OPEN WIRE REPAIRING

Contents

1. GENERAL

1.01 The forces engaged in the repair of exchange and toll open wire and associated plant should be familiar with the authorized construction and maintenance practices involved and should be guided by such practices as well as by those included in this section.

1.02 The following are some of the general principles which should be applied in making repairs to exchange and toll open wire and associated plant:

(a) Correct the condition which has caused or is likely to cause service impairment, following standard practices in doing the work, except as noted in (b) below.

(b) There may be many cases where existing plant does not conform to the latest standards. It is not usually economical or necessary, unless service or safety is involved, to bring such conditions into conformity with present standards.

(c) Temporary repairs should be avoided whenever possible. When unable to permanently repair defects or correct hazardous conditions, the workman shall be governed by local instructions from the supervisor.

(d) Any dangerous plant conditions which cannot be corrected by the workman should be reported in accordance with local instructions.

(e) New wire of the same type and size should be used when it is necessary, on account of wire breaks or other defects, to splice in a new piece of wire. When splices already exist in the span, they should be cut out if they are within 25 feet of the new splice to be made.

(f) Care should be exercised at all times to avoid causing any service interruptions. In this connection it may in some cases be necessary to arrange with the toll testboard or wire chief for the temporary assignment of a circuit for calling in or testing purposes.

(g) When work is to be performed on any circuit or group of circuits, information should be obtained as to the character of any toll circuits and special services that may be involved, such as carrier systems, radio broadcasting, teletypewriter, important tie lines, battery feeders, etc. On work involving repairs that may cause service interruptions, the toll testboard or wire chief should be notified in advance in order that, if necessary, arrangements may be made for the release or rerouting of the circuits involved. Upon completion of the work the toll testboard or wire chief should be so advised and an O.K. test secured. Before making any repairs on a circuit that may cause service interruptions, the workman should be sure that the circuit is not in use. Suitable precautions should be taken to prevent interference to circuits other than those being worked on.

(h) When extensive repairs or replacements of poles and open wire plant are required that may cause service interruptions, consideration should be given to the placing of parallel or twisted pair wire or emergency cable.

(i) Before descending a pole on which work has been done or leaving a job that has in any way disturbed the wires, see that all wires are clear and in proper condition.

2. CLEARANCES

2.01 When repairs or changes are made in open wire, the clearances specified in the Practices shall be maintained and the instructions outlined therein followed.

2.02 When slack is pulled or wire attachments are raised on poles, care must be exercised to see that clearance or separation requirements are complied with.

2.03 When clearances from electric wires or structures require correction, the telephone plant should be changed or the power company requested to rearrange their plant. When the telephone plant is to be changed to provide the required clearances, the methods outlined in the sections covering the particular type of plant involved should be followed.

2.04 When clearances over highways, sidewalks, railroads, etc., require correction, the clearances specified in the Practices and instructions covering railroad crossings, should be obtained. Greater clearances should be obtained when practicable and desirable and when required by public regulations, agreements or special conditions.

2.05 The usual methods for correcting inadequate clearances under normal conditions are as follows:

(a) Correct excessive sag of wires.

(b) Raise or lower wire attachments on poles. When other methods are impracticable or undesirable this can usually be accomplished, except where carrier systems are involved, by reducing the space between crossarms. See instructions covering placing crossarms.

(c) Replace existing poles with poles of different height.

(d) Place additional poles of suitable height.

(e) When it is not possible to obtain the required clearances by any of the above methods the condition should be reported to the supervisor so that some other method of obtaining the required clearances may be given consideration.

3. SAG

3.01 When it is necessary to cut out or introduce slack in bare wire because of non-uniform or incorrect sag the work should be done in accordance with the instructions covering placing open wire.

3.02 In repairing parallel or twisted pair wire in line spans the sag should conform to the Table of Sags shown in Section 625-400-200.

4. SCRAP OR DEBRIS

4.01 All foreign material such as scrap wire, metallic objects or debris of any kind hanging on wires should be removed. The following are some of the methods that may be used:

(a) Shake or whip wire or wires involved to dislodge material.

(b) Untie wire to permit more vigorous shaking or whipping action.

(c) Place tension on wire by holding down with one hand while snapping wire with the other hand to cause vibration. Pliers or other tools that might damage the wire, shall not be used to snap or vibrate the wire.

(d) Throw or place hand line over wire involved. Hold both ends of hand line and slide it along wire to engage the foreign material. Pull material to a point where it can be removed from wire.

(e) Use tree trimmer to dislodge or to cut out debris.

(f) Use ladders when necessary and conditions permit.

4.02 When other methods are not effective it may be necessary to:

(a) Untie and lower wire.

(b) Cut wire and lower to the extent necessary to dislodge material.

4.03 Scrap wire, metallic material and debris that are removed from wires together with that found under and in the immediate vicinity of the line, should be gathered up and properly disposed of.

