

BURIED CABLE

MARKERS

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1. GENERAL

1.01 Markers are provided along buried cable routes to establish the location of the cable and for mounting electrolysis and gas pressure equipment at a convenient location above ground.

1.02 The addition of warning signs to new or existing markers at certain points is for the purpose of notifying residents and foreign workmen along the route of the approximate location of the buried cable and to solicit their cooperation in advising the Telephone Company before they do any work which may endanger the buried cables.

1.03 This Section covers Buried Cable Markers; however, markers and warning signs may also be required along conduit routes to locate manholes that are buried and at certain locations along these routes to solicit the cooperation of the public and foreign workmen in the protection of the telephone plant.

2. LOCATION

2.01 Markers along a buried cable route should be provided in sufficient number and with proper spacing and length so that the location of the cable route is clearly defined to our workmen and the public.

2.02 Markers along buried cable routes should be placed at or near splice locations, at points where the route of the cable changes direction, and at other points where it is necessary to identify the cable route or locate the cable for maintenance work. In some cases it may be necessary to move the markers to fence lines or other locations to meet the requirements of the property owner. In addition, markers should be installed adjacent to the cable at road, railroad, pipe line and stream crossings and at crossings of irrigation and drainage ditches as well as at other locations where excavating work is likely to be performed. The location of the markers will be shown on the detail plans.

3. TYPE AND SETTING OF MARKERS

3.01 Fully treated 10-foot Class "W" reinforcing stubs or Class 10 poles or structural grades of 4-in. x 6-in. redwood timber of suitable length, will generally be found satisfactory for use as markers. The longer markers shall be used in ground covered with brush, undergrowth or agricultural crops where plant growth would obscure a good portion of a shorter marker when viewed from a distance.

Note: In heavy snow areas markers shall be of sufficient length to allow 6 feet of the marker to extend above the expected snow level. In these areas the gas pressure equipment should be placed above the ground at about the expected snow level and the marker stepped in accordance with Section G22.130-S.

3.02 Markers should be set 3-1/2 feet deep except where fluid soil or frost heaving may be anticipated. In such cases where the ground is not firm or live stock might rub the markers, the depth of setting should be increased 1 foot.

4. NUMBERING MARKERS

4.01 All markers along a buried cable route shall be numbered consecutively in the manner outlined for numbering toll poles in Section G21.901. Full numbers shall be placed on each marker.

4.02 When additional markers are placed after the original numbering has been completed they should be marked by using the number shown on the adjacent lower

number marker and add to this number an appropriate fraction, for example:

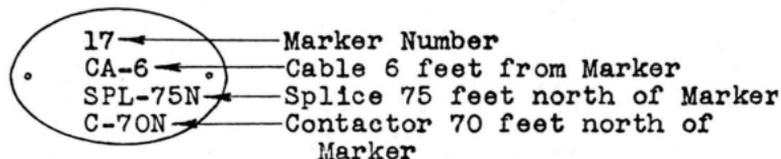
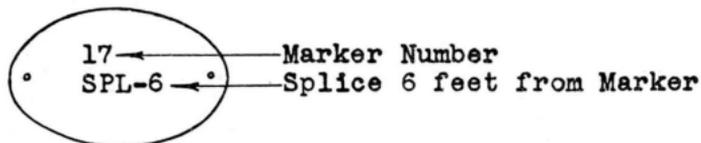
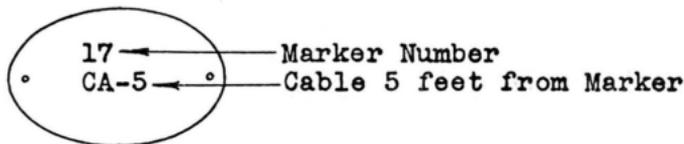
- (a) Adjacent lower number old marker, 17.
- (b) Next new marker in direction of numbering, 17-1/2.
- (c) Second new marker if placed between 17 and 17-1/2, 17-1/4; if placed between 17-1/2 and 18, 17-3/4.
- (d) Third new marker if placed between 17 and 17-1/4, 17-1/8; if placed between 17-1/4 and 17-1/2, 17-3/8; etc.
- (e) Next old marker in direction of numbering 18.

