DROP AND BLOCK WIRING

LOWERING AND REPLACING DROP WIRE

VOLTAGES LESS THAN 300 INVOLVED

1. GENERAL

1.03 The procedures outlined herein apply specifically to the conditions usually encountered where the drop wire does not cross over trolley or trolley-bus contact wires or over power wires or power cables operating at 300 volts or more. The basic principles presented in this section should also be observed in those cases where conditions necessitate a departure from the usual procedures.

1.04 The methods outlined herein are such that the drop wire is lowered, raised, or replaced by means of a handline while the employee remains on the ground where he can observe traffic, control the wire to prevent its striking persons or damaging property, and remove the wire from a street or highway quickly. An exception is made in certain cases where a wire, which does not cross a street or highway, may be dropped from a pole. The methods are intended also to avoid the possibility of accidents caused by releasing wire under tension from a building or strand attachment while working from a ladder or as the result of vehicles striking the wire as it is being lowered to the ground.

1.05 Refer to Section 462-800-312 for the methods of lowering or replacing a drop wire which crosses over trolley or trolley-bus contact wires or over power wires or power cables operating at 300 volts or more. The methods of placing drop wires are covered in Sections 462-400-205 and 462-400-206.

2. PRECAUTIONS

2.01 Obtain assistance before lowering a drop wire, raising a lowered drop wire, or replacing a drop wire over streets, highways, or elsewhere if traffic, tree, or other conditions are such that one man cannot do the work safely.

2.02 Rubber gloves shall be worn by all employees when performing all operations in which the handline or the drop wire may come in contact with power wires or power cables.

2.03 The handline used for lowering, raising, or replacing a drop wire under the conditions outlined in this section shall be free from metallic strands and shall preferably be dry. However, if weather conditions are such that it is impracticable to keep the handline dry, a wet handline may be used for lowering, raising, or replacing a drop wire over secondary electric service wires operating at less than 300 volts.

2.04 In general, one 50-foot and one 100-foot 3/8-inch handline will be needed for the operations outlined in this section and Section 462-800-312. The handlines should be served at the ends to prevent unraveling.

2.05 When it is necessary to carry a handline up a pole or ladder, double the end of the handline back on itself for a distance of approximately one foot and place this loop under the right or left side or back of the body belt or in such other position that the handline will be released readily if it is placed under tension while the employee is climbing the pole or ladder.

2.06 Never release the drop wire supports from a wire span while working inside the angle formed by the wire.

2.07 Avoid working from a ladder placed against a building with the side rails crossing a wire run or in any other position where movement of the wire, due to loosening of the attachments, would cause an accident.

2.08 When a drop wire attached to a span clamp is to be lowered or replaced, place the foot of the extension ladder on the field side of the suspension strand and not in the street or highway. If there is no street or highway adjacent to the span clamp, place the ladder preferably against the opposite side of the strand from the drop wire run to the building.

2.09 If conditions are such that the handline, or the drop wire to which it is attached, may become disengaged from a drive hook or crossarm or may slide along the strand or guard arm while doing the work outlined in this section, the handline or drop wire shall be enclosed with a temporary guide loop. This loop shall consist of a short length of wire or houseline placed over the handline or drop wire with the ends of the guide securely tied as follows:

- Drive Hook: Tie one end to the vertical portion of the drive hook and lash the other end to the pole.
- Crossarm: Tie the ends to adjacent pins or insulators.
- Guard Arm: Tie the ends to the guard arm on each side of the handline or drop wire.
- Strand: Tie the ends to the strand or the strand and lashed cable on each side of the handline or drop wire, or place the handline or drop wire through the hook of a span clamp.

3. LOWERING WIRE WHICH CROSSES A STREET OR HIGHWAY – WIRE ATTACHED TO POLE

Caution: The lowering of a taut drop wire span requires that special precautions be taken to ensure that the wire is lowered safely. These special precautions are covered in Part 6 of this section.

Handline Lowering Method

3.01 Lower the drop wire from its position on the pole (drive hook, guard arm, or crossarm) in accordance with the following sequence of operations.

