BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G52.141.1
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AT&T Co Standard

CABLE DANCING—GENERAL

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1. GENERAL

1.01 This section replaces Issue 1 and is rewritten to cover general information on dancing or oscillating cables. Information formerly contained in this section concerning methods for reducing or preventing dancing on lines carrying two cables is now covered in Section G52.141.2.

1.02 Unless precautions are taken to reduce and limit dancing, strand and sheath failures due to fatigue or crystallization will result. Damage to cable sheath may also result from the impact of a cable against rings, hardware, poles or an adjacent cable.

2. DISCUSSION OF CABLE DANCING

2.01 Cable dancing has been experienced at widely scattered locations in the plant. While the majority of dancing and damage to cable, strand, etc., resulting therefrom has, in the past occurred on lines carrying two cables on opposite ends of cable suspension bolts, the frequency of dancing on single cable lines has increased in recent years with the increasing use of aerial cable construction in rural areas. While the presence of trees or structures on the side of the prevailing wind and immediately adjacent to the line may provide sufficient shielding to prevent the occurrence of dancing, scattered trees or structures some distance from the line may tend to set up turbulent air currents conducive to dancing.

2.02 Cables are more likely to dance in relatively high velocity cross-winds, but dancing may occur at wind velocities as low as 15 miles per hour. While dancing may

originate and be confined to only one span, other spans in the line may quite frequently be found dancing simultaneously. Also adjacent spans may be found dancing where one controlling span may have set the other spans in motion. Points of discontinuity in the line, such as corner poles, load fixtures or short spans tend to resist or confine dancing.

2.03 Dancing cables can not be restrained completely under all conditions. Corrective measures should be applied where such motion under severe conditions would be expected to result in plant damage.

3. DETECTION OF DANCING

3.01 Dancing cables can be identified either by observation or inspection.

3.02 **Observation:** In areas where conditions are favorable to dancing, observations should be made periodically under varying wind velocities to ascertain whether dancing is occurring. Observations should be continued over a period of several months before reaching a conclusion that no dancing is being experienced. It should be kept in mind that a small amount of dancing motion in single cable lines is tolerable and will not subject the plant to damage. In those lines where two cables are supported on the same suspension bolt the tolerable motion would be less than that on a single cable line. This is to prevent damage resulting from one cable striking the other. If dancing is observed at any time, apply temporary measures as outlined in Part 4 and report the location to your Supervisor immediately.

3.03 **Inspection:** Cable lines on which dancing has occurred usually exhibit some damage to the cable, strand, attachments, etc., which can be found by inspecting the plant. Where evidence of damage due to dancing is found on inspection, report the location to the Supervisor immediately. Among the evidences of damage due to dancing are the following:

(a) Failure of suspension strand or individual suspension strand wire at or near the edge of a 3-bolt suspension or guy clamp.

(b) Failure or bending of cable suspension bolts or guy bolts.

(c) Sheath abrasion caused by contact with rings, lashing wire, suspension strand or hardware on adjacent cable.

(d) Cable looped over the suspension strand.

(e) Broken lashing wire at terminating points and in the span.

(f) Broken wires of aerial cable supports.

(g) Movement of lashed cable supports and spacers toward the pole.

(h) Ring cutting, particularly cutting in the span and displaced cable rings at shield locations, ring markings on sheath adjacent to existing ring positions, etc. Since similar conditions may also result if ring supported cables on a grade are not properly held by grade clamps or if slack has been cut into the strand, these possibilities should be evaluated before concluding that dancing has occurred.

4. TEMPORARY MEASURES FOR PREVENTING DANCING

4.01 If dancing is observed, particularly where two cables are supported on one bolt, and plant damage may be expected to result from such dancing if it continues, it is necessary to take immediate measures to prevent or restrict the motion of the cable.

4.02 Rope lines can be used to tie the cables to trees, digging bars or anchors as a temporary expedient pending the installation of permanent arrangements for reducing or preventing this motion. The most effective single tie-down can be placed at approximately the 1/4 or 1/3 point in each span. When using such a rope tie it is desirable to leave some slack in the rope in order to permit the rope to check the dancing action of the cable. If slack is not left in the rope while the condition of dancing prevails a fixed point will be set up at that location and dancing will occur in the short spans between the rope tie and the two adjacent poles.

4.03 In some locations dancing may be so severe that a single rope tie will not be effective. In this event, the motion of the cable may be brought under control by placing two or more tie-downs per span, for example, at the 1/4 and 2/3 span locations, or at the 1/4, 1/2 and 2/3 span locations.