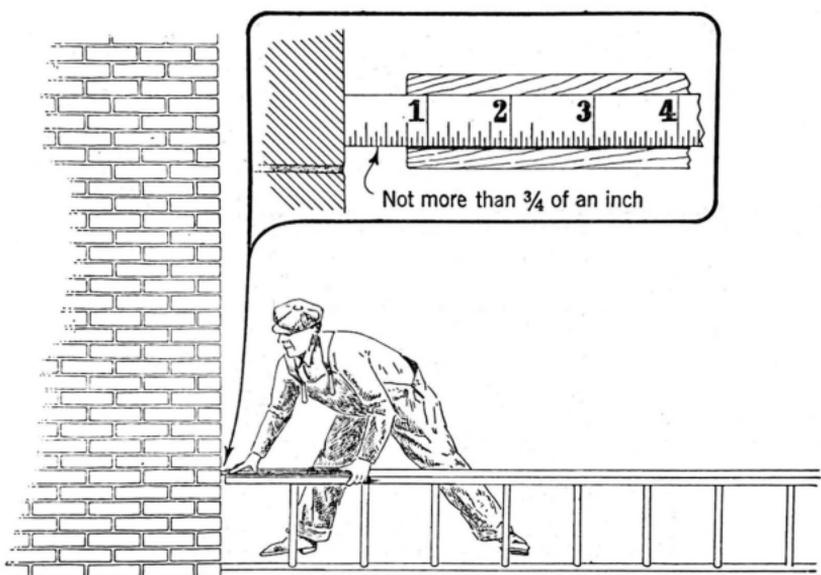
- (b) Splits that extend into an edge of a side rail which can not be removed by dressing without reducing the original rail width by not more than  $3/8$  in. ←
- (c) Splits extending from one face of the rail through to the opposite face and which are more than 24 inches in length, or that result in loosening of rungs.
- (d) Rail badly splintered so that the original width of the rail will be reduced more than  $1/2$  in. by dressing to completely remove the projecting fibers. All splinters should

be removed as they appear and the rail dressed with a wood rasp, file, spokeshave, knife, sandpaper, or other suitable means.

(e) Worn, crushed or indented excessively (top or bottom face of narrow side worn or depressed  $\frac{3}{8}$  in. or less is permitted).

(f) Decay.

(g) Longitudinal play too great (more than  $\frac{3}{4}$  in). This is due to looseness of the rungs and rung braces and may be measured, as shown in the following sketch.



Measuring longitudinal play in rails

(h) Protruding nails (these shall be driven home and set with a nail set).

3.04 The important defects to look for on the rungs are:

(a) Cracked, split, badly splintered, or decayed rungs. (Splits, six inches or less in length, shall be permitted.)

Sometimes a rung is broken in the tenon which is mortised into the side rail. Such a defect is, of course, not visible but may be detected by rapping the rung near each side rail with a hammer handle and comparing the sound with that obtained from other rungs.

- (b) Rungs worn excessively. (Less than 7/8 inch in diameter.)
  - (c) Loose or missing rungs.
- 3.05 The important defects to look for on the fittings are:
- (a) Broken, badly bent, or cracked guide irons.
  - (b) Loose rivets. (Where practicable, loose rivets shall be tightened on the job.)
  - (c) Broken locks, or improper action of locks. (The spring shall function so as to keep the hook in position to engage the rung.)
  - (d) Ladder rope seriously frayed, worn excessively, or rotted. Replace the rope, attaching it to the ladder by means of an eye splice.
  - (e) Broken, cracked, or badly distorted strand hooks.
  - (f) Broken or defective spurs.
  - (g) Broken or defective brace.
  - (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).

#### 4. CARE OF LADDERS

4.01 The standard extension ladders have been designed to have a minimum weight consistent with ample strength. If properly handled and cared for, a ladder can be used for a considerable time without repairs or replacement. Employees using extension ladders shall maintain them in accordance with the instructions given in this section. Extension ladders requiring other repairs shall be returned to the storeroom and repaired under the Company's established routine.

4.02 By observing the following precautions the life of extension ladders should be greatly prolonged.

- (a) When lowering the top section of a ladder, check its downward movement with the extension rope so that the side rails do not strike the ground or pavement sharply.
- (b) A single workman should not attempt to lower a ladder longer than 32 feet. Dropping a ladder for even a short distance to the ground may readily introduce failures in the side rails (such as described in Paragraph 3.03 (a)) which may subsequently result in breakage of the rails under normal loads.
- (c) Heavy objects shall not be permitted to rest on ladders in storage.
- (d) Never use a ladder as a skid.

- (e) Ladder rails should be kept free from splinters. Splinters may be removed by dressing with a rasp, file, knife, sandpaper, or other suitable means.