(1) Lash a handline securely to the base of the pole at a point on the handline which will leave a sufficient length on the ground so that this end will be accessible from the ground until the wire has been lowered to the street.

(2) Place the other end of the handline over the strand, guard arm, drive hook, or crossarm so that this end is toward the building and reaches the ground. If practicable, the handline may be formed into a coil at one end and thrown over the strand. If the drop wire passes through a tree in the immediate vicinity of the pole attachment, place the handline so that it follows the route of the wire through the tree. A wire raising tool may be used to facilitate this operation. After the handline has been placed, tie it to the base of the pole to avoid interference with pedestrians or vehicles.

Caution: The handline shall not overhang the street unless it is properly guarded. If practicable, park the telephone company car so that it will shield the handline.

(3) Disconnect the drop wire from the terminal and remove the free end from the wiring rings on the pole.

(4) Place a temporary drop wire clamp on the wire to be lowered, about one foot out in the span. Seat the clamp firmly on the wire.

(5) Tie a loop of the handline to the tail of the temporary drop wire clamp so that the lashed end of the handline is sufficiently taut to remove tension from the original drop wire clamp.

(6) Remove the original drop wire clamp from the wire span, thus leaving the wire supported by the temporary drop wire clamp and the lashed handline.

(7) Return to the ground. Untie the handline from the base of the pole and, when no vehicles or pedestrians are approaching, lower the drop wire to the ground by pulling that portion of the handline toward the building. The portion of the handline on the opposite side of the strand should pass through the employee's hand as shown in Fig. 1 in order that he may be able to pull the handline in either direction to work the drop wire among the branches of a tree or to raise the wire quickly if necessary.

(8) After the wire has been lowered to the street or highway, remove the temporary drop wire clamp from the wire, tie the handline to the base of the pole, and remove the wire from the street or highway.

4. DROPPING WIRE WHICH DOES NOT CROSS A STREET OR HIGHWAY – WIRE ATTACHED TO POLE

Caution: The lowering of a taut drop wire span requires that special precautions be taken to ensure that the wire is lowered safely. These special precautions are covered in Part 6 of this section.

4.01 A wire span may be dropped from a pole provided conditions are such that: (a) the wire span does not cross a street or highway or over power wires or power cables, (b) a taut wire span is not involved, (c) the wire will not be struck by a passing vehicle, and (d) the wire will not fall on pedestrians or cause damage to property as a result of being dropped to the ground. If any of these conditions are present, the span shall be lowered by the handline method as covered in Part 3.

5. LOWERING WIRE ATTACHED TO A SPAN CLAMP

Caution: The lowering of a taut drop wire span requires that special precautions be taken to ensure that the wire is lowered safely. These special precautions are covered in Part 6 of this section.

