

EP486.1 - Shallow Post Foundation Design

Sections of the standard that are applicable to fence post footings:

§4.2.2 – If there is no geotech report available, Table 1 can be used for lateral and vertical soil strengths. (S & S_y)

Presumed Soil Properties for Post Foundations per EP486.1, Table 1			
Class of Materials	Density / Consistency	Lateral Bearing Pressure per unit depth, S (psf / ft)	Allowable Vertical Foundation Pressure, S _y (psf)
1. Crystalline bedrock	-	1,200	4,000
2. Sedimentary & foliated rock	-	400	2,000
3. Sandy gravel and /or gravel (GW & GP)	Firm	300	2,000
	Loose	200	
4. Sand, silty sand, clayey sand, silty gravel & clayey gravel (SW, SP, SM, SC,	Firm	200	1,500
	Loose	150	
5. Clay, sandy clay, silty clay, clayey silt, silt & sandy silt (CL, ML, MH & CH)	Medium	130	1000
	Soft	100	

§4.2.2.1 – If using Table 1 values, allowable lateral soil pressure, S can be doubled for isolated post (e.g. fence posts)

§4.2.2.2 – If using Table 1 values, allowable lateral soil pressure, S can also be increased by 1/3 for wind forces. (Total increase is 2.67 for isolated posts & wind force)

§4.2.3.1 – If S and S_y values are determined by a Geotechnical Engineer, the Engineer will have to determine if the lateral strength increases per §4.2.2.1 & §4.2.2.2 are allowable.

§4.2.3.2 – Soil test samples are to be taken at 1/3 of the expected post depth and at the full post depth. Determine this preliminarily from the table 1 values or the IBC §1807.3 procedure before having the samples taken if possible.

§4.2.3.4 – Table 1 values have safety factors built in – values from a Geotech typically will not. Divide the Engineer provided S and S_y values by a minimum safety factor of 2.5. (Verify with Engineer that they did not include safety factors)

§5.2.1 – Extend the post hole below the frost line.

§6.5.1 – Non-constrained post footing minimum depth formula. Variables in red changed to match FenceDesign.com nomenclature. Solve for d by iteration by changing footing depth, D and footing diameter, b as needed.

$$d = \sqrt{\frac{6P + \frac{8P\frac{1}{2}h}{D}}{MSb}}$$

Minimum Footing Depth, d ≤ Footing Depth, D is OK M = 2 if using Table 1 values per §4.2.2.1

Check axial forces per the Footing Design page at FenceDesign.com with either the Table 1 S_y value or a Geotech provided S_y value divided by the appropriate safety factor. (2.5 minimum per §4.2.3.4)