

5.2 Prohibited defects

1. Cross breaks;
2. Decay, except as permitted for firm red heart in 5.3.1, defective butts in 5.4.4, and decayed knots in 5.4.6;
3. Dead streaks, except as permitted in 5.4.3;
4. Holes, open or plugged, are prohibited, except for those deliberately placed holes for explicit use as increment boring holes, framing holes, or through-boring holes. All increment boring holes should be plugged with treated wood plugs;
5. Hollow butts or tops, except as permitted under hollow pith centers and defective butts;
6. Marine borer damage; and
7. Nails, spikes, and other metal not specifically authorized by the purchaser.

5.3 Permitted defects

5.3.1 Firm red heart

Firm red heart not accompanied by softening or other disintegration (decay) of the wood is permitted.

5.3.2 Hollow pith centers

Hollow pith centers in the tops or butts and in knots are permitted in poles that are to be given full-length treatment.

5.3.3 Sap stain

Sap stain that is not accompanied by softening or other disintegration (decay) of the wood is permitted.

5.3.4 Scars

Turpentine acid face scars are permitted anywhere on the pole surface.

5.4 Limited defects

5.4.1 Bark inclusions

Depressions containing bark inclusions shall be not more than 2 inches (5cm) in depth, measured from the surface of the pole.

5.4.2 Compression wood

The outer 1-inch (25mm) of all poles shall be free from visible compression wood.

5.4.3 Dead streaks

A single, sound dead streak is permitted in western red cedar and northern white cedar, provided the greatest width of the streak is less than 1/4 of the circumference of the pole at the point of measurement.

5.4.4 Defective butts

Hollowing in the butt caused by "splinter pulling" in felling the tree is permitted, provided that the area of such a hollow is less than 10% of the butt area. Hollow heart or decay, or both, is permitted in cedar poles only, provided the aggregate area of the hollow heart or decay, or both, does not exceed 10% of the entire butt area and does not occur closer than 2 inches (50mm) to the side surface and provided that the depth of the hollow does not exceed 2 feet (0.61m), as probed and measured from the butt surface.

5.4.5 Insect damage

Insect damage, consisting of holes 1/16 inch (2mm) or less in diameter, or surface scoring or channeling is permitted. All other forms of insect damage are prohibited, except those associated with hollow heart in cedar poles.

5.4.6 Knot

The diameter of any single knot and the sum of knot diameters in any 1-foot (31cm) section shall not exceed the limits of Table 2.

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In determining the sum of the knot diameters in any 1-foot (0.31m) section, only those knots with diameters over 0.5 inch (13mm) whose pith centers fall within the section shall be included in the sum, and the 1-foot (0.31m) section shall be located so as to include the maximum number of knots (i.e., the most severe condition).

Type II "decayed knots" are permitted.

5.4.7 Scars (cat face)

No pole shall have a scar or turpentine cat face (southern pine) located within 2 feet (0.61m) of the groundline. Turpentine scars need be trimmed only to the extent necessary for examination for evidence of fungus infection and insect damage. Other sound scars are permitted elsewhere on the pole surface, provided they are smoothly trimmed and do not interfere with the cutting of any gain, and provided that:

1. The circumference at any point on trimmed surfaces located between the butt and 2 feet (0.61m) below the groundline is not less than the minimum circumference specified at 6 feet (1.8m) from the butt for the class and length of the pole;
2. The depth of the trimmed scar is not more than 2 inches (50mm), if the diameter is 10 inches (0.25m) or less, or 1/5 the pole diameter at the location of the scar if the diameter is more than 10 inches (0.25m).

5.4.8 Shakes

Shakes in the butt surface that are not closer than 2 inches (50mm) to the side surface of the pole are permitted, provided they do not extend to the groundline. Shakes or a combination of connected shakes that are closer than 2 inches (50mm) to the side surface of the pole are permitted, provided they do not extend farther than 2 feet (0.61m) from the butt surface and do not have an opening wider than 1/8 inch (3mm). Shakes in the top surface are permitted in poles that are to be given full-length preservative treatment, provided that the shake is not closer to the surface of the pole than the midpoint of a line extending from the pith to the surface (i.e., the shake is permitted if it is closer to the pith than to the surface of the pole).

5.4.9 Shape

Poles shall be free from short crooks. A pole may have sweep subject to the following limitations:

1. *Where sweep is in one plane and one direction only:* For poles of all species, except northern white cedar, a straight line joining the surface of the pole at the groundline and the edge of the pole at the top shall not be distant from the surface of the pole at any point by more than 1 inch (25mm) for each 10 feet (3m) in length. The deviation for northern white cedar poles is 1 inch (25mm) for each 5 feet (1.5m) in length. (See Figure 1, Diagram 1.)
2. *Where sweep is in two planes (double sweep) or in two directions in one plane (reverse sweep):* Except in northern white cedar poles⁵, a straight line connecting the midpoint at the groundline with the midpoint at the top shall not at any intermediate point pass through the surface of the pole. (See Figure 1, Diagram 2.)