5.01 The lowering method covered in this part applies to all drop wire spans attached to span clamps.

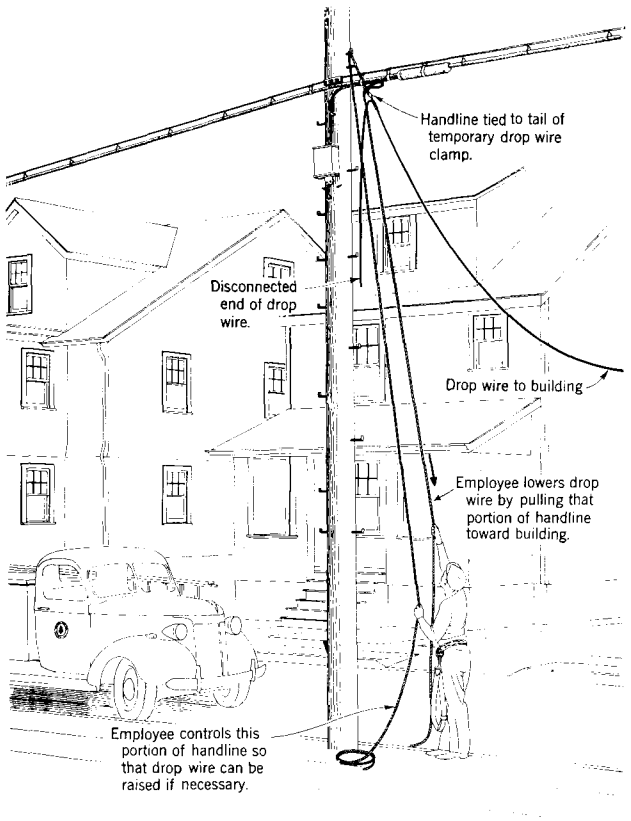

Fig. 1 – Lowering Drop Wire

Precautions

5.02 The following precautions shall be observed when lowering a drop wire attached to a span clamp in order that the work may be done in a safe manner.

(a) Place the extension ladder at the location of the span clamp as outlined in 2.08.

(b) When climbing the extension ladder to work at a span clamp, the strand is forced out of line. The distance the strand is deflected depends on the tension in the strand, the weight of the cable, and the combined weight of the man and ladder. Therefore, while the employee is climbing the ladder, it is important that he observe the effect of the strand deflection on all drop wires attached to the section of strand in which he is working. The principal conditions to be observed are:

(1) Where drop wire crosses a street or highway, avoid placing additional sag in a drop wire span which would create a

traffic hazard, unless traffic is properly controlled.

(2) Where drop wire does not cross a street or highway, avoid placing excess tension in a drop wire span which may pull out the first building attachment, thereby causing property damage and sudden movement of the strand while the employee is climbing the ladder. See 6.04 for the method of releasing excess tension in a drop wire span.

5.03 Lower the wire from the span clamp in accordance with the following sequence of operations:

(1) Detach the drop wire first from the pole and lower this end of the wire run to the ground.

(2) Coil the drop wire and place it on the ground near the ladder in order to avoid accidents resulting from vehicles striking it or pedestrians tripping on it.

(3) Place a handline over the strand and lower the drop wire as outlined in Part 3, except that the handline shall be lashed to the lower rungs of the extension ladder if it cannot be fastened to a nearby pole or tree.

6. LOWERING TAUT WIRE

6.01 The method outlined in this part covers the special precautions which shall be taken when lowering a taut drop wire span and it applies to the lowering of all taut wire spans whether or not they cross streets or highways.

Taut Span from Pole

6.02 When it is necessary to lower a taut drop wire span from a pole, proceed as follows:

(1) Place a handline over the strand, guard arm, drive hook, or crossarm so that the end of the handline toward the building just reaches the ground.

(2) Disconnect the drop wire from the terminal and remove the free end from the wiring rings on the pole.

(3) Place a temporary drop wire clamp on the wire to be lowered, about one foot out in the span. Seat the clamp firmly on the wire.

(4) Tie a loop of the handline securely to the tail of the temporary drop wire clamp.

(5) Return to the ground. Pull the long end of the handline sufficiently taut to remove tension from the original drop wire clamp and lash the handline securely to the base of the pole, thereby supporting the taut wire span by means of the temporary drop wire clamp and the lashed handline.

Caution: Exercise care to avoid placing more tension in the drop wire span than is necessary to remove tension from the tail of the original drop wire clamp.

(6) Climb the pole and check to ensure that the tension in the drop wire span has been removed from the tail of the original drop wire clamp.

(7) Cut the tail of the original drop wire clamp with pliers.

(8) Return to the ground. Untie the handline and slowly ease off the long end of the handline, thereby releasing excess tension in the taut drop wire span. When no vehicles or pedestrians are approaching, lower the wire span to the ground by pulling the short end of the handline. The long end of the handline should pass through the employee's hand in order that he can raise the wire quickly if necessary.

Taut Span from Span Clamp

6.03 The procedure outlined in Part 5 also applies to the lowering of a taut drop wire attached to a span clamp, except that the excess tension in the drop wire span shall first be released.

6.04 Release the excess tension in the drop wire from the building end of the span as follows:

(1) Remove the C knob or the SC wire clip and the associated loop of drop wire from the first building attachment. Do not remove the drop wire clamp which supports the wire span.