4.03 When markers are placed along a conduit route, the marker placed opposite a manhole shall carry the same number that is assigned to the manhole and any markers placed between two manholes should be marked by using the number of the adjacent lower number manhole and adding to this number an appropriate fraction as indicated in Paragraph 4.02.

4.04 When markers are removed and are not replaced the numbers on the remaining markers shall not be changed unless specifically called for in the detail plans.

4.05 In addition to the marker number, a Cable Location Number Plate shall be attached to each marker (on the side of the marker toward the cable) and die stamped with the marker number and the distance from the marker to the cable. At splice or contactor points, the plate shall also be stamped with the distance from

the marker to the splice and to the contactor. Examples of cable location number plates are illustrated below:



5. UG CABLE WARNING SIGNS

Warning Signs Placed Along Buried Cable Routes

5.01 Warning signs worded as illustrated in Figure 1 shall be installed at all places along the route of buried cable where digging operations may be expected. Such locations, for example, are at road or highway crossings, crossings under pipe lines or railroads, stream crossings, and crossings of irrigation and drainage ditches. Warning signs should also be installed where the cable is in close proximity to roads, highways, railroad rights-of-way, or gravel pits.

WARNING

**TELEPHONE CABLE
UNDERGROUND**

**BEFORE WORKING NEAR HERE
PLEASE CALL
TOLL WIRE CHIEF COLLECT**

THE PACIFIC TEL. AND TEL. CO.

FIGURE 1

5.02 Warning signs at crossings should be placed on each side and the wording of the signs should face in the direction that offers the maximum visibility to persons approaching the cable route. Warning signs placed on private rights-of-way and not adjacent to ditches, roads, or railroads shall be placed in such a manner as to face ahead along the cable route. In general, warning signs indicating the route of buried cable shall be so placed that from any location along the cable route a warning sign will be visible in each direction. In individual situations that require the signs to be visible from opposite directions, it shall be permissible to place the signs back to back.

5.03 Warning signs shall generally be mounted on markers as illustrated in Figure 2. When the sign is placed on a rectangular marker, it should be mounted on the 6-inch surface. In this arrangement the marker shall be turned, if necessary, so that the sign will face in the proper direction. When using a 10-foot marker, the bottom of the sign will be normally about 4-1/2 feet above the ground line. Where greater clearances above the ground are necessary, longer markers shall be used. In general, the clearance is determined by the type of terrain where the signs are to be placed. The signs shall be mounted sufficiently high to be visible above brush and snow from various points along the cable route. Wherever practicable, signs placed on land used for live stock grazing shall have a minimum clearance of 6-1/2 feet above the ground to avoid the possibility of damage from the live stock rubbing against the signs.