5.4.10 Spiral grain

Spiral grain (twist grain) is permitted as follows:

Length of pole (feet)	Maximum twist of grain permitted
30 (9.1m) and shorter	1 complete twist in any 10 feet (3m)
35 (10.7m) to 45 (13.7m), inclusive	1 complete twist in any 16 feet (5m)
50 (15.2m) and longer	1 complete twist in any 20 feet (6m)

⁵ The double sweep limitation for northern white cedar poles shall be as follows: Where sweep is in two planes (double sweep), the sum of the sweeps in the two planes (each sweep being measured as shown in Figure 1, Diagram 1) shall be not greater than the allowance for sweep in one plane and one direction for a pole of the same length.

5.4.11 Splits & checks

5.4.11.1 In the top

A split or a combination of two single checks (each check terminating at the pith center and separated by not less than 1/6 of the circumference) having one or both portions located in a vertical plane within 30 degrees of the top bolt hole shall not extend downward along the pole more than 6 inches (15cm). All other combinations of checks or a split shall not extend downward along the pole more than 12 inches (0.31m).

5.4.11.2 In the butt

A split or a combination of two single checks, as defined above, shall not extend upward along the pole more than 2 feet (0.61m).

5.4.12 Shelling

Shelling on the surface of the pole shall be limited to no more than one inch (25mm) in depth nor exceed 1/3 of the pole's circumference at the point of shelling.

5.4.13 Cone holes

For species containing cone holes, the sum of the diameter of all cone holes greater than 0.5 inch (13 mm) shall be combined with the sum of the diameter of all knots greater than 0.5 inch (13 mm) knot diameters in any 1-foot (0.31m) section, and the result shall not exceed the limits of Table 2. In determining the combined sum of cone hole and knot diameters, the 1-foot (0.31m) section shall be located so as to include the maximum sum of cone hole and knot diameters greater than 0.5 inch (13 mm).

6 Dimensions

For dimensions of particular species of poles, see Tables 3 through 10 (or Tables 3M through 10M).

6.1 Length

Poles less than 50 feet (15.2m) in length shall be not more than 3 inches (80mm) shorter or 6 inches (150mm) longer than nominal length. Poles 50 feet (15.2m) or more in length shall be not more than 6 inches (150mm) shorter or 12 inches (0.31m) longer than nominal length.

Length shall be measured between the extreme ends of the pole.

6.2 Circumference

6.2.1 General

Poles are classed while in the green condition, after bark removal and/or shaving. Subsequently, there may be some shrinkage due to conditioning, seasoning, or while in service. Therefore, this shrinkage, which is usually about 2 percent as the pole dries below fiber saturation, should be recognized if re-measuring circumference at a later date.

6.2.2 Circumference

The minimum circumferences at 6 feet (1.8m) from the butt and at the top, for each length and class of pole, are listed in Tables 3 through 10 (or Tables 3M through 10M). The circumference at 6 feet (1.8m) from the butt of a pole shall be not more than 7 inches (0.18m) or 20 percent larger than the specified minimum, whichever is greater. The top dimensional requirement shall apply at a point corresponding to the minimum length permitted for the pole.

6.3 Classification

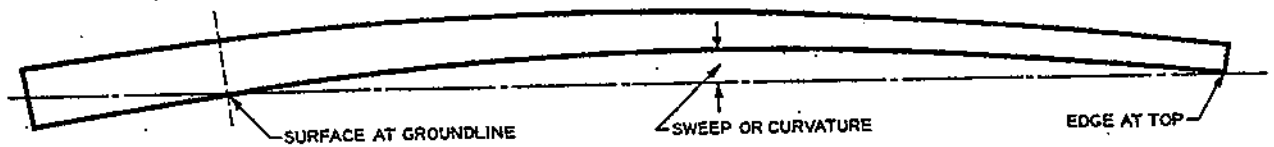
The true circumference class shall be determined as follows: Measure the circumference at 6 feet (1.8m) from the butt. This dimension will determine the true class of the pole, provided that its top (measured at the minimum length point) is large enough. Otherwise, the circumference at the top will determine the true class, provided that the circumference at 6 feet (1.8m) from the butt does not exceed the specified minimum by more than 7 inches (0.18m) or 20 percent, whichever is greater.