(2) Attach a temporary guide loop to the first building attachment, such as shown in Fig. 2, to prevent the handline used in releasing the excess tension from becoming accidentally disengaged from the building attachment.

(3) Place a temporary drop wire clamp on the wire to be lowered, about one foot out in the span. Seat the clamp firmly on the wire.

(4) Place a handline over the first building attachment and through the temporary guide loop. Tie the handline securely to the tail of the temporary drop wire clamp.

(5) Return to the ground. Pull the handline sufficiently taut to remove tension from the original drop wire clamp and lash the handline to a substantial and secure support near the base of the building.

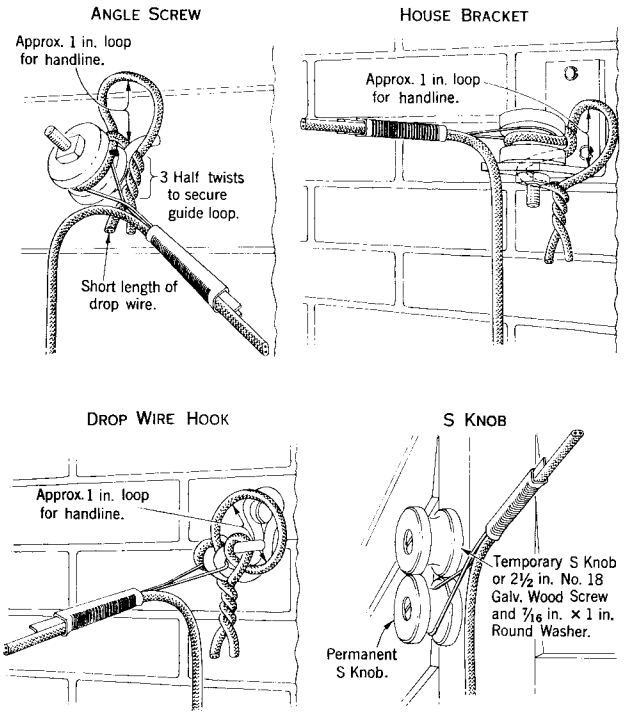

Fig. 2 — Temporary Guide Loop

Caution: Exercise care to avoid placing more tension in the drop wire span than is necessary to remove tension from the tail of the original drop wire clamp.

(6) Check to ensure that the tension in the drop wire span has been removed from the tail of the original drop wire clamp.

(7) Cut the tail of the original drop wire clamp with pliers.

(8) Return to the ground. Untie the handline and slowly ease off the handline, thereby releasing excess tension in the taut drop wire span. Retie the handline to a substantial and secure support near the base of the building.

Note: If the amount of slack introduced into the drop wire span is not sufficient to release the excess tension, remove the wire from one or more of the building attachments beyond the first attachment and, if necessary, cut the wire in the building run.

(9) Proceed as covered in Part 5 for lowering a normal wire span from a span clamp.

7. LOWERING WIRE ATTACHED TO TWO BUILDINGS

7.01 The method described in this part shall be followed in lowering a drop wire span attached to two buildings.

(1) Select the end of the drop wire span at which the following operations can be performed best.

(2) Lower the drop wire run on the building up to the first attachment from which the wire span is to be lowered and remove the C knob or the SC wire clip and the associated loop of drop wire from this first attachment. Do not remove the drop wire clamp which supports the wire span.

(3) Place a handline over the first building attachment so that the end of the handline toward the wire span just reaches the ground. Attach a temporary guide loop to the first building attachment around the handline as illustrated in 6.04 (2) to prevent the handline from becoming accidentally disengaged from the building attachment during the lowering operation.

(4) Place a temporary drop wire clamp on the wire to be lowered, about one foot out in the span. Seat the clamp firmly on the wire.

(5) Tie a loop of the handline securely to the tail of the temporary drop wire clamp.

(6) Return to the ground. Pull the long end of the handline sufficiently taut to remove tension from the original drop wire clamp, lash the handline to a substantial, and secure support near the base of the building, thereby supporting the wire span by means of the temporary drop wire clamp and the lashed handline.

