POLE EMBEDMENT DEPTH

Refer to the following charts:
This information can be used to help determine the foundation depth for installing light poles. These charts are based on soil conditions where the installation is to be done. We typically recommend using the table for: clay, sandy clay, silty clay and clayey silt soil, which is the worst soil classification. So the numbers will be high, but the safety factor is also higher. For more information, please consult a local structural engineer for advice on embedment depths.

Using the Charts

Determine pole size and wall thickness, this will give you a rated pole working moment.

Using the rated pole working moments, move up the graph vertically until you reach the foundation diameter to be used, look horizontally. The recommended foundation depth will be at that intersection.

EXAMPLE: Using the table for clay soil classification (page 2) and a 4" square aluminum pole with a "D" wall or .250 in wall thickness using an 18" foundation diameter. Rated pole working moment = 7,000 ft lbs., vertical/horizontal intersects at foundation depth of 6'.

Anchor Bolt Placement

- For current information – See: CI102X01

POLE EMBEDMENT DEPTH

Backfill Requirements

The backfill in the annular space around columns not embedded in poured footings shall be by one of the following methods:

A. Backfill shall be of concrete with an ultimate strength of 2000 pounds per square inch at 28 days. The hole shall be not less than 4 inches larger than the diameter of the column at its bottom or 4 inches larger than the diagonal dimensions of a square or rectangular column.

B. Backfill shall be clean sand. The sand shall be thoroughly compacted by tamping in layers not more than 8 inches in depth.

Class of Materials[2]	Allowable Foundation Pressure Lbs. Sq. Ft.[3]	Lateral Bearing Lbs./Sq. Ft. Ft. of Depth Below Natural Grade[4]	Lateral Sliding[1]	
			Coefficient[5]	Resistance Lbs./Sq. Ft.[6]
Sedimentary and Foliated Rock	2000	400	.35	
Sandy Gravel and/or Gravel (GW and GP)	2000	200	.35	
Sandy, Silty Sand, Clayey Sand, Silty Gravel and Clayey Gravel (SW, SP, SM, SC, GM, GC)	1500	150	.25	
Clay, Sandy Clay, Silty Clay and Clayey Silt (CL, ML, MH and CH)	1000	100		130

(1) Lateral bearing and lateral sliding resistance may be combined.

(2) For soil classifications OL,OH and PT (i.e. organic clays and peat), a foundation investigation shall be required.

(3) All values of allowable foundation pressure are for footings having a minimum width of 12 inches and a minimum depth of 12 inches into natural grade. Except as in Footnote 7 below, increase of 20 percent allowed for each additional foot of width and/or depth to a maximum value of three times the designated value.

(4) May be increased by the amount of the designated value for each additional foot of depth to a maximum of 15 times the designated value. Isolated poles for uses such as flagpoles or signs and poles used to support buildings which are not adversely affected by a 1/2-inch motion at ground surface due to short-term lateral loads may be designed using lateral bearing values equal to two times the tabulated values.

(5) Coefficient to be multiplied by the dead load.

(6) Lateral sliding resistance value to be multiplied by the contact area. In no case shall the lateral sliding resistance exceed one half the dead load.

(7) No increase for width is allowed.

*Round off embedment depth to next greatest 0.5 foot increment.

* Minimum embedment depth is 4 feet.

*Chart values limited to foundations with a projected height above grade less than or equal to 30-inches.

PUBLICATIONS & DEFINITIONS

POLE EMBEDMENT DEPTH

Rated Pole Working Moments

Square Steel & Aluminum Poles

Pole Size and Type	Wall Thickness	Rated Pole Working Moment
3"sq.Aluminum [1]	.125 in.	2,200 Ft.- lbs.
3"sq Steel	.125 in.	5,800 Ft.- lbs.
4"sq Aluminum [1]	.125 in.	3,900 Ft.- lbs.
4"sq Aluminum	.250 in.	7,100 Ft.- lbs.
4"sq Steel	.125 in. "C"	10,800 Ft.- lbs.
4"sq Steel	.125 in. "R"	15,125 Ft.- lbs.
4"sq Steel	.188 in. "S" and "H"	15,125 Ft.- lbs.
5"sq Aluminum	.250 in.	11,500 Ft.- lbs.
5"sq Steel [2]	.120 in.	17,250 Ft.- lbs.
5"sq Steel [2]	.188 in.	24,600 Ft.- lbs.
6"sq Aluminum [2]	.250 in.	17,000 Ft.- lbs.
6"sq Steel [2]	.188 in.	36,400 Ft.- lbs.
4.5" Round		6,750 Ft.- lbs.
5.5" Round		10,250 Ft.- lbs.

