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The Pacific Telephone and Telegraph Company
Southern California Area
BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance
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AERIAL CABLE

GROUNDING - PLACING NOISE BONDS

Contents

1. GENERAL

1.01 This section covers the method of bonding aerial cables to water pipes in order to reduce noise due to induction from power lines.

2. INSTALLING GROUND WIRE, HOUSING AND CONDENSER

2.01 Ground sheath of aerial cables to reduce induced noise in the cable only when specified in the detail plans.

2.02 Detail plans will state:

(a) Where ground connection is required.

(b) Where electrolytic condenser is required.

(c) Location of water pipe to which ground connection is to be made.

2.03 Where ground connection is specified, use one piece of No. 6 BRC Solid R copper ground wire without joints, regardless of the number of cables involved, and make the attachment in the most practicable manner in accordance with the following procedure:

(a) Where cables are supported in cable rings larger than 1-1/2 inches, the ground wire shall be attached to the strand on the side away

from the terminal splice or location of a future terminal splice by means of a grade clamp. Remove the insulation from the end of the wire for a distance equal to twice the length of the clamp; bend and serve the wire around itself and insert in the lower groove of the three-bolt clamp. Tighten the bolts of the clamp. No other bond between the cable sheath and strand is required at this location.

(b) Where cables are supported in 1-1/2 inch cable rings, the ground wire shall be attached to the strand on the side away from the terminal splice or location of a future terminal splice by means of a strand ground clamp. Remove the insulation from the wire for a length of about five inches. Bend the wire back on itself for about two inches and, placing the strand ground clamp over the strand, insert the loop between the strand and the bolt of the clamp. Tighten the bolt. With this type of connection it will be necessary to bond the cable to the strand by the addition of an adjustable grade clamp placed closely adjacent to the strand ground clamp.

(c) Where cable is lashed to the suspension strand, the ground wire shall be attached to the strand the same as for cable supported in 1-1/2 inch cable rings. (See (b) above.) However, the grade clamp, specified to provide a bond between the cable and messenger, will not be required.

(d) Where there are two or more cables on the pole, in any of the above cases ((a), (b) or (c)), the other cable or cables that are not involved in the actual ground wire connection shall be bonded to their respective cable suspension strands and the various strands shall then be bonded together, in accordance with standard practices.

(e) Run the ground wire as direct as practicable from the suspension strand to the electrolytic condenser if one is required, otherwise to a water pipe.

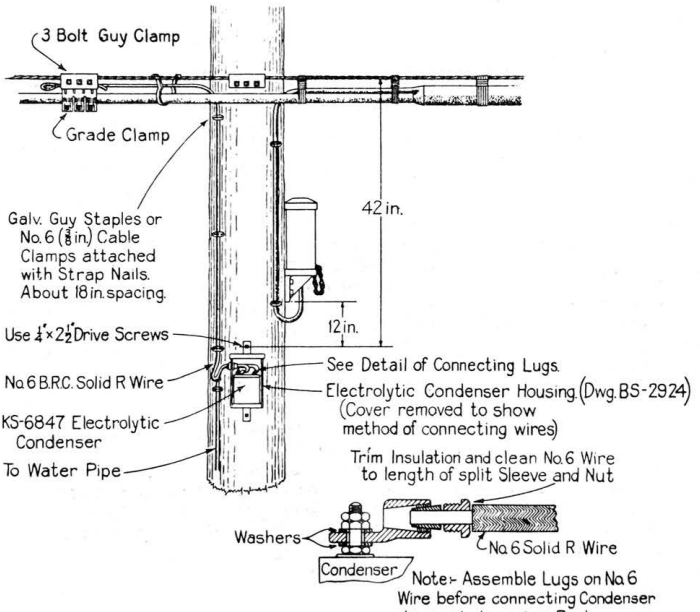
(f) Attach wire to pole with galvanized guy staples or 3/8-inch cable clamps spaced about 18 inches apart and, where required, protect ground wire with ground wire molding.

(g) When a condenser is specified, place the housing on the pole in such a manner as to make the most convenient and practicable installation to a water pipe. However, avoid placing the hous-

ing on the street side of the pole whenever practicable. The upper condenser housing bracket should be 12 inches below the terminal or 42 inches below the strand if there is no terminal.

(h) If a condenser is placed, make a drip loop in the entrance wire. Wrap friction tape around both wires so as to plug the holes in the bushings.

(i) Connect the wires to the electrolytic condenser with solderless connectors, as shown in the following illustration, taking care to insure that the binding posts of the condenser do not become twisted or damaged. It makes no difference to which terminals the wires are connected.



DETAIL OF CONNECTING LUGS

(j) Place ground wire in trench not less than two feet deep, selecting a route as short as practicable to the water pipe. No conduit is necessary. In placing ground wire in sodded parkways, care should be taken to replace sod properly.

(k) Where a water service pipe is used, the point of attachment of the ground wire shall be on the street side of the water meter and shut-off valve. When a connection is to be made to a fire hydrant, it may be made between the shut-off valve and the fire hydrant plug.

(l) Clean the water pipe at the point of attachment, using abrasive cloth or a file to obtain a clean contact surface. Place an L ground clamp around the pipe, inserting the ground wire in the proper loop. If the pipe size is larger than three inches, use two or more L ground clamps. Care must be taken when placing ground clamps on copper or brass service pipes as they are easily dented and flattened.

(m) In order to prevent corrosion, paint the connection with No. 2 asphalt paint. Apply two layers of friction tape and paint again with asphalt paint. The tape and paint shall completely cover all bare parts of the clamp and ground wire, extending along the water pipe at least one inch beyond the clamp in both directions.