(7) Remove the original drop wire clamp from the building attachment.

(8) Return to the ground. Untie the long end of the handline and lower the wire span by pulling the short end of the handline.

8. RAISING WIRE LOWERED BY HANDLINE METHOD

8.01 When it is necessary to raise a drop wire that was lowered by the handline method, proceed as follows:

(a) Where an intermediate portion of the original wire span is to be replaced or the entire original wire span is to be raised.

Note: The length of wire spliced in as an intermediate portion of the original wire span shall be approximately the same as that which it replaces in order that the drop wire clamp will be within reach of the employee after the wire span has been raised.

(1) After the wire has been repaired, lay it along the ground between the building and the building side of the highway and coil the remaining length of wire.

(2) When no traffic is approaching, carry the coil across the street or highway to the previously placed handline, paying out the wire so that it rests flat on the ground. If a metal or hard rubber-tired vehicle passes over the wire, pull the wire back to the building side of the highway. Inspect the wire for possible injury and replace any portions that are found to be damaged.

(3) Tie the end of the drop wire to the handline as shown in Fig. 3 at a point in that portion of the handline toward the building which will permit the employee to have access to both ends of the handline from his position on the ground during the entire raising operation.

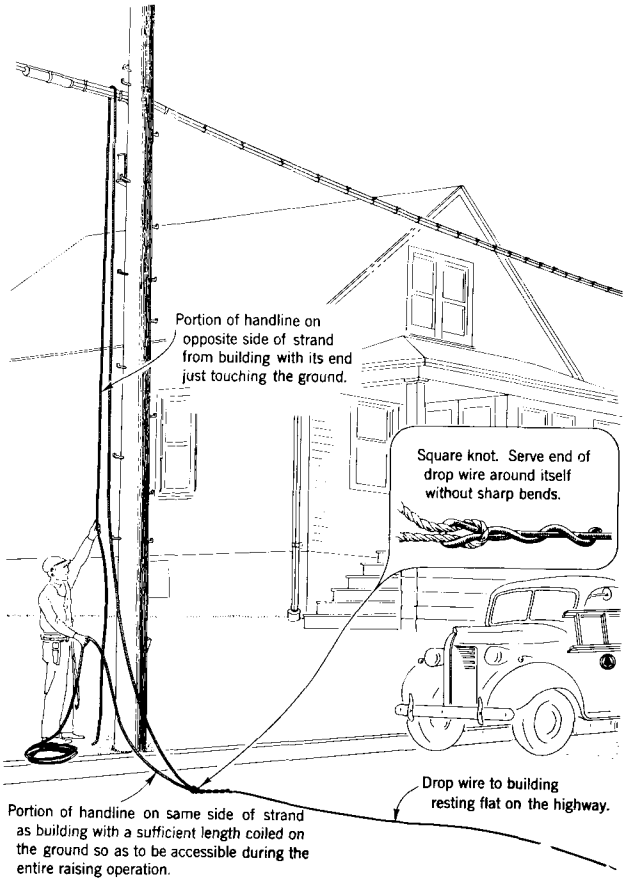

Fig. 3 — Raising the Drop Wire

Note: If the handline has been placed over a drive hook or other support on which the square knot would snag, fasten the wire to the handline as shown in Fig. 4.

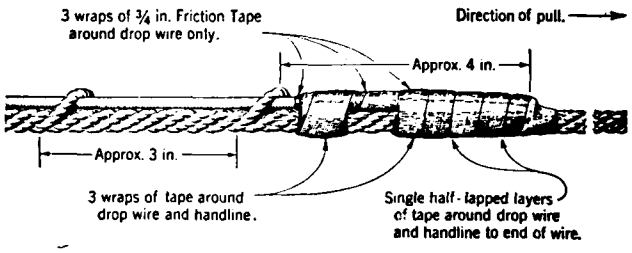

Fig. 4 — Fastening Handline to Prevent Snagging

(4) When no vehicles or pedestrians are approaching, raise the drop wire by pulling that portion of the handline on the opposite side of the strand from the building. The portion of the handline toward the building should pass through the employee's hand in order that he may be able to pull the wire to the ground quickly if necessary.