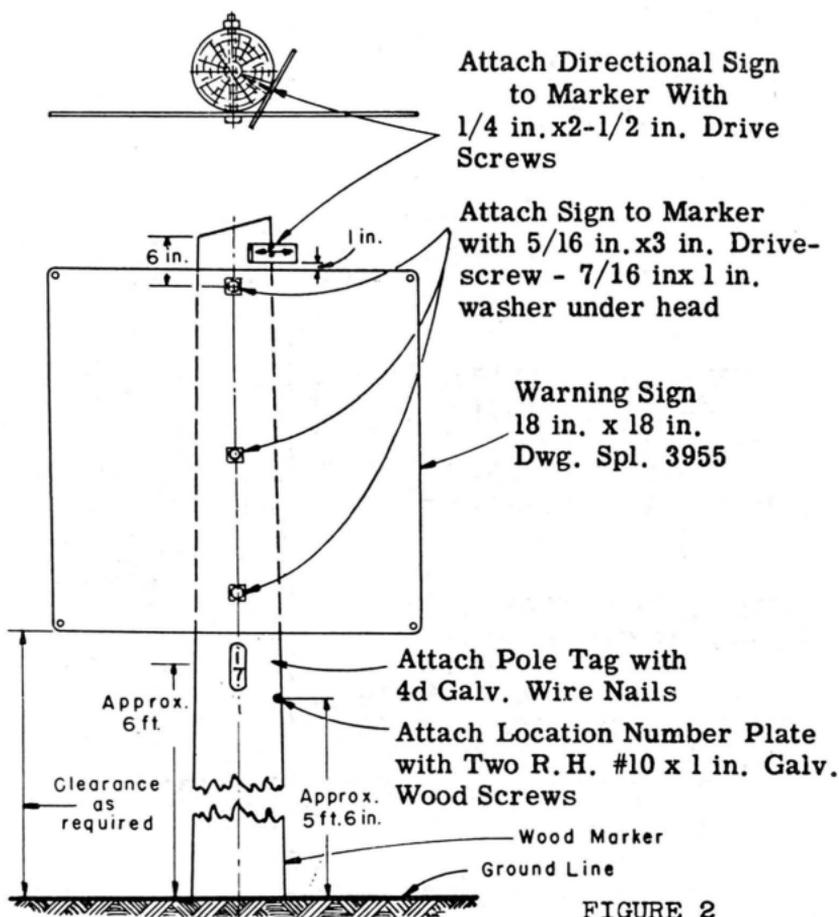


FIGURE 2

Buried Cable Marker Extension

5.04 Where it is necessary to attach warning signs in pasture or grazing land, on markers previously placed and the markers are not sufficiently high to place the signs beyond the reach of cattle or horses, the sign may be raised by attaching a Buried Cable Marker Extension to the marker as shown in Figure 3. The extension is bolted to the marker by means of two 1/2-inch galvanized machine bolts. The flanges of the channel should be against the marker, and the upper mounting hole should be not less than 4 inches from the lowest edge of the top of the marker. The warning sign is mounted on the flat surface of the channel. The extension should be so placed on the marker that the warning sign will face in the proper direction and have the clearances set forth in Paragraph 5.03 above.

Note: The Buried Cable Marker Bracket is used to mount the directional arrow on the extension when it is desired to place the arrow at an angle with the plane of the warning sign. The bracket may be bent to form the required angle.

