

## DROP WIRING

### LOWERING AND REPLACING DROP WIRE POWER EXPOSURE UP TO 300 VOLTS

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#### 1. GENERAL

1.01 This practice provides procedures for the one-man method of lowering a drop wire, raising a lowered drop wire, and replacing a drop wire by pulling the new wire into the span as the old wire is pulled out of the span.

1.02 The procedures in this practice apply specifically to drop wire that crosses over power wires or power cables operating at 300 volts or less, or where there is no exposure to power.

1.03 These methods provide for the drop wire to be 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 also intended to avoid the possibility of accidents caused by releasing wire under tension from a building or

2.03 Under the conditions described in this practice, the handline used for lowering, raising, or replacing a drop wire shall be free from metallic strands and shall be dry. However, if it is impracticable to keep the handline dry due to weather conditions, 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 One 50-foot and one 100-foot 3/8-inch handline will be needed for the operations in this practice. The handlines should be served at the ends to prevent unraveling.

2.05 When it is necessary to carry an extended handline up a pole or ladder, use a handline carrier (CTS #74-56-031-0), or double the end of the handline back on itself for a distance of approximately 1 foot. Place this loop under the right or

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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 so it is 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 could cause the handline, or the drop wire to which it is attached, to become disengaged from a drive hook or crossarm, or may slide along the strand or guard arm while doing the work, the handline or drop wire shall be enclosed with a temporary guide loop. This loop shall consist of a short length of wire or rope placed over the handline or drop wire, with the ends of the guide securely tied as follows (Figure 1):

- a. **Guard Arm:** Tie the ends to the guard arm on each side of the handline or drop wire.
- b. **Drive Hook:** Tie one end to the vertical portion of the drive hook and lash the other end to the pole.
- c. **Crossarm:** Tie the ends to adjacent pins or insulators.
- d. **Strand:** Tie the ends across 2 span clamps.

### 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 paragraph 6.

**3.01 Handline Lowering Method:** Lower the drop wire from its position on the pole (drive hook, guard arm, or crossarm) as follows:

- a. 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.

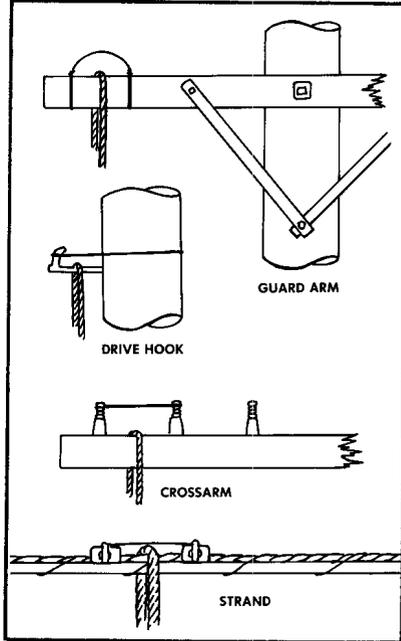


FIGURE 1. Temporary Guide Loop—Pole

b. 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 truck so that it will shield the handline.

- c. Disconnect the drop wire from the terminal and remove the free end from the wiring rings on the pole.

d. 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.

e. Tie a loop of the bight of the handline to the bail 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.

f. Remove the original drop wire clamp from the wire span, leaving the wire supported by the temporary drop wire clamp and the lashed handline.

g. 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 Figure 2, so that the handline can be pulled in either direction to work the drop wire among the branches of a tree, or to raise the wire quickly if necessary.

h. 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 paragraph 6.**

4.01 A wire span may be dropped from a pole if:

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.

d. The wire will not fall on pedestrians or cause damage to property as a result of being dropped to the ground.

4.02 If any of the above conditions exist, the span shall be lowered by the handline method (paragraph 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 paragraph 6.**

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

5.02 **Precautions:** The following precautions shall be observed when lowering a drop wire attached to a span clamp:

a. Place the extension ladder at the location of the span clamp as instructed in paragraph 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 employee and ladder. Therefore, while climbing the ladder it is important to observe the effect of the strand deflection on all drop wires attached to the section of strand on which the employee 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 paragraph 6.04 for the method of releasing excess tension in a drop wire span.

