

BELL SYSTEM PRACTICES
Outside Plant Construction
and Maintenance

SECTION G36.090
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AT&T Co. Prov. Std.

BURIED WIRE
PRECAUTIONS

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1. PERMITS

1.01 Permits for placing wire in the highway, for pipe in culverts, bridge attachments, etc., and right-of-way permission for the placing of wire or terminal posts on private property should be obtained in advance of starting the work. During the progress of the work permits should be available on the job and ready for immediate reference.

2. AVOIDANCE OF INJURY TO WIRE

2.01 U Distribution Wire has no protection other than the rubber insulation and, while the rubber is tough and will withstand the ordinary wear incident to placing, reasonable care must be exercised to avoid impairing the insulation or breaking the conductors.

2.02 The wire should never be left exposed to light or unprotected from the weather for long periods as the life of the rubber may be impaired by such exposure. For this reason the lags should not be removed from the reels until just before the wire is to be placed in the ground. Pipe should always be used to conduct the wire from the ground to a point

of termination and slack wire left for any reason should either be buried or stowed away within a terminal. For the protection of wire in terminals, lacquer should be applied as described in Section G36.130, Terminating.

2.03 Avoid getting the reels of wire wet, as damp soapstone may adhere to the feeding tube and cause the wire to bind.

2.04 All pipe joints and ends should be carefully reamed before installing the wire to remove burrs that might cut the insulation. Do not ream the pipe more than is necessary to remove burrs as excessive reaming may leave a sharp edge on the pipe.

2.05 Do not attempt to pull the wire around small radius pipe bends. If bends of less than 12 inch radius are unavoidable, it may be practical to pull the wire into the straight pipe and form the bends afterward.

2.06 When mounting a reel on the plow, see that the revolving head turns freely so that the wire does not bind at the reel flanges. When pulling wire by hand through the slot made by the plow, as when pulling slack from the reel or in pulling to a terminating point, cease pulling if the wire does not emerge readily from the slot, otherwise the wire may break. Do not attempt to pull wire through the slot after vehicles have passed over the trench.

2.07 In tripping the plow when wire is in the feeding tube, lower the plow standard into the excavation gradually so as to avoid pinching the wire where it comes out of the tube. Avoid backing the plow with wire in the tube when the standard is buried in the ground. If necessary to back the plow to clear an obstruction, excavate behind the standard and hold the wire clear as the plow is backed.

2.08 Inspect the feeding tube at intervals to see that it is clear and if necessary run through it a small wire gun cleaning brush to remove any accumulation of soil, soapstone, etc. This should only be done at a time when the wire has been removed from the tube.

2.09 Exercise care to avoid trampling the wire. Do not allow vehicles to pass over the wire when lying on the ground. Sharp stone particles may be forced into the rubber and puncture the insulation.

2.10 In places where the wire has not been buried to a sufficient depth by the plow, as may happen where the plow has been forced out of the ground due to striking buried

boulders, stumps, tree roots or the like, it is good practice to stop the plow and pull from the reel sufficient slack wire so that the wire may be laid to the side while a trench is dug by hand.

2.11 If the passage of the plow through rocky soil or boulders necessitates hand work to obtain proper depth, inspect the wire for cuts and upon relaying protect the wire by placing around it a cushion of earth free from sharp rock fragments before backfilling the remainder of the trench.

2.12 Continuity and insulation resistance tests should be made during the course of plowing in the wire, as recommended in Section G36.200.

2.13 If there is any reason to believe that the wire may have been injured and the wire is accessible for examination without digging, inspect the surface of the wire immediately for evidence of cuts. If the incident occurs in the course of plowing in the wire, mark the spot with a stake so that the location may later be identified if subsequent tests indicate a defect in the section.

3. UNCOVERING SHALLOW CULVERTS

3.01 In highway construction, the location of culverts will be shown on the construction prints. Culverts which are too close to the road surface to permit the plow to pass over them safely without raising the plow point should be uncovered by digging a narrow trench in the line being followed by the plow. This will disclose the exact depth of the culvert and permit raising the plow point just enough to allow it to pass the culvert without unnecessarily decreasing the depth at which the wire is buried on either side of the culvert.

3.02 Uncovering of shallow culverts should be done immediately in advance of the plow and backfilling should follow closely after the plow has passed in order to avoid leaving unguarded openings in the highway.

4. RECORDING SPLICE LOCATIONS TEMPORARILY

4.01 Splicing U Distribution Wire does not generally follow immediately after the plowing and several days may elapse before some of the splices are completed. Since the slack wire left for splicing is buried immediately after the plow passes, and trucks, rains or other agencies may soon remove all evidence of the location, it is necessary that accurate records be kept of splice locations.