[1]Use 4 ft. foundation depth
[2]Use 24"diameter foundation

Round Tapered Steel Poles

Pole Size and Type	Wall Thickness	Rated Pole Working Moment
25' Round Tapered Steel [2]	.125 in.	20,000 Ft.- lbs.
30' Round Tapered Steel [2]	.125 in.	26,300 Ft.- lbs.
35' Round Tapered Steel [2]	.125 in.	29,770 Ft.- lbs.
39' Round Tapered Steel [2]	.125 in.	33,450 Ft.- lbs.
45' Round Tapered Steel [2]	.125 in.	41,460 Ft.- lbs.
50' Round Tapered Steel [2]	.125 in.	41,460 Ft.- lbs.

[1]Use 4 ft. foundation depth
[2]Use 24"diameter foundation

Round Tapered Aluminum Poles

Pole Size and Type	Wall Thickness	Rated Pole Working Moment
25' Round Tapered Aluminum [2]	.188 in.	8,637 Ft.- lbs.
30' Round Tapered Aluminum [2]	.188 in.	15,716 Ft.- lbs.
35' Round Tapered Aluminum [2]	.188 in.	15,716 Ft.- lbs.
39' Round Tapered Aluminum [2]	.188 in.	24,907 Ft.- lbs.
50' Round Tapered Aluminum [2]	.250 in.	32,506 Ft.- lbs.

