BELL SYSTEM PRACTICES
Outside Plant Construction and Maintenance

SECTION G56.090.1
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AT&T Co Standard

BURIED CABLE
PRECAUTIONS

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1. GENERAL

1.01 This section outlines the precautions to be followed in placing splicing and maintaining buried cable. It is reissued to include a change to further restrict the use of open flames at manholes.

1.02 Refer to G10. sections of the practices for additional information on guarding work areas.

2. ORDINANCES AND PERMITS

2.01 All ordinances and public regulations should be complied with.

2.02 Permits which are required to do buried cable work should be obtained before starting the work and should be retained during the progress of the job ready for immediate reference. Permits may be required for the following:

(a) Opening streets
(b) Closing a thoroughfare to traffic
(c) Excavating on private property
(d) Placing materials on the street or on private property
(e) Blasting

3. MAINTENANCE OF TRAFFIC—WARNING SIGNALS

3.01 When excavating along or across highways, streets or alleys carry on the work in such a manner that there will be a minimum of interference with traffic. If necessary the opening may be bridged with a structure of adequate strength to provide suitable passage for any traffic which is likely to pass over it.

3.02 In general protect all openings, construction material, excavated material, cable reels or machinery left on streets, highways or other accessible locations with standard guards, warning signs or other approved devices. Observe any other precautions which may be required by local regulations or by existing conditions. Warning lights should be placed as required.

3.03 When the excavation or obstruction is located on a highway and local public regulations will permit, place an approved warning signal or signals in the direction of approaching traffic and far enough from the obstructions to permit safe divergence of traffic. When working near a curve in the road or near the top of a hill, place an additional warning signal far enough away to give sufficient warning to vehicles approaching from around the curve or over the top of the hill. When necessary use flagmen to direct traffic.

4. WORKING ON PRIVATE PROPERTY

4.01 Before starting work on private property make sure that the necessary permission has been obtained.

4.02 Special care should be exercised to avoid damage to fences, trees, shrubs, flowers, etc. Disturbance of the ground surface by heavy apparatus should be kept to a minimum.

4.03 When excavating a trench across lawns, the sod should be removed carefully so that it can be replaced when the job is completed. The sod should be cut into long strips and rolled up or cut into pieces and stacked with grass to grass and soil to soil. It should be kept wet from the time it is removed until at least three days after it is replaced. Tarpaulins may be placed along the side of the trench to receive the soil taken from the excavation, in order to avoid damage to the grass.

4.04 In pasture or range land it is desirable to have live stock removed before starting work. If this is not practicable and excavations are to be left unattended, openings should be protected with temporary fencing or planking of suitable strength to keep livestock from falling into the trench or splicing pit.

4.05 Close gates and repair fence openings as soon as possible. If it appears that it will be necessary to enter a field at frequent intervals after the cable is installed, the work print will indicate if a gate is to be placed in the fence.

4.06 It is important that the work be conducted in such a manner as to minimize inconvenience to the occupant of the property. After the work is finished, the property should be left in as clean and good condition as it was found.

4.07 Close as much trench as practicable before the end of each day's work and avoid having more trench open at one time than is necessary.

4.08 The trench or plow slot should be firmly tamped. In addition, it should be inspected from time to time and especially following the first rain after completion of the work to check for settling of the fill.

5. EXCAVATING—ROOTING, PLOWING AND TRENCHING

5.01 The location of all subsurface structures across or near the proposed route should be ascertained before excavation begins.

5.02 Excavating operations near the possible location of other subsurface structures should be carried on in a manner that will avoid accidental contact of the digging tools with such structures. This applies particularly to buried power cables, due to the serious hazards involved in such contacts.

5.03 The machines which may be used in these operations should be operated only by qualified personnel.

5.04 When a plow or rooter is in motion make certain that no person is within its falling range since obstructions may cause the machine to overturn.

5.05 No attempt should be made while the rooter or plow is in motion to remove roots, vines or other foreign matter entangled with the share.

5.06 Workmen or other persons should not be allowed to ride the plow or to walk beside the plow or ahead of the train or between the units of the train when the equipment is in motion.

5.07 When lowering the plowshare into a pit no workman shall be in the pit.

5.08 When lowering the share of the rooter or plow into the ground the depth should be increased gradually to avoid unbalancing the equipment which might cause it to overturn.

5.09 In trenches where there is evidence of caving or any possibility that it might occur, arrangements should be made to support the walls of the trench by shoring or sloping of the sides before any employee enters it. A workman should be above the excavation to keep the workman in the trench in sight at all times.

