PLACING POLES

POLE HOLES

Contents

1. LOCATION

1.01 When stakes are used to show pole locations, dig or bore hole so that the center of the pole hole will be at the location of the stake or at the specified distance from the stake.

1.02 Where no stakes are used, dig or bore holes where shown by detail plans or directed by supervisor, bearing in mind the requirements for clearances.

1.03 When railroad crossing poles are involved, see the section of the Practices covering Railroad Crossings for the minimum depth at which such poles may be set.

2. DIAMETER OF HOLES

2.01 Make holes large enough to permit the free setting of the pole without cutting down its normal circumference at the butt, and of sufficient size to permit tamping of the backfill throughout the depth of the hole. Make the holes of uniform diameter from top to bottom. Where large poles are to be set with pike poles, trench the side of the hole facing toward the pole to facilitate the entrance of the pole in the hole.

3. DEPTH OF HOLES

3.01 In level ground, under average firm ground conditions and in solid rock, set poles to the depths given in the appropriate column in the following table. Under certain conditions, as described in Paragraphs 3.02 to 3.06, inclusive, different depths of setting are recommended. Where a pole hole is in rock and the diameter of the hole at the surface of the rock is more than two feet, set the pole to the full depth recommended for poles set in firm ground. Where there is any probability of the grade of the highway or ground under the line being changed within a short time, set poles, whenever practicable, so that they will be in the ground not less than the specified depths after the new grade is established.

Length of Pole (in Feet)	Depth of Setting in Average Firm Ground (in Feet)	Depth of Setting in Solid Rock (in Feet)*
16	3-1/2	3
18	3-1/2	3
20	4	3
22	4	3
25	4-1/2	3
30	5	3
35	5	3-1/2
40	5-1/2	3-1/2
45	6	4
50	6-1/2	4
55	7	4-1/2
60	7	4-1/2
65	7-1/2	5
70	7-1/2	5
75	8	5-1/2
80	8	6

*These depths of setting are recommended where solid rock is encountered at the ground level and the diameter of the hole is such as to permit pieces of rock to be wedged firmly between the pole surface and the walls of the hole, so as to prevent the pole from leaning.

Note: See the section of the Practices covering Railroad Crossings for the minimum depth of setting for railroad crossing poles.

3.02 Unguyed poles carrying very heavy loads tend to lean, particularly under wet ground conditions in rainy seasons, and also when exposed to strong cross winds. In order to prevent poles from leaning under such conditions, set the following poles one foot deeper in average firm ground than the normal depth recommended in the above table, or set them to the depths recommended in the table and, in addition, place ground braces as described in Section G21.145. In the absence of instructions from the supervisor as to which practice should be followed, select the one which will be more economical.

(a) Toll cable poles which will carry a cable load in excess of one full size cable, all span lengths.

(b) Poles which will carry a load in excess of one cable on 16,000 pound or larger strand and the span lengths average more than 150 feet.

(c) Open wire poles which will carry more than 30 wires in heavy loading areas, or 40 wires in medium loading areas.

(d) Poles which will carry cable supported by 16,000 pound or larger strand on cable extension arms or more than 30 wires on extension fixtures.

3.03 In loose earth or swampy ground and under other conditions where local experience indicates that it is advisable, set poles either one foot deeper than is specified in the table in Paragraph 3.01 or set them to the depths recommended in the table and, in addition, place ground braces or other supports as described in Section G21.145. The greater depth of setting is preferable, provided that one to two feet of firm foundation can thereby be obtained.

3.04 Guyed poles may be set to a depth one foot less than that specified in the table for poles in firm ground but never less than 3 feet deep.

3.05 Poles set in sloping banks or within four feet of the edge of a bank, particularly the edge of a drainage ditch, should be set one to two feet deeper than is specified in the table, depending on the nature of the ground and the load to be supported.

3.06 Unguyed corner poles, unguyed dead-end poles and unguyed stubs shall be set deeper by one foot or more, depending on the nature of the ground and the load to be supported.

3.07 Where solid rock is encountered at various depths below the ground level, set poles to the following minimum depths.