5.03 Lower the wire from the span clamp as follows:

a. Detach the drop wire first from the pole and lower this end of the wire run to the ground. Take necessary precautions if this span crosses a street or highway.

b. Coil the drop wire and place it on the ground near the ladder to avoid accidents resulting from vehicles striking it or pedestrians tripping on it.

c. Place a handline over the strand and lower the drop wire as instructed in paragraph 3, except that the handline shall be lashed to the

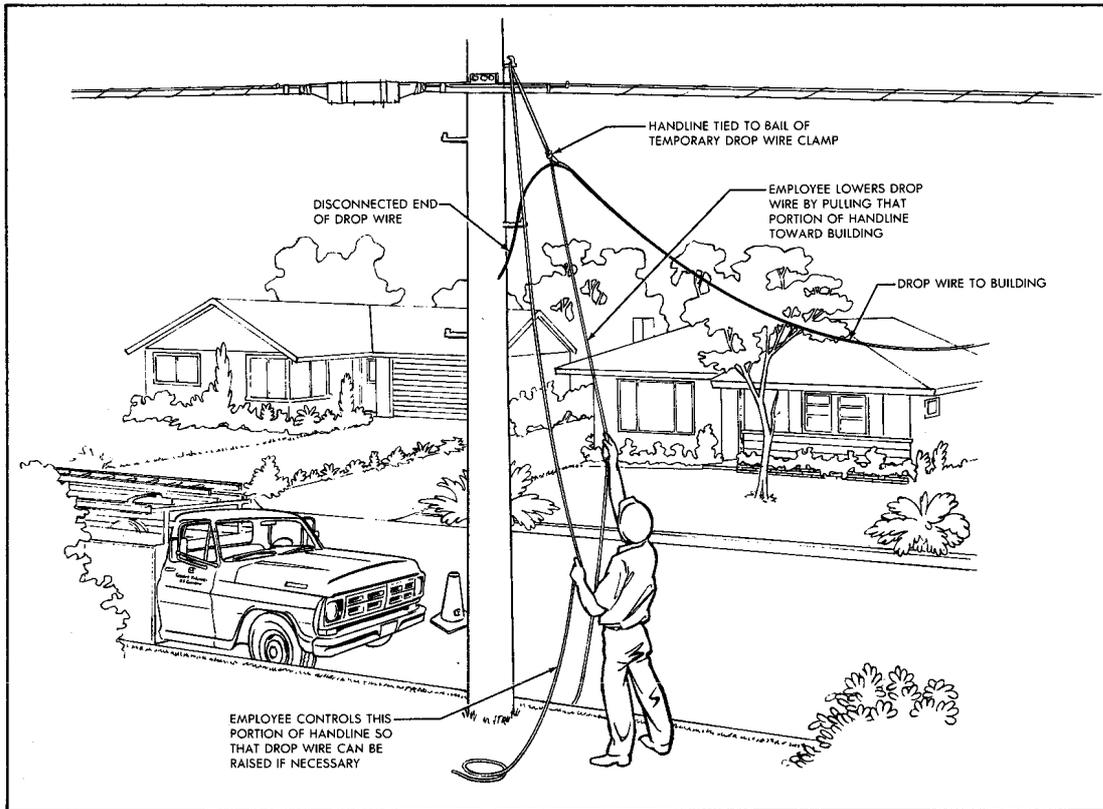


FIGURE 2. Lowering Drop Wire

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 described in the following paragraphs covers the special precautions which shall be taken when lowering a taut drop wire span. It applies to the lowering of all taut wire spans whether or not they cross streets or highways.

**6.02 Taut Span From Pole:** When it is necessary to lower a taut drop wire span from a pole, proceed as follows:

- a. 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.
- b. Disconnect the drop wire from the terminal, and remove the free end from the wiring rings on the pole.
- c. 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.
- d. Tie a loop of the bight of the handline securely to the bail of the temporary drop wire clamp.
- e. 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. The taut wire span will be supported by 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 bail of the original drop wire clamp.**

- f. Climb the pole and check to ensure that the tension in the drop wire span has been removed from the bail of the original drop wire clamp.
- g. Cut the bail of the original drop wire clamp with pliers.
- h. 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. The wire can be raised quickly if necessary.

