

## TESTING SUSPENSION STRAND

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### 1. GENERAL

1.01 This section covers the methods of testing the soundness of aerial cable suspension strand.

1.02 This section is reissued to include testing self-supporting cable and pole to building spans, to change the size of the rope required for use in making mechanical tests, and to provide for repair or replacement of strand that has been in contact with a power wire.

1.03 Since this reissue covers a general revision, marginal arrows ordinarily used to indicate changes have been omitted.

1.04 Before placing a cable car, ladder, or splicing platform in a pole to pole span, a ladder in a pole to building span, or before performing any work operation which involves shifting the strand or varying the strand tension in the span, the entire span should be checked from the ground and the strand *given a mechanical test* to determine its soundness, except as indicated in Part 4.

*Note:* In no case shall a platform or cable car be suspended from any size strand which is attached to a building.

### 2. PRECAUTIONS

2.01 Vehicles, tools, and equipment that might be damaged as a result of strand breakage should not be located under the strand when it is being tested. Only the individuals involved in making the test should be permitted in the work area.

2.02 On joint use lines or at power crossings, the rope used for testing shall not be thrown over the strand. Pass the rope over the strand with a tree pruner handle or place it over the strand at the pole and move the rope along the strand to the desired location.

2.03 Do not make a mechanical test of a span that crosses over electric light, power, or trolley wires. Follow procedures outlined in 4.01.

2.04 Do not make a mechanical test of a span that crosses over the main line of a railroad. Procedures to be followed in testing spans that cross railroad tracks are outlined in 4.03 and 5.01.

2.05 Do not make a mechanical test of a strand that has been in contact with an electric power wire. Follow procedures outlined in 4.04 and 6.04.

### 3. TESTING THE STRAND

3.01 Before testing suspension strand or the strand of self-supporting cable, examine the span from the ground for:

(a) The presence of power crossings, power clearances, etc, that may prevent testing the strand.

(b) Strand abrasion or corrosion, particularly at points of tree interference, strand splices and dead ends, strand attachments, etc , and for any other irregularities of the strand,

cable, lashing wire, or rings which may require attention. Observe the strand of self-supporting cable closely as the covering on this strand may hide possible defects.

**TESTING STRAND PRIOR TO PLACING LADDER**

**3.02** Before placing a ladder against suspension strand or the strand of self-supporting cable, the strength of the strand and its supports should be tested in the following manner.

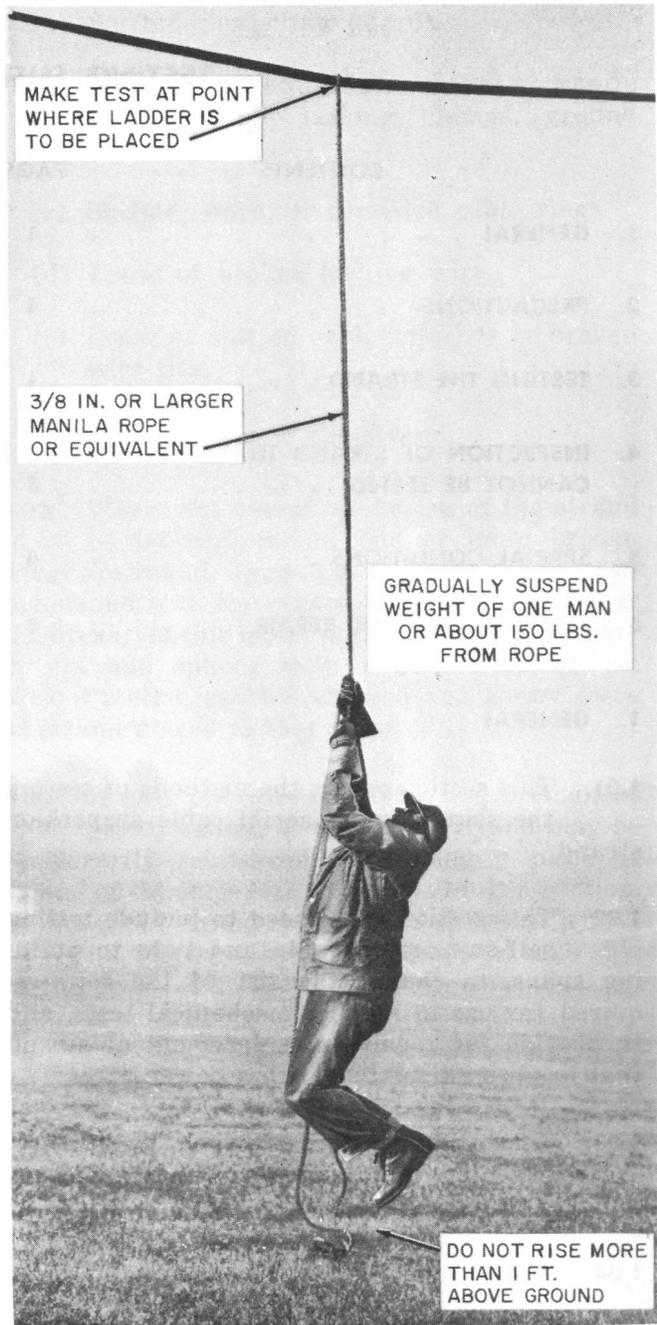
- (1) Throw or place the handline (see 2.02) over the strand at the point where the ladder is to be placed.
- (2) The workman who will work from the ladder should grasp the two ends of the handline and gradually apply his full weight to the strand by lifting himself slowly off the ground (Fig. 1).