5.10 The plow train or rooter train should never be placed in operation without an approved signal system with which all of the employees on the job are familiar.

5.11 When winching the train as in other winching operations make sure that workmen and other persons will not be in the path of the rope if it or any of the supports should break and whip.

5.12 Workmen or other persons shall not rest their hands on a moving winch line nor permit the moving winch line to pass through the hands. This is especially important near a block or sheave.

6. DAMAGE TO CABLES—HANDLING REELS

6.01 The coverings surrounding the lead sheath are provided for corrosion and mechanical protection. Puncturing or damaging the coverings tends to nullify this protection. It is important, therefore, to avoid damaging the cable when handling it in transit, during transit from the storage yard to the job, and on the job.

6.02 Excessive pulls on the ends of buried cable should be avoided. The protective coverings of buried cable are bulky and produce an appearance of strength when placed on a cable. These materials are not especially strong, however, and buried cables should never be subjected to stresses in excess of those considered safe for lead covered cable having the same diameter as the lead sheath of the buried cable.

6.03 Where it is necessary to pull the cable over the ground or in the trench, trench rollers or other supporting devices should be used to prevent the cable from dragging over rocks, tree trunks, stumps, etc., that might injure the protective coverings. When pulling cable along the route under road pavements, cross-pipelines, etc., the setup should be such that undue strain will not be placed on the lead cable sheath or its protective coverings.

6.04 Sharp bends should not be made in the cable, since severe bending of the cable is likely to crack the lead sheath or separate the protective coverings and expose the metals to corrosive elements.

6.05 When loading or unloading reels, keep all persons away from the rear of the trailer to avoid possible injury in case unexpected movement of the reel occurs. No one should be permitted on the trailer platform during the loading and unloading operations.

6.06 When reels are delivered to the job, they should be securely blocked to prevent rolling if the cable is not to be placed immediately. Reels should be stored where they will not inconvenience the public. If practicable, they should be left on side streets or roads in preference to main thoroughfares. They should not be left at locations where there is a possibility of grass fires or near other fire hazards. Reels should not be left on grades if it can be avoided. When it is necessary to leave a reel on a grade, cant and block it so that it cannot roll downhill.

6.07 On steep hills move reels by power equipment and do not detach trailer slings before the reel is effectively blocked.

6.08 A full reel of cable of maximum size weighs about 5 tons and it is necessary therefore to exercise careful control of its movement. In handling a heavy reel it should never be permitted to tilt. When uneven ground conditions are encountered, provide a substantial runway of heavy planks leveled by blocking so that tilting of the reel will not occur. If practicable use power equipment for moving.

6.09 In turning reels, particularly when the lags have been removed, bars should not be used in such a manner that they will press against the cable. Reels should not be dropped since, in addition to damaging the reels if the lags have been removed the flanges are likely to sink into the ground with the result that the cable may be crushed between the ground and the drum of the reel.

6.10 When it is necessary to roll the reels over soft ground after the lags have been removed, plank tracks should be employed to prevent the flanges from sinking. Reels should not be rolled over rocks or other projecting objects that are likely to damage the cable.

7. PROPERTY OF OTHER COMPANIES

7.01 Do not interfere with the property of other companies unless permission has first been obtained. In laying out the line of trench, endeavor so far as practicable to avoid interference with underground structures of other companies, municipalities or individuals. Properly support all exposed pipes or other subsurface structures.

7.02 If any foreign structure is damaged, it should be reported to the supervisor. Temporary repairs should be made immediately to structures other than those of Gas or Electric Companies. Permanent repairs should not be made unless the consent of the owner has been obtained and no repairs should be made to gas or electric structures.

8. OPEN FLAMES

8.01 Care should be exercised if an acetylene torch is used in removing the wrappings over the sheath from cable at pedestal terminal, handhole and buried splice points. This work should be done before a tent or other shelter is placed in order to avoid fire hazards.

8.02 **Furnaces, kerosene lanterns and other open flames should be kept at least 10 feet from the openings of manholes having a permanent roof.**

9. GAS IN MANHOLES

9.01 Before entering a manhole, tests should be made of the atmosphere to determine whether the air is safe. Methods of detection and the action to be taken when gases are found are given in other sections of the practices.

10. USE OF CONSTRUCTION APPARATUS

10.01 A buried cable project will often require the use of heavy construction equipment and the transportation of heavy loads. Certain soil conditions may be encountered that will not support these loads. Local conditions must therefore be carefully observed when using this heavy equipment, to avoid hazards or unnecessary delays due to becoming mired.