**6.03 Taut Span From Span Clamp:** The procedure in paragraph 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:

- a. Remove the C knob or the D 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.
- b. Attach a temporary guide loop to the first building attachment to prevent the handline used in releasing the excess tension from becoming accidentally disengaged from the building attachment.
- c. 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.
- d. Place a handline over the first building attachment and through the temporary guide loop. Tie the handline securely to the bail of the temporary drop wire clamp.
- e. Return to the ground. Pull the handline sufficiently taut to remove tension from the original drop wire clamp, and lash the handline to a secure support near the base of the building.

**CAUTION: Take care to avoid placing more tension in the drop wire span than is necessary to remove tension from the bail of the original drop wire clamp.**

- f. At the first attachment, check to ensure that the tension in the drop wire span has been removed from the bail of the original drop wire clamp.
- g. Cut the bail of the original drop wire clamp with pliers.
- h. 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 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.

i. Proceed as instructed in paragraph 5 for lowering a normal wire span from a span clamp.

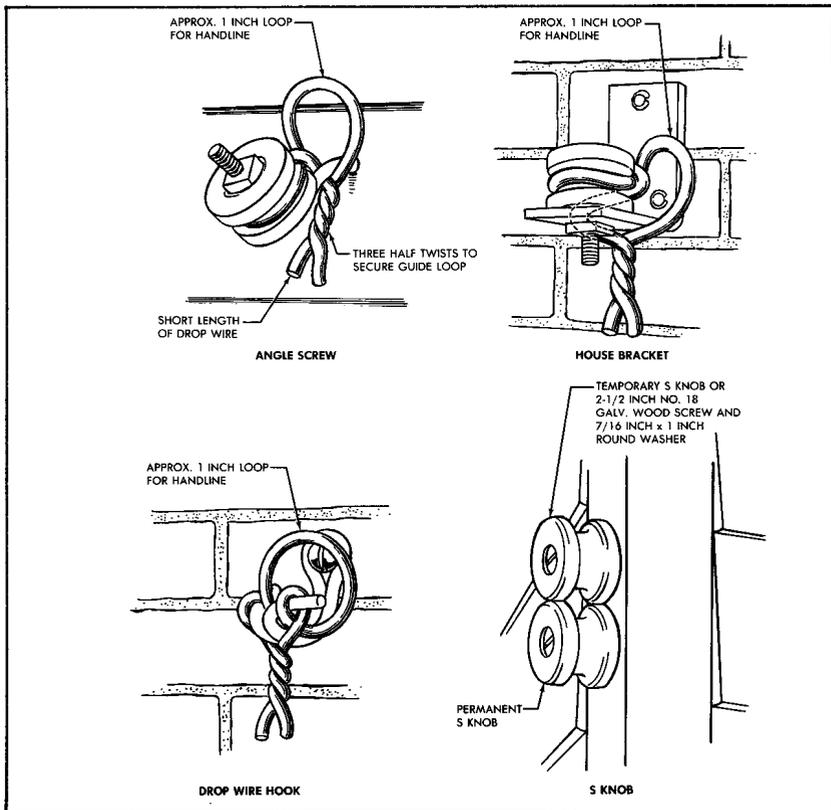
**7. LOWERING WIRE ATTACHED TO TWO BUILDINGS**

**7.01** To lower a drop wire span attached to two buildings:

- a. Select the end of the drop wire span at which the operations can be performed.
- b. Lower the drop wire run on the building up to the first attachment from which the wire span

is to be lowered. Remove the C knob or the D wire clip and the associated loop of drop wire from this attachment. Do not remove the drop wire clamp which supports the wire span.

c. Place a handline over the first building attachment so 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 (Figure 3) to prevent the handline from becoming accidentally disengaged from the building attachment during the lowering operation.