Depth Below Ground at Which Solid Rock is Encountered	Minimum Total Depth of Setting							
	25 ft. Pole	30 ft. Pole	35 ft. Pole	40 ft. Pole	45 ft. Pole	50 ft. Pole	55 ft. Pole	60 ft. Pole
0'	3'-0"	3'-0"	3'-6"	3'-6"	4'-0"	4'-0"	4'-6"	4'-6"
0'-6"	3'-6"	3'-6"	3'-11"	3'-11"	4'-3"	4'-6"	4'-10"	4'-10"
1'	3'-10"	3'-10"	4'-2"	4'-2"	4'-6"	4'-10"	5'-1"	5'-1"
1'-6"	4'-2"	4'-2"	4'-5"	4'-5"	4'-9"	5'-1"	5'-4"	5'-4"
2'	4'-3"	4'-5"	4'-8"	4'-8"	5'-1"	5'-5"	5'-9"	5'-9"
2'-6"	4'-4"	4'-8"	4'-10"	5'-0"	5'-4"	5'-8"	6'-0"	6'-0"
3'	4'-5"	4'-10"	4'-11"	5'-2"	5'-7"	5'-11"	6'-4"	6'-4"
3'-6"	4'-6"	4'-11"	5'-0"	5'-4"	5'-9"	6'-1"	6'-7"	6'-7"
4'	4'-6"	5'-0"	5'-0"	5'-5"	5'-11"	6'-4"	6'-9"	6'-9"
4'-6"	4'-6"	5'-0"	5'-0"	5'-6"	6'-0"	6'-5"	6'-10"	6'-10"
5'		5'-0"	5'-0"	5'-6"	6'-0"	6'-6"	7'-0"	7'-0"
5'-6"				5'-6"	6'-0"	6'-6"	7'-0"	7'-0"
6'					6'-0"	6'-6"	7'-0"	7'-0"
6'-6"						6'-6"	7'-0"	7'-0"
7'							7'-0"	7'-0"

3.08 Where the pole hole is bored by the earth boring machine and the pole is to be guyed, tamp the earth at the bottom of the hole before setting the pole in order to compact any loose earth that may be present.

3.09 In wet ground and loose ground that cannot be tamped to a firm foundation, the hole should be made large enough to permit placing an anchor plank under guyed corner or dead-end poles or unguyed poles that will carry a heavy load.

4. COVERING HOLES

4.01 The number of holes to be dug or bored each day should, where practicable, be sufficient to permit the pole erection gang to do a full day's work and fill practically all the holes the same day.

4.02 Where holes are to remain open at the end of the day's work, cover them well to prevent accidents. Where conditions require it, the holes should be covered with substantial planking immediately after they have been dug.

5. METHODS OF DIGGING OR BORING HOLES

5.01 In ordinary ground.

(a) With Earth Boring Machine. Use the earth boring machine if one is available and conditions are such as to make its use advantageous.

(b) By Hand. Use long handled shovel, digging spoon and digging bars. Place the earth removed from the hole to one side where it will not interfere with the erection of the pole. Where the excavated material is partly rock, separate the rock from the dirt to facilitate back filling.

(c) With Hand Earth Auger. The hand auger can be used to advantage where the required diameter of the holes is not greater than 10 inches and the earth is relatively free from large stones and rock. It will usually be desirable to have the shovel, spoon and digging bars also available.

5.02 In soft soil and swampy ground. The methods of digging holes in soft ground are as follows:

(a) By Hand. Where the soil caves while digging, use a barrel with the heads removed, or a split iron cylinder to act as shoring. Place the barrel or cylinder in position when the earth starts to cave and force it down as the earth is removed from inside. After the pole is erected, remove the cylinder, the barrel need not be removed.

(b) Water Jet Method. In sandy ground where water is close to the surface, and means are available for forcing a large volume of water through a nozzle to be placed alongside the

pole to be set, the water jet method may be employed. See Section G21.140 for instructions regarding setting poles by the water jet method.

5.03 In hard clay, gumbo or rock. The methods to be employed in hard soil will vary considerably with the conditions. The earth boring machine is capable of digging a hole under conditions that would be extremely difficult for hand digging, and if conditions permit the use of the boring machine, its use should be favored. Under the most severe conditions, compressed air tools will facilitate the work of excavating holes. However, if dynamite is required to blast the hole, consult your supervisor.

6. HOLES IN CONCRETE SIDEWALKS

6.01 In concrete sidewalks, remove only enough pavement to permit digging holes of the required size and proper tamping of the backfill.