5. TREE INTERFERENCE

5.01 Where tree interference exists, trees should be removed or pruned in accordance with the instructions covering Tree Pruning. If permission can be secured, it is generally desirable to entirely remove the interfering trees or growth. When this is impracticable or undesirable, remove sufficient growth to obtain adequate clearance from the wires. The amount of clearance required in any specific case will depend upon the kind of tree, rate of growth, frequency of inspection, etc. Cutting to obtain clearances of a foot or so around the wires is generally inadequate as the tree will grow back into the line within a short time. In cases where permission to trim for adequate clearances cannot be obtained it is usually desirable to trim for such clearances as will be allowed by the owner. In these cases and also in cases where the owner will not allow trimming of any nature the matter should be referred to the supervisor.

5.02 Where tree wardens, city foresters or other authorities have control of trees, secure permission from the proper authorities as well as the consent of the property owner before work is started.

5.03 All timber, brush and debris cut or pruned should be disposed of as specified in the instructions covering Tree Pruning or in accordance with local instructions.

5.04 Where it is not practicable to remove or trim trees, extension arms may sometimes be used to secure adequate clearances; or pins may be respaced to change the location of wires through the trees to obtain satisfactory clearances provided that the proper spacing of wires can be obtained where carrier circuits are involved.

5.05 The use of tree wire (or insulated wire) as a means of maintaining line insulation is not in general desirable because of the relatively short life of the insulation when in contact with foliage and, therefore, should be used only when it is otherwise impracticable to obtain satisfactory clearances from interfering tree growth. When it is necessary to use tree wire (or other insulated wire) the wire shall be placed as specified in the instructions covering tree wire or drop wire.

5.06 Tree guards that are defective should be replaced. Tree guards that have slipped on the wire to the extent that they do not prevent abrasion to insulation should be reinstalled to afford proper protection. Where tree guards are required they should be placed as outlined in Section 625-450-200.

Note: Tree guards should never be placed over portions of the wire on which the insulation is abraded and has not been repaired.

6. WIRE

6.01 Bare wire, deteriorated to the extent that service has been impaired or that its condition constitutes a potential hazard to service, should be replaced. In connection with such replacements, it is usually desirable, either from a preventive maintenance standpoint or for reasons of economy, also to include the replacement of wire that is deteriorated so that it shortly will constitute a potential hazard to service. The extent of such replacements should be based upon local conditions, as well as upon the judgment of the workman or supervisor.

6.02 When the insulation on covered wire is abraded to the extent that repairs are necessary, the methods outlined in Section 625-800-305 should be followed.

6.03 When the insulation on covered wire is weather-worn or deteriorated to the extent that service is or may be impaired because of low insulation, it is usually advisable to replace the entire length of defective wire.

6.04 Kinks, bruises, flaws, or other faults in bare wire, which require repairs, should be cut out, and the wire spliced. When there is not sufficient slack in the wire to make the splice, cut in a piece of wire of the same kind and size as the line wire.

6.05 Kinks or other faults in parallel or twisted pair wire should be repaired as outlined in Section 625-800-305.

6.06 Kinks or other faults in tree wire, which require repairs, should be cut out as outlined in paragraph 6.04. See the instructions covering tree wire.

6.07 When necessary to repair short lengths of defective bridle wire, such as between open wire and terminal, replace rather than splice in piece. Replace bridle wire that contains splices.

6.08 Where a working pair in bridle cable has become defective transfer the circuit to another pair in the cable. If a phantom group is involved, the group should be transferred to another quad in the cable. In the event that no spare pairs or quads are available, repairs can usually be made by cutting in bridle wire parallel to the cable. When repairs are made by the latter method, advise your supervisor so that, if necessary, arrangements may be made for the replacement of the bridle cable.

7. CONNECTIONS

7.01 Sleeve splices in toll wire which are found to be defective should either be removed by making new sleeve splices in the standard manner, as shown in Section 623-030-200 and the instructions covering splicing open wire or should be soldered in accordance with local instructions. Defective sleeve splices in exchange wire should be replaced with standard sleeve splices.

7.02 Hand made or other types of unauthorized or obsolete splices, joints or connections that are causing trouble or have been reported for removal should be cut out and the wires spliced in accordance with standard practices.

7.03 Where there is not sufficient slack in the wire to make the new splice, cut in a piece of wire of the same kind and size as the line wire.

7.04 Making a splice within 25 feet of an existing splice in the same wire in any one span should be avoided.

7.05 Defective soldered splices, joints or connections should be remade in the standard manner.

7.06 Loose connections on toll line test and bridging connectors, binding posts, and terminals, should be repaired by disconnecting the wires, thoroughly cleaning both the wires and contact surfaces and remaking the connections properly. Defective test or bridging connectors should be replaced.

8. TIES

8.01 Replace broken and missing ties with new ties of the proper size and type as specified in the instructions covering tying open wire.

8.02 Replace loose ties when line wire has pulled out of insulator groove.

8.03 When removing or placing ties, use care to avoid injuring the line wire.

9. INSULATORS

9.01 Replace defective, improper type, or missing insulators in accordance with the instructions covering placing insulators.

9.02 Insulators that have pulled off pins or brackets should be securely reinstalled. If the threads are stripped or worn the pins or brackets should be replaced.

9.03 Defective interconnecting pin straps or wires should be replaced. Wires or straps which have become loosened or detached from pins should be securely reattached.