[1]Use 4 ft. foundation depth
[2]Use 24"diameter foundation

PUBLICATIONS & DEFINITIONS

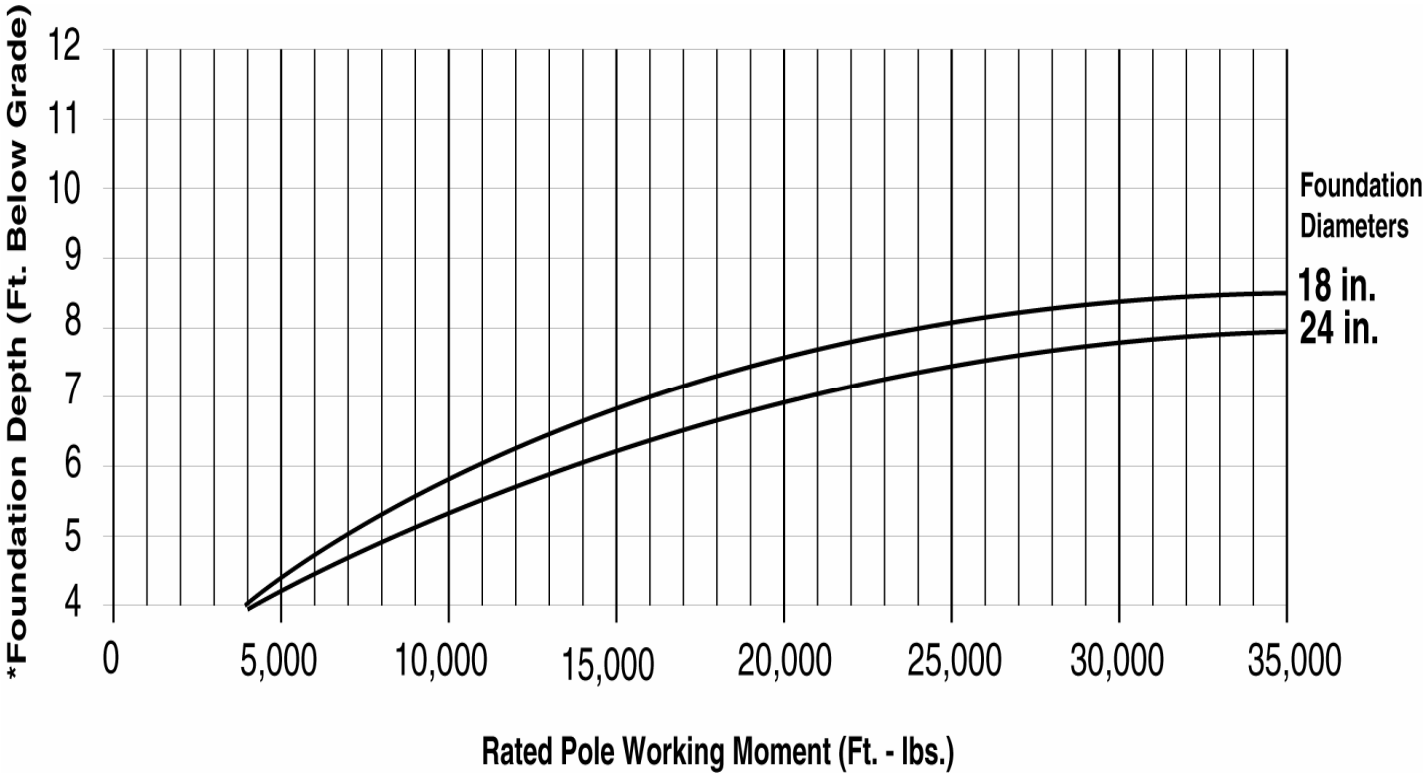
POLE EMBEDMENT DEPTH

Soil Classification

Sand

Sand, Silty Sand, Clayey Sand, Silty Gravel and Clayey Gravel (SW, SP, SM, SC, GM and GC)