### **Storage of Ladders When Not in Use**

4.03 Ladders that are not being used should be stored at a location where they will not be exposed to the elements but where there is good ventilation. Never store ladders near radiators, stoves, steampipes, nor in places where the wood may be subjected to excessive heat or dampness. Such conditions bring about severe changes in the moisture content of the wood which tend to cause the wood to split, crack or check and cause loosening of the rungs and hardware.

4.04 Ladders should be stored in such a manner as to provide ease of access for inspection and prevent danger of accident when withdrawing a ladder for use.

4.05 In general, where ladder racks have not been provided, store ladders in a vertical position. Where this is impracticable, lay the ladders in a horizontal position, one on the other. Place wooden spacers between the floor and the lower ladder and between ladders to prevent side rails being damaged by guide irons. Do not store the ladders in any position where there is a chance of any pressure being placed on them that might cause warping or twisting. Not more than 6 ladders should be placed in one pile.

4.06 Ladders stored in a horizontal position should be supported at a sufficient number of points (at least 3 points for 20- and 24-foot length ladders and 4 points for the longer length ladders) to avoid sagging and permanent set.

### **Cleaning and Treating Extension Ladders**

4.07 So far as practicable, keep ladders free from dirt, paraffin, oil, etc.

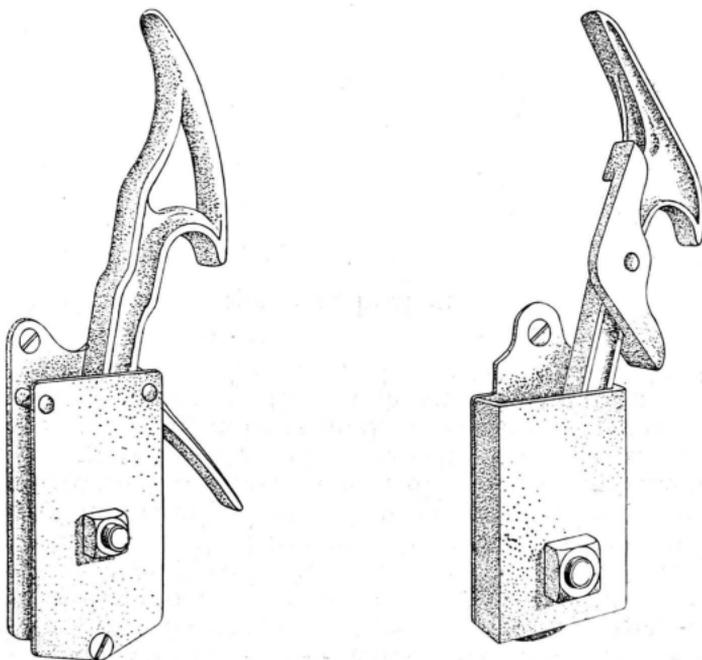
4.08 A paraffin coating on wood is slippery and may be the cause of an accident. To remove paraffin from the ladder, first scrape the excess off with a shave hook or other edged tool and then rub the surface vigorously with a rag saturated with trichloroethylene, turpentine, or mineral spirits.←

4.09 When the paint on a ladder is worn excessively, the ladder shall be repainted with an approved paint in accordance with the Company's established routine.

### Care of Ladder Locks and Pulley

4.10 Keep locks, springs, and pulleys on extension ladders well lubricated by applying oil on the movable parts at least once a month. This will not only make them operate more easily but will also add to their service life. See that locks are securely fastened to the side rails. Test each spring to see that it is capable of returning the catch to position and examine the keeper to see that it operates properly. See that the pulley is held securely at the middle of the rung.

4.11 The types of locks with which the standard ladders are equipped are illustrated below.



### Care of Ladder Locks and Pulley

4.12 Wheel spurs, the notches of which are dull or have become worn ( $\frac{1}{3}$  the depth of the notch), shall be adjusted. To do this, remove the nut with a wrench and then remove lock washer and bolt provided with a square shoulder on the shank. Turn notched wheel 90 degrees so as to bring the sharp teeth into the proper position for use (down) and replace

the bolt with the shoulder registering in the plates and wheel spur. Replace the washer and nut and tighten the nut securely.

4.13 Do not change the position of a wheel spur on only one side of ladder; always change both, even though one is not badly worn.

## **5. DISPOSITION OF LADDERS REQUIRING REPAIRS**

5.01 Sections of ladders which have developed major defects (see Part 3) shall be withdrawn from service for repairs or destruction. Employees in the field shall see that such ladder sections in their possession are returned to the storeroom tagged or marked "Dangerous, Do Not Use" and, if practicable, the ladder shall be marked to show the location of the defect. If the Company has established the practice, employees remote from the storeroom shall destroy and dispose of junk ladders on the job if instructed to do so by the supervisor. Sections of ladders with the following defects shall be considered junk unless they are required in connection with an investigation that may be made to determine the cause of an accident or a ladder failure.

- (a) Side rails broken.
- (b) More than one rung broken.