**3.03** Be alert for visual or audible signs of weakness. A strand and its supports which will support the workman without showing any signs of failure or slippage have ample strength to support the ladder and the workman.

**TESTING STRAND PRIOR TO PLACING AERIAL PLATFORM OR CABLE CAR**

**3.04** Before placing an aerial platform or a cable car on suspension strand, the strength of strand and its supports should be tested in the following manner.

- (1) Throw or place the handline (see 2.02) over the strand at midspan.



**Fig. 1 — Testing Strand Prior to Placing Ladder**

(2) Two workmen should grasp the two ends of the handline and gradually apply their full weight to the strand by lifting themselves slowly off the ground (Fig. 2).

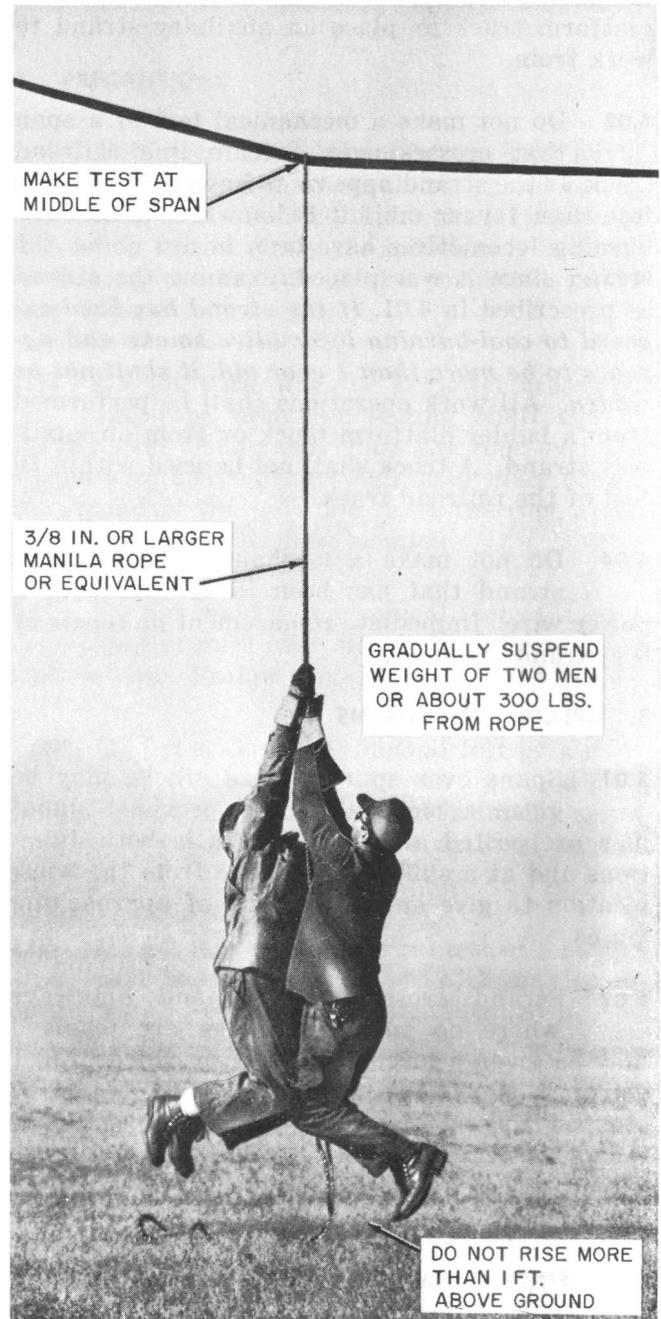
**3.05** The equivalent of the two-man test may be made by attaching one end of the handline to some suitable anchorage, such as the bumper of the truck or a tree, located under or nearly under the strand at midspan. Pass the free end of the handline over the strand and gradually support one man's weight on the handline.