**FIGURE 3. Temporary Guide Loop—Building**

- d. 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.
- e. Tie a loop of the handline securely to the bail of the temporary drop wire clamp.
- f. 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 secure support near the base of the building. The wire span will be supported by the temporary drop wire clamp and the lashed handline.
- g. Remove the original drop wire clamp from the building attachment.
- h. 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** Where the entire original wire span is to be raised:

- a. 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.
- b. 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 damaged.
- c. Tie the end of the drop wire to the handline 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 the ground during the entire raising operation. See Figure 4.

*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 Figure 5.*

- d. 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 so the wire may be pulled to the ground quickly if necessary.

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

- f. Climb the pole or ladder (if at a span clamp), and attach the drop wire to the pole or strand without removing the handline from the drop wire. When attaching the drop wire to a span clamp, keep in mind that the strand is forced out of line by the ladder resting against it; make any adjustments 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.

- g. Remove the handline from the drop wire and complete the connection.

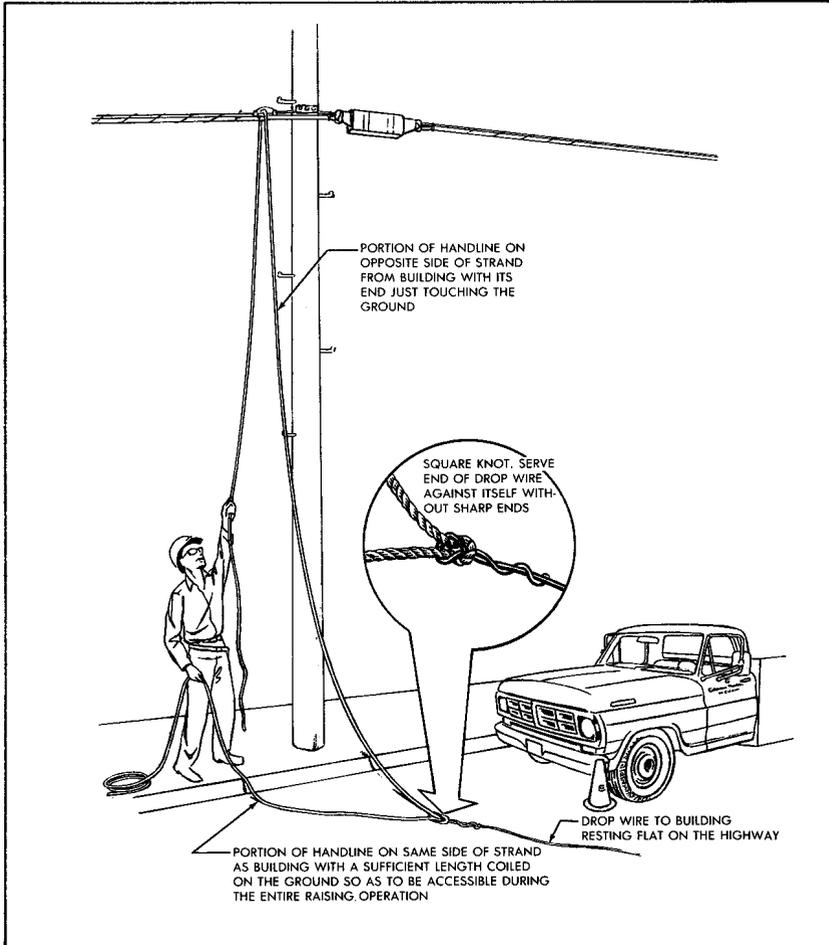
**8.02** Where the entire original wire span or the end toward the pole or strand is to be replaced, proceed as though raising a new drop wire over a street or highway. See CTSP 475-301-405.