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Table 2 - Limits of Knot Sizes

	Maximum sizes permitted		
	Diameter of any single knot (in) and (mm)		Sum of diameters of all knots (and cone holes, if applicable) greater than 0.5 inch (13mm) in any 1-foot (0.31m) section (in) and (mm)
Length of Pole	Classes H6 to 3	Classes 4 to 10	All Classes
45 feet (13.7m) and shorter Lower half of length Upper half of length	3 in (80mm) 5 in (130mm)	2 in (50mm) 4 in (100mm)	1/3 of the average circumference of the same 1-foot (0.31m) section or 8 inches (.20m), whichever is greater, but not to exceed 12 inches (0.31m) ¹⁾
50 feet (15.2m) and longer Lower half of length Upper half of length	4 in (100mm) 6 in (150mm)	4 in (100mm) 6 in (150mm)	1/3 of the average circumference of the same 1-foot (0.31m) section or 10 inches (0.25m), whichever is greater, but not to exceed 14 inches (.36m) ¹⁾
NOTE - See clause 4 and Tables 3 through 10 (or Tables 3M through 10M) for pole classes.			
¹⁾ Both upper and lower halves			

DIAGRAM 1 - MEASUREMENT OF SWEEP IN ONE PLANE AND ONE DIRECTION



**DIAGRAM 2 - MEASUREMENT OF SWEEP IN TWO PLANES (DOUBLE SWEEP)
OR IN TWO DIRECTIONS IN ONE PLANE (REVERSE SWEEP)**

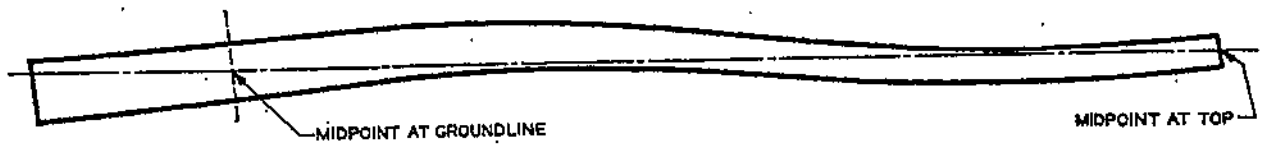
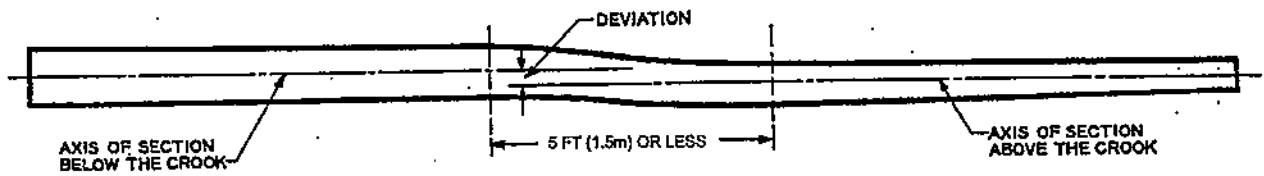
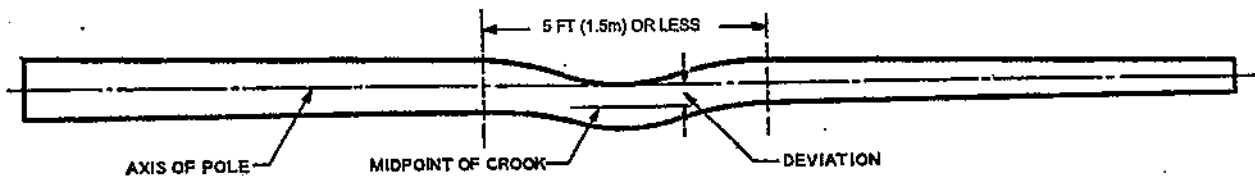


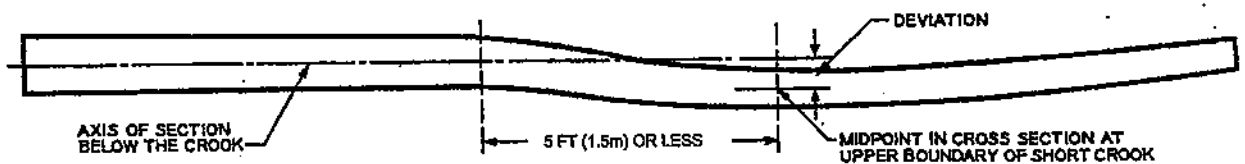
DIAGRAM 3 - MEASUREMENT OF SHORT CROOK (THREE CASES SHOWN)



CASE 1: WHERE THE REFERENCE AXES ARE APPROXIMATELY PARALLEL



CASE 2: WHERE AXES OF SECTIONS ABOVE AND BELOW THE CROOK COINCIDE OR ARE PRACTICALLY COINCIDENT



CASE 3: WHERE AXIS OF SECTION ABOVE SHORT CROOK IS NOT PARALLEL OR COINCIDENT WITH AXIS BELOW THE CROOK

NOTE - The three cases shown under Diagram 3 are typical and are intended to establish the principle of measuring short crooks. There may be other cases not exactly like those illustrated.

Figure 1 - Measurement of sweep and short crook in poles