

SPECIFICATION

DISTRIBUTION POLE SETTING AND SOIL PROBE USAGE GUIDELINES

1. SCOPE:

The purpose of this document is to provide detailed instruction for proper hole size and depth, plumbing of pole, backfill material, and proper tamping techniques. It also provides an overview of the soil probe inspection process.

2. DOCUMENTS:

2.1 None

3. EQUIPMENT:

- 3.1 Tampers: Pneumatic, Hydraulic or Mechanical
- 3.2 Soil Probe

4. MATERIALS:

4.1 None

5. PROCEDURE:

5.1 Excavation of Hole

- 5.1.1 The diameter of the hole shall have adequate space to allow the tamping of backfill around the circumference of the pole. The diameter of the hole shall be a minimum of eight (8) inches larger than the pole butt.
- 5.1.2 Table 1 lists the recommended auger size for several heights and classes of Northern Red Pine poles. For other species or pole heights and classes not listed, contact the Distribution Engineer for additional information.

Recommended Auger Sizes					
Size\Class	1	2	3	4	5
35 ft.	22 in	20 in	20 in	20 in	18 in
40 ft.	24 in	22in	20 in	20 in	20 in
45 ft.	24 in	22 in	20 in	20 in	20 in
50 ft.	24 in	24 in	22 in	20 in	20 in
55 ft.	24 in	24 in	22 in	22 in	

Table 1: Recommended Auger Sizes for Height and Class for Northern Red Pine Poles

☐=REVISED AREA

ENGR	APPD	DATE	APPD	DATE	REV
James Carlin	Quentin Rogers	08/18/14		10/15/13	
APPD	Quentin Rogers	09/09/14			A
DR	James Carlin	08/18/14			



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5.1.3 Unless otherwise specified, all poles shall be set to a minimum depth of ten (10) percent of pole height plus two (2) feet, and not to exceed three (3) inches deeper. As an exception, Thirty-Five Foot poles shall be set a minimum of six (6) feet in depth with a tolerance of plus three (+3) inches unless otherwise specified. See Table 2 for setting depth.

Pole Size	Minimum Setting Depth	Maximum Setting Depth
35 ft.	6.0 ft.	6.25 ft.
40 ft.	6.0 ft.	6.25 ft.
45 ft.	6.5 ft.	6.75 ft.
50 ft.	7.0 ft.	7.25 ft.
55 ft.	7.5 ft.	7.75 ft.

Table 2: Pole Size Setting Depth

5.1.4 The diameter of the hole shall be of uniform diameter or with the base of the hole larger than the top.

5.2 Setting of Pole

5.2.1 Pole shall be plumb, with no more than six (6) inches out of plumb as measured from the top center of pole to the bottom center at ground line.

5.2.1.1 Guyed Structures

5.2.1.1.1 Single Dead-end structures shall be raked away from the conductor, and be no more than six (6) inches out of plumb.

5.2.1.1.2 Double dead-end structures shall be raked away from the larger conductor size, and be no more than six (6) inches out of plumb

5.2.1.1.3 Angle structures shall be raked away from the conductors, and be no more than six (6) inches out of plumb so the pole leans in to the angle bisect.

5.2.1.1.4 Corner structures shall be raked away from the conductors, and be no more than six (6) inches out of plumb so the pole leans in to the angle bisect.

5.2.2 Facing the poles

5.2.2.1 For tangent lines, face corresponding poles so the gain of the pole is facing in the opposite direction from the previous pole where practicable.

5.2.2.2 For angle poles and corner poles, the previous two poles and the next two poles shall have the gain facing the angle/corner pole.

5.2.2.3 For dead-end structures, the previous two poles and the next two poles (if applicable) shall have the gain facing toward dead-end structure.

5.2.2.4 For Road Crossings and Rail Road Crossings, the previous two poles and the next two poles shall have the gain facing toward from the crossing.

5.3 Tamping

5.3.1 The backfill material must be compactible and suitable for providing a supportive foundation, free of voids, of adequate moisture content, and not frozen. If native soil is not acceptable for backfill, the select aggregate specified in Table 3 shall be used.

5.3.2 Prior to tamping, freestanding water shall be removed from hole. If the water cannot be removed, select aggregate backfill shall be used and tamped as specified.

5.3.3 Aggregate Backfill

5.3.3.1 The aggregate shall be well mixed in a stockpile before backfilling.

5.3.3.2 Where aggregate with smaller fines is available at a cheaper cost, the Distribution Engineer may provide approval for use.

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Gradation for Imported Granular Backfill	
Size of Gravel (or) Crushed Stone	Size of Mesh (in)
100% By Weight to pass 1" screen	1.00
60% – 90% By Weight to pass 1/2" screen	0.500
40% – 60% By Weight to pass no. 4 screen	0.187
25% – 50% By Weight to pass no. 8 screen	0.0937
20% – 40% By Weight to pass no. 16 screen	0.0469
15% – 30% By Weight to pass no. 40 screen	0.0165

Table 3: Gradation for Imported Granular Backfill

5.3.4 The backfill will be placed in layers of six (6) inches in depth around the pole.

5.3.4.1 Each layer shall be mechanically tamped to a density equal to or greater than the surrounding undisturbed soil before adding the next layer.

5.3.4.2 The backfilling and compaction shall be at a rate of one person shoveling, and two persons operating a mechanical or pneumatic tamper.

5.3.5 Native soil shall be banked around the pole and tamped to a minimum height of six (6) inches above the natural grade. The banked soil shall slope away from the pole.

5.4 Soil Probe Inspection Criteria

5.4.1 Use a soil probe that is constructed of a nominal 1/2 inch diameter metal rod between three (3) and four (4) feet in length. A vertical force should be consistently applied to the probe, with approximately thirty (30) pounds of pressure.

5.4.2 Probe each quadrant of the pole at least once. The foundation shall meet the criteria specified in Table 4.

Pole Foundation Criteria	
Probe Penetration Depth	Pass/Fail Criteria
0"-6"	Pass
6"-8"	Moderate
>8"	Fail

Table 4: Pole Foundation Criteria

6. ENVIRONMENTAL & SAFETY:

6.1 Adequate Personal Protection Apparel shall be worn while digging, setting and tamping of poles. This shall include but not limited to; hard hats, eye protection and steel toe boots.