**3.06** Be alert for visual or audible signs of weakness. A strand and its supports which will support the weight of two men without showing any signs of failure or slippage have ample strength to support a properly placed platform and two men or a cable car and one man.

#### 4. INSPECTION OF STRAND THAT CANNOT BE TESTED

**4.01** Do not make a mechanical test in spans that cross over electric light, power, or trolley wires. Make a careful visual inspection of the span from the ground. Then, from a working position on the poles, examine the strand adjacent to each of the supporting poles. If any of the following defects are found, the strand must be repaired before performing any work operation that will place an additional load on the strand.

- (a) *Corrosion of the strand* to the extent that no galvanizing remains.
- (b) *Strand wire breaks* in one or more of the strand wires.
- (c) *Excessive strand wear* caused by rings, tree interference, cable guards, etc.
- (d) *Any loose attachments* affecting the structure within reach of the workman.



**Fig. 2 — Testing Strand Prior to Placing Aerial Platform or Cable Car**

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**4.02** If any defects are found and work operations must be performed on the cable prior to making repairs on the strand, use a ladder platform truck or place an auxiliary strand to work from.

**4.03** Do not make a mechanical test of a span that crosses over a main line railroad track. If the strand appears to have been in place less than 1 year or if it is known that no coal-burning locomotives have been in use under the strand since it was placed, examine the strand as prescribed in 4.01. *If the strand has been exposed to coal-burning locomotive smoke and appears to be more than 1 year old, it shall not be ridden.* All work operations shall be performed from a ladder platform truck or from an auxiliary strand. A truck shall not be used within 10 feet of the railroad track.

**4.04** Do not make a mechanical test of any strand that has been in contact with a power wire. Immediate replacement or repair of the strand is necessary.

**5. SPECIAL CONDITIONS**

**5.01** Spans over spur railroad tracks may be given a mechanical test provided signal men are posted along the tracks in both directions and at a sufficient distance from the work location to give ample warning of approaching trains.

**5.02** Strand crossing streets and highways where no power crossings are involved may be given a mechanical test provided proper warning signs are posted and all traffic is stopped during the test. For those locations where the traffic cannot be stopped, do not make a mechanical test, but follow the procedures in 4.01.

**6. MAINTENANCE AND REPAIR**

**6.01** Conditions found during the inspection or test which necessitate repairs include:

- (a) Shifted protecting guards.
- (b) Loosened suspension clamps, grade clamps, cable lashing clamps, ground clamps, etc.
- (c) Shifted, worn, or corroded cable rings.
- (d) Loose or broken lashing wire.
- (e) Loose or shifted cable supports or broken wire ties.
- (f) Broken wires in the strand.

**6.02** Where the overall corrosion of the strand is not serious but one or more broken wires are found, apply a B Strand Connector to the strand with the center of the connector over the break. If this is not possible, the strand may be cut and spliced with a Strandlink or the broken section can be removed and a new piece of strand placed at that point.

**6.03** If only one wire is broken and permanent repair cannot be made, the strand may be temporarily reinforced by placing a piece of strand of the same size across the broken portion. This piece of strand should be of sufficient length to permit placing 3-bolt guy clamps on each side of the break as follows:

SIZE OF STRAND	NUMBER OF 3-BOLT GUY CLAMPS ON EACH SIDE OF BREAK
6M	2
10M	3
16M	4
25M	5

**6.04** Strand that has been in contact with a power wire shall be repaired by replacing a minimum of 2-1/2 feet of strand on either side of the point of power contact. If a single point of power contact cannot readily be determined, the entire span should be replaced.