Follow all Backfill Requirements



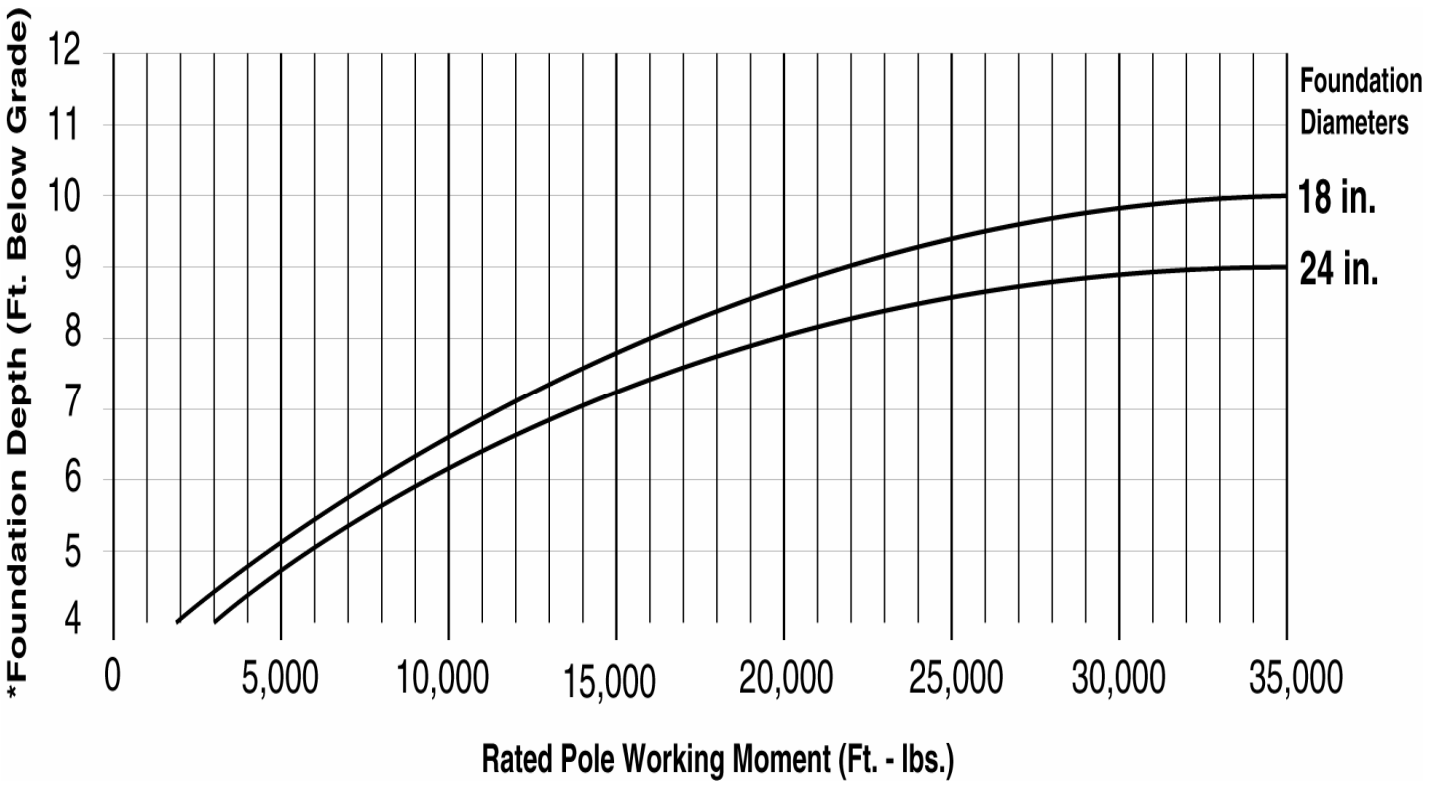
PUBLICATIONS & DEFINITIONS

POLE EMBEDMENT DEPTH

Clay

Clay, Sandy Clay, Silty Clay, Clayey Silt

Follow all Backfill Requirements



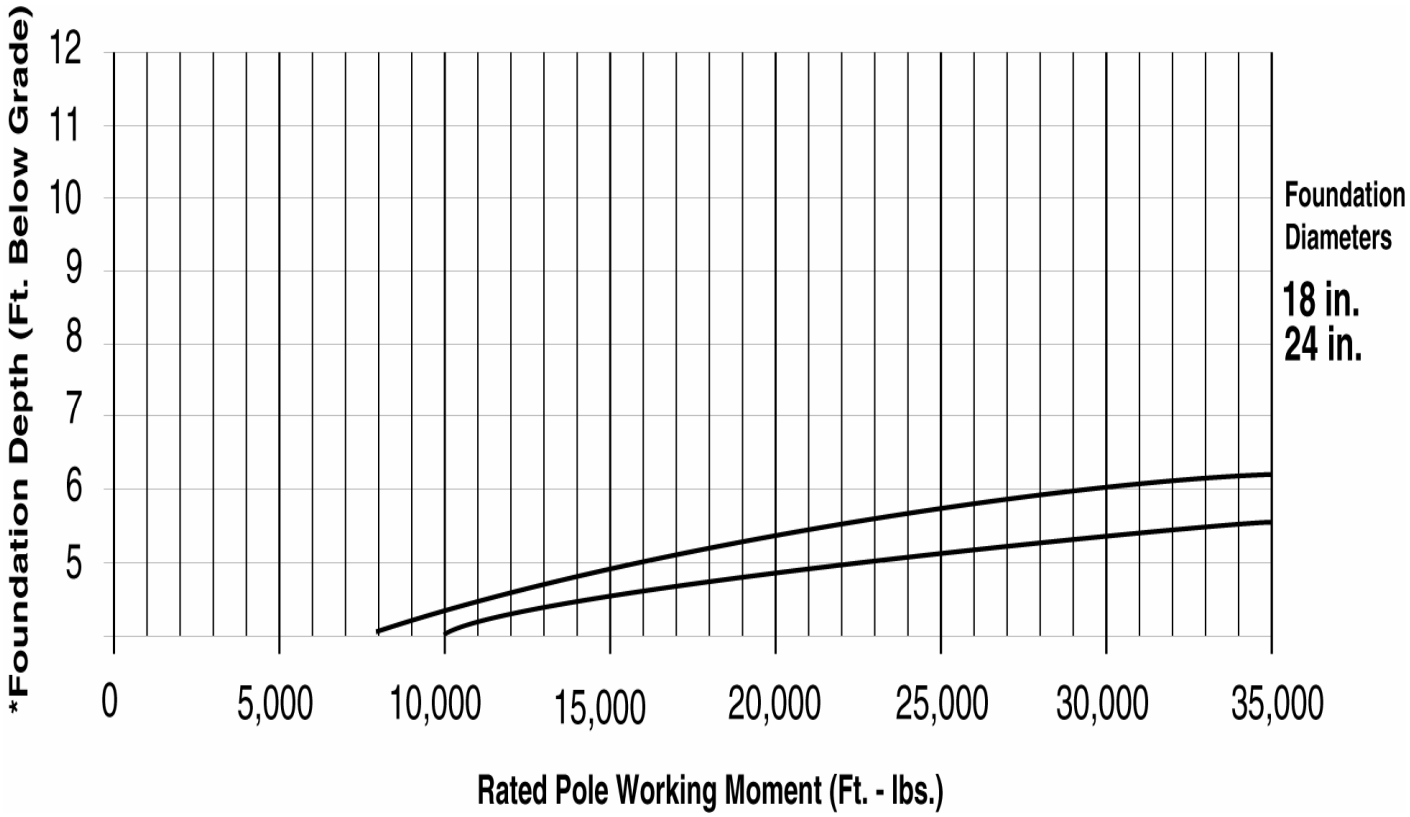
PUBLICATIONS & DEFINITIONS

POLE EMBEDMENT DEPTH

Sedimentary Rock

Sedimentary and Foliated Rock

Follow all Backfill Requirements



PUBLICATIONS & DEFINITIONS

POLE EMBEDMENT DEPTH

Gravel

Sandy Gravel and/or Gravel (GW and GP)

Follow all Backfill Requirements