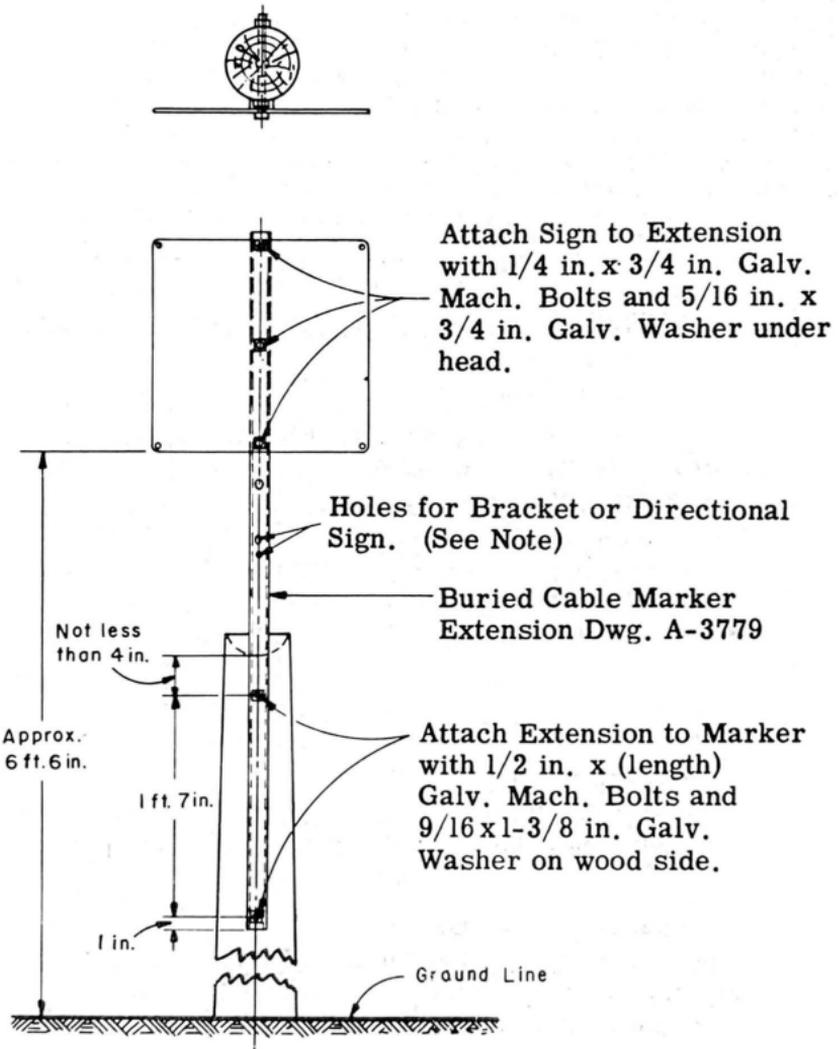


FIGURE 3

Warning Signs Placed at Entrances to Private Property

5.05 Where specified, the warning sign may also be installed at entrances to property on which buried or underground cable is located and on which unusual hazards might arise from the operations of borrow pits, gravel pits, mining activities, irrigation work, etc.

5.06 Where approved by the owner, the warning sign shall be mounted on a substantial fence or post adjacent to the entrance to the property. The sign shall be mounted in such a manner that when the gate is opened the view of the sign will not be obstructed. When attaching the sign to fence posts or fence rails, 3/8 inch galvanized machine bolts of the proper length, with washers, shall be used in the appropriate mounting holes. Additional washers should be used against the face of the sign to avoid damage to the enamel.

5.07 No warning sign shall be placed on any portion of a state highway right-of-way without authorization of the Division Plant Engineer, who shall obtain a written permit from the State Department of Public Works, Division of Highways, before giving such authorization.

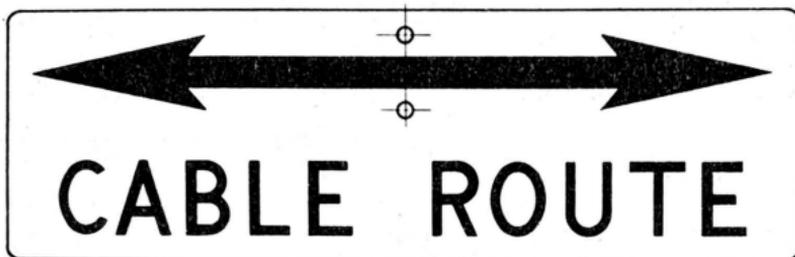
Cable Location Signs

5.08 Place cable location signs on all markers except those bearing warning signs. These location signs are enameled steel plates, 3-1/2 in. x 7-1/8 in., which bear the words "Underground Telephone Cable, Do Not Disturb." In general, they should be attached 2 inches below the lowest visibility strip on the side of the marker that will be most conspicuous to persons approaching the cable route. See Figures 5 and 6. Round markers shall be ground sufficiently to obtain a flat surface 2 inches wide for mounting the sign.

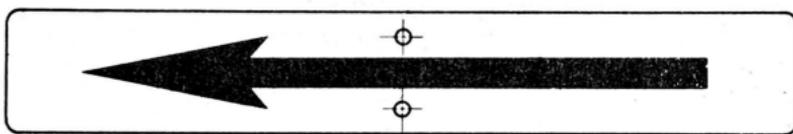
Cable Directional Signs

5.09 The sign consists of two parts; a plate with a double-headed arrow and the wording "CABLE ROUTE" below, and a panel with a single-headed arrow which may be used to cover the double-headed arrow and point either