4.02 The splice point should be marked on the construction print along with an approximation of the distance to some fixed point such as a pole, tree, bridge or other landmark. As further identification, the location should be marked by means of a stake bearing the word "SPLICE" and the distance in feet from the stake to the splice point. The stake should be driven in the ground abreast of the splice location and out of the path of vehicular traffic. A second stake should be placed in the ground immediately beside the splice location but with only 2 or 3 inches exposed above ground. To increase the visibility of the second stake and further identify it as a splice location, it may be desirable to tack a small piece of red fabric, such as coarse cambric, to the top of the stake.

4.03 The same method of identification should be followed to mark loading points at which the wire may be continuous but where slack has been left for splicing in the loading coils.

5. MAINTENANCE OF HIGHWAY TRAFFIC

5.01 When plowing along well traveled highways, one man should be assigned to direct traffic around the plow and towing equipment. A red flag should be carried by this man for the purpose of stopping traffic when necessary and red flags should be prominently displayed on the trucks.

5.02 Whenever the work is of such a nature that the equipment will be halted at one location in the highway for a considerable time, "Men Working" signs should be displayed as recommended in the practices relating to the use of warning signals.

6. WORKING ON PRIVATE PROPERTY

6.01 Before plowing across private property, make sure that no drains, buried electric services, or water pipes leading to tanks or outbuildings will be damaged by the plow. Also, in highway work in the vicinity of houses, be on the lookout for water pipes running across the road between residences and farm buildings located on opposite sides of the road.

6.02 When working on private property, as in the installation of service entrances to residences, special care should be exercised to avoid damage to lawns, shrubs, flowers, etc. The plow is equipped with a sod cutting disc or colter which when used will minimize the disturbance to lawns by cutting the sod cleanly and preventing tearing of the turf. As soon as operations will permit, replace by hand any displaced sod and tamp the turf along the line of the plow with a hand tamper.

6.03 Locate the pulling truck or tractor so as to avoid pulling the plow through flower beds or large tree roots. Select the location for the truck so that the plow can be used for installing most of the entrance and thus keep hand trenching to a minimum.

6.04 Where fences interfere with plowing, remove them wherever it can be done conveniently and in a manner which will permit ready replacement in as good condition as when found. When fences cannot be removed place the plow by hand as close to the fence as possible so as to reduce the amount of hand trenching required.

6.05 When hand trenching in lawns is necessary, first carefully remove the sod and set it aside so that it can be replaced when the job is finished. When necessary tarpaulins should be placed along the side of the trench to receive soil in order to avoid injury to grass.

7. RESTORATION OF HIGHWAY

7.01 As the wire is placed, one or two men should follow behind the plow to bury slack wire and complete such hand placing and restoration of the highway as is necessary. Following this the line of the plow or furrow should be pressed down by running the wheels of the truck over it. This will generally serve to restore the highway to its original condition, but when further finishing of the surface is felt desirable a drag attached to the rear of a truck can be employed to level off the surface.

Note: Do not run the truck wheels over the line of the plow in rocky soil where sharp fragments of rock might be forced against the wire. In such cases the surface should be restored as much as possible by hand and left to compact naturally.

7.02 Carefully replace any mail boxes, newspaper boxes, highway signs, milk loading platforms, etc., that are removed in the course of plowing along the highway shoulder.

7.03 Avoid plowing immediately following a period of prolonged rain when the highway surface may be so soft as to cause the wheels of the towing equipment to sink into the ground and injure the surfacing or leave ruts.

8. EXCAVATING TO EXPOSE WIRE

8.01 In preparation for splicing, for the completion of terminations and occasionally in locating trouble it is necessary to excavate to uncover the wire. The need to exer-

cise extreme care in digging around the wire cannot be emphasized too strongly.

8.02 In excavating at locations where slack wire has been previously buried for the purpose of later running it to a post, subscriber pole or residence, the wire will be found formed in a coil and buried only a few inches below the surface as described in paragraph 6.05 of Section G36.120. It is necessary in these cases only to scrape away a few inches of soil to expose the lags which have been laid over the coil of wire.

8.03 Slack left at splice points will be found coiled inside a piece of single vitrified clay conduit or wood conduit set upright in the ground with the upper end about 3 inches below the surface of the road.

8.04 In excavating to uncover the wire it is best to start digging at a point somewhat to one side of where the wire is judged to be and work laterally toward the wire. In this way the sides of the hole may be cut down with a stick or other blunt tool and there will be less danger of cutting the wire when it is finally reached. The wire should be partially uncovered in this way when slack is to be pulled from the plow using the hook as described in Section G36.120.