(5) After the drop wire has been raised to the approximate required height, tie the handline to the base of the pole or, if at a span clamp, to the lower rungs of the ladder.

(6) Climb the pole or, if at a span clamp, the ladder, and attach the drop wire to the pole or strand in a standard manner without removing the handline from the drop wire. When attaching the drop wire to a span clamp, bear in mind that the strand is forced out of line by the ladder resting against it and make any adjustments that are necessary to avoid excessive tension in the wire span when the employee is working from the ladder and also to ensure proper sag and clearance after removal of the ladder.

(7) Remove the handline from the drop wire and complete the connection in a standard manner.

(b) Where the entire original wire span or the end toward the pole or strand is to be replaced.

(1) On the building side of the street or highway, splice the end of the existing wire to the outer end of a coil of drop wire mounted on the drop wire reel.

Caution: The inner end of the coil of drop wire shall be securely fastened to one of the springless spokes of the drop wire reel.

(2) Coil up any excess length of wire on the drop wire reel.

(3) Proceed as in raising a new drop wire over a street or highway. See Section 462-400-205.

8.02 When raising a drop wire between two buildings, provide as much sag as practicable in the wire span, and support the tension in the wire by means of a lashed handline before placing the second drop wire clamp.

9. RAISING WIRE LOWERED BY DROPPING METHOD

9.01 When it is necessary to raise a drop wire that was lowered by the dropping method as outlined in Part 4, proceed as follows:

(a) Where an intermediate portion of the original wire span is to be replaced or the entire original wire span is to be raised.

Note: The length of wire spliced in as an intermediate portion of the original wire span shall be approximately the same as that which it replaces in order that the drop wire clamp will be within reach of the employee after the wire span has been raised.

(1) After the wire has been repaired, lay it along the ground between the building and the pole or span clamp location.

(2) Attach one end of the handline to the tail of the drop wire clamp. The length of the handline shall be greater than the distance from the ground to the drop wire attachment point.

(3) Loop the other end of the handline under the body belt as described in 2.05 and climb the pole or, if at a span clamp, the ladder.

(4) Place the handline over the strand, guard arm, drive hook, or crossarm from the side toward the building.

(5) Raise the drop wire to the approximate required height by pulling the handline over the strand or other support and then lash the handline to the pole or strand.

(6) Attach the drop wire to the pole or strand in a standard manner and then remove the handline. When attaching the drop wire to a span clamp, bear in mind that the strand is forced out of line by the ladder resting against it and make any adjustments that are necessary to avoid excessive tension in the wire span when the employee is working from the ladder and also to ensure proper sag and clearance after removal of the ladder.

(b) Where the entire original wire span or the end toward the pole or strand is to be replaced.

(1) Splice the end of the existing wire to the outer end of a coil or drop wire mounted on the drop wire reel.

Caution: Fasten the inner end of the coil of the drop wire securely to one of the springless spokes of the drop wire reel.

(2) Coil up any excess length of wire on the drop wire reel.

(3) Proceed as in raising a new drop wire elsewhere than over a street or highway. See Section 462-400-205.

Note: If it is necessary to replace only a short length (not more than about 10 feet) at the free end of the drop wire, it may be found more convenient to splice in a length of wire of approximately the same length as that which it replaces and then place a drop wire clamp in the same relative position as that of the original clamp. Raise the repaired wire as outlined in 9.01 (a).

10. REPLACING WIRE NOT LOWERED FOR INSPECTION

10.01 If it is obvious that an entire drop wire span requires replacement and conditions are such that it would be advantageous to pull the new wire into the span as the old wire is pulled out of the span, the method outlined in 10.02 may be followed, provided that:

(a) The existing drop wire span has at least the minimum required clearance over streets or highways or over secondary electric service wires operating at less than 300 volts.

(b) Specific approval to use this method has been obtained from the supervisor.

(c) The operation of the drop wire reel can be observed from the handline location.

(d) The drop wire reel can be located in a stable position so that when the tension in the wire span is transferred to the reel, it will not slide along the ground or fall over.