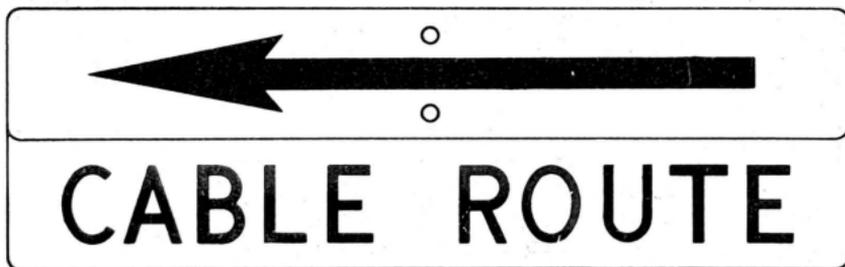
to right or left as desired. (See Figure 4.) Detail 2 shall be mounted on markers or on marker extensions where there is no change in the direction of the cable route. At angles in the line of the cable route, Detail 1 shall be placed over Detail 2 and mounted on the marker or the marker extension to indicate the change in direction of the cable route. (See Figures 2 and 3.)



Directional Arrow Detail 2



Directional Arrow Detail 1



Typical Assembly of Directional Arrow
Detail 1 and 2

FIGURE 4

5.10 Where directional signs are used with warning signs, the directional sign shall be placed above the warning sign as illustrated in Figure 2 and Figure 3. Where the directional signs are attached to markers that bear visibility strips, the directional sign shall be mounted between the first and second visibility strips.

6. ORANGE VISIBILITY STRIPS

6.01 Visibility strips, used to increase the visibility of buried cable markers, shall be placed on all buried cable markers except those bearing warning signs. These strips are furnished in two sizes, 14-in. x 5-1/2 in. and 14-in. x 3-1/2 in., and are made of aluminum painted orange on the side that is exposed.

Note: The orange visibility strips shall not be used on public highways. In such cases, Metal Visibility Strips shall be used in accordance with G21.901.

6.02 Where round markers are used, at least three 5-1/2 in. visibility strips shall be mounted as illustrated in Figure 5. Where the strips do not completely encircle the marker, they should be so placed that the starting edge of the strip is approximately 120° around the marker from the starting edge of the preceding strip.

6.03 Where 4-inch x 6-inch redwood timbers are used for markers, the visibility strips shall be placed vertically on each of the four sides of the marker as shown in Figure 6. The 5-1/2 inch strips shall be used on the 6-inch surfaces and 3-1/2 inch strips shall be placed on each of the two 4-inch sides of the marker. On tall markers, it may be desirable to use two strips on each of the four sides of the marker to increase visibility.