**8.03** 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** Where the entire original wire span of a drop wire that was lowered by the dropping method (paragraph 4) is to be raised:

- a. After the wire has been repaired, lay it along the ground between the building and the pole or span clamp location.
- b. Attach one end of the handline to the bail 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.
- c. Loop the other end of the handline under the body belt or use a handline carrier as instructed in paragraph 2.05, and climb the pole or, if at a span clamp, the ladder.
- d. Place the handline over the strand, guard arm, drive hook, or crossarm from the side toward the building.
- e. Raise the drop wire to the required height by pulling the handline over the strand or other support; then lash the handline to the pole or strand.



**FIGURE 4. Raising the Drop Wire**

f. Attach the drop wire to the pole or strand; then remove the handline. When attaching the drop wire to a span clamp, keep in mind that the strand is forced out of line by the ladder resting against it. Make any adjustments 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.

**9.02** Where the entire original wire span or the end toward the pole or strand is to be replaced, proceed

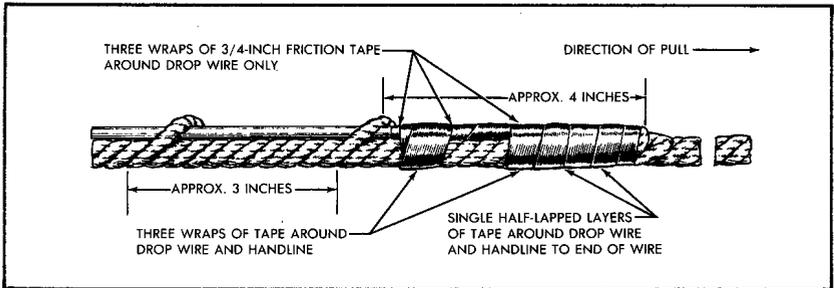


FIGURE 5. Fastening Handline to Prevent Snagging

as though raising a new drop wire at a location **OTHER** than over a street or highway. See CTSP 475-301-405.

#### 10. REPLACING WIRE NOT LOWERED FOR INSPECTION

**10.01** If it is obvious that an entire drop wire span requires replacement, and conditions indicate that it would be advantageous to pull the new wire into the span as the old wire is pulled out of the span, proceed as instructed in paragraph 10.02, 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 power wires or power cables operating at 300 volts or more.

**CAUTION:** If all of the above conditions are not met, the employee 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:

- a. Remove the C knob or the D 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.
- b. Attach a temporary guide loop to the first building attachment (Figure 3) to prevent the replacing drop wire from becoming accidentally disengaged from the building attachment.
- c. Place the drop wire reel in a stable position near the foot of the ladder on the side away from the wire span.

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

- d. Set the brake of the reel so that it will hold the tension in the wire span after it is transferred to the reel.
- e. 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.
- f. 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, securely fasten the end of the wire from the drop wire reel to the wire in the span, as shown in Figure 4.

- g. Securely tie the end of the wire from the drop wire reel to the bail of the temporary drop wire clamp.
- h. 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.
- i. 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.
- j. Loop the other end of the handline under the body belt or use a handline carrier as instructed in paragraph 2.05, and climb the pole or ladder.
- k. Disconnect the drop wire from the terminal and remove the free end from the wiring rings on the pole.
- l. 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.
- m. Tie a loop of the handline to the bail 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.
- n. Remove the original drop wire clamp from the drop wire at the pole or span clamp, leaving the wire supported by means of the temporary drop wire clamp and the lashed handline.
- o. Return to building; check to ensure that tension has been removed from the original drop wire clamp, and cut the wire to be replaced behind the temporary drop wire clamp with pliers.
- p. Return to the pole or span clamp location; untie the handline and, while standing on the ground, pull the new wire into the span. Observe 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 excessively.
- q. When a sufficient length of new wire has been pulled over the strand, guard arm, drive hook, or crossarm, 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 there will not be undue tension in the span when placing the drop wire clamp at the first building attachment.
- r. Fasten the new wire span to the first building attachment with a drop wire clamp, and remove the temporary guide loop.
- s. Fasten the new wire span to the pole or strand attachment without removing the old wire which was used as the pulling line. When attaching the drop wire to a span clamp, keep in mind that the strand is forced out of line by the ladder resting against it; make any adjustments 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.
- t. Detach the old wire from the new wire and complete the connection.