(e) The existing drop wire span is not taut.

(f) The existing wire does not cross over trolley or trolley-bus contact wires or over power wires or power cables operating at 300 volts or more.

Caution: If all of the above conditions are not met, the workman shall follow the standard method for lowering an existing drop wire span and raising a new drop wire span.

10.02 If conditions permit pulling the new drop wire into place as the old wire is pulled out, proceed as follows:

(1) Remove the C knob or the SC wire clip and the associated loop of drop wire from the first building attachment. Do not remove the drop wire clamp which supports the wire span.

(2) Attach a temporary guide loop to the first building attachment, as illustrated in 6.04 (2), to prevent the replacing drop wire from becoming accidentally disengaged from the building attachment.

(3) Place the drop wire reel near the foot of the ladder on the side away from the wire span and in a stable position.

Caution: Fasten the inner end of the coil of drop wire securely to one of the springless spokes of the drop wire reel.

(4) Set the brake of the reel so that it will hold the tension in the wire span after it is transferred to the reel.

(5) With the drop wire paying off from the bottom of the reel, pass the end of the wire over the first building attachment and through the temporary guide loop at this attachment.

(6) Place a temporary drop wire clamp on the wire to be replaced about one foot out in the span. Seat the clamp firmly on the wire. Tape the front end of the temporary clamp so that it will not foul on the strand, guard arm, or crossarm.

Note: If the drop wire is to be pulled over a drive hook or other support on which the temporary clamp would snag, fasten the end of the wire from the drop wire reel securely to the wire in the span in a manner such as illustrated in Fig. 4.

(7) Tie the end of the wire from the drop wire reel securely to the tail of the temporary drop wire clamp.

(8) Reel up all slack between the drop wire reel and the temporary drop wire clamp so that tension is removed from the original drop wire clamp.

(9) Go to the other end of the drop wire span and lash one end of the handline to the base of the pole or, if at a span clamp, to the lower rungs of the ladder or to a nearby pole or tree.

(10) Loop the other end of the handline under the body belt as described in 2.05 and climb the pole or ladder.

(11) Disconnect the drop wire from the terminal and remove the free end from the wiring rings on the pole.

(12) Place a temporary drop wire clamp on the free end of the drop wire (not in the span) to be replaced. This arrangement eliminates the necessity of pulling the temporary drop wire clamp over the strand, guard arm, drive hook, or crossarm on which it may become fouled.

(13) Tie a loop of the handline to the tail of the temporary drop wire clamp so that the lashed end of the handline is sufficiently taut to remove tension from the original drop wire clamp.

(14) Remove the original drop wire clamp from the drop wire at the pole or span clamp, thereby leaving the wire supported by means of the temporary drop wire clamp and the lashed handline.

(15) Return to building, check to ensure that tension has been removed from the original drop wire clamp, and then cut the wire to be replaced behind the temporary drop wire clamp with pliers.

(16) Return to the pole or span clamp location, untie the handline and, while standing on the ground, pull the new wire into the span, observing the drop wire as it feeds from the drop wire reel to make sure that the brake maintains sufficient tension to prevent the wire from sagging an excessive amount.

(17) When a sufficient length of new wire has been pulled over the strand, guard arm, drive hook, or crossarm for terminating or splicing purposes, lash the old wire to the base of the pole, or to the lower rungs of the ladder. The wire in the crossing span shall be reasonably slack so that there will not be undue tension in the span when placing the drop wire clamp at the first building attachment.

(18) Fasten the new wire span to the first building attachment with a drop wire clamp and then remove the temporary guide loop.

(19) Fasten the new wire span to the pole or strand attachment in the standard manner without removing the old wire which was used as the pulling line. When attaching the drop wire to a span clamp, bear in mind that the strand is forced out of line by the ladder resting against it and make any adjustments that are necessary to avoid excessive tension in the wire span when the employee is working from the ladder and also to ensure proper sag and clearance after removal of the ladder.

(20) Detach the old wire from the new wire and complete the connection in a standard manner.