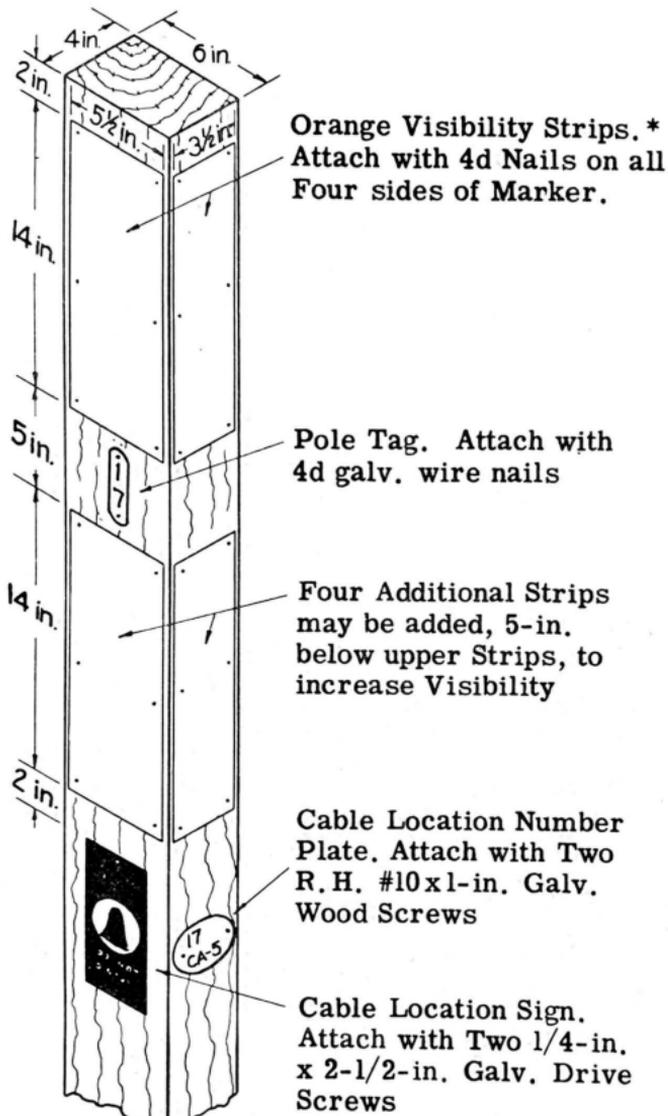


FIG. 6

* Except as noted in Paragraph 6.01

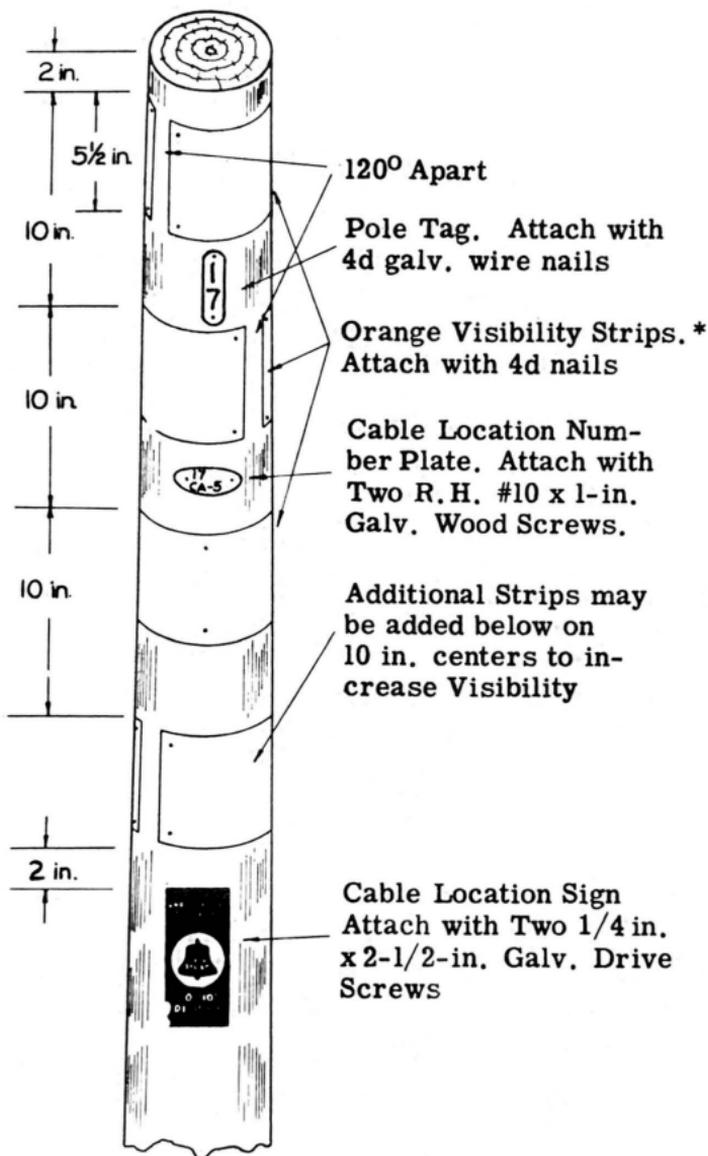


FIG. 5

* Except as noted in Paragraph 6.01