

### Strain Pole Foundation Chart

Span Length (ft)	Soil Type	Soil Condition		30 ft Pole Length		36 ft Pole Length		40 ft Pole Length		Casing Depth	
		S <sub>u</sub>	N <sub>60</sub>	Diameter (in)	Foundation Depth (ft)	Diameter (in)	Foundation Depth (ft)	Diameter (in)	Foundation Depth (ft)		
≤ 100	Low Sand	-	5 ≤ N <sub>60</sub> ≤ 10	36	14.0	42	13.5	42	14.0	42	14.5
	Med Sand	-	10 ≤ N <sub>60</sub> ≤ 20	36	13.0	42	12.5	42	13.0	42	13.5
	High Sand	-	N <sub>60</sub> > 20	36	12.5	42	12.0	42	12.5	42	12.5
	Low Clay	500 ≤ S <sub>u</sub> ≤ 1000	-	36	18.0	42	17.5	42	18.0	42	18.5
	Med Clay	1000 ≤ S <sub>u</sub> ≤ 2000	-	36	14.5	42	14.0	42	14.5	42	15.0
	high Clay	S <sub>u</sub> ≥ 2000	-	36	11.5	42	11.5	42	12.0	42	12.0
101 to 120	Low Sand	-	5 ≤ N <sub>60</sub> ≤ 10	36	14.5	42	14.0	42	15.0	42	15.0
	Med Sand	-	10 ≤ N <sub>60</sub> ≤ 20	36	13.5	42	13.0	42	13.5	42	14.0
	High Sand	-	N <sub>60</sub> > 20	36	13.0	42	12.5	42	13.0	42	13.0
	Low Clay	500 ≤ S <sub>u</sub> ≤ 1000	-	36	18.5	42	18.0	42	19.0	42	19.5
	Med Clay	1000 ≤ S <sub>u</sub> ≤ 2000	-	36	15.0	42	14.5	42	15.0	42	15.5
	high Clay	S <sub>u</sub> ≥ 2000	-	36	12.0	42	12.0	42	12.4	42	12.5
121 to 150	Low Sand	-	5 ≤ N <sub>60</sub> ≤ 10	36	15.0	42	15.0	42	15.5	42	16.0
	Med Sand	-	10 ≤ N <sub>60</sub> ≤ 20	36	14.0	42	13.5	42	14.0	42	14.5
	High Sand	-	N <sub>60</sub> > 20	36	13.5	42	13.0	42	13.5	42	14.0
	Low Clay	500 ≤ S <sub>u</sub> ≤ 1000	-	36	20.0	42	19.5	42	20.0	42	21.0
	Med Clay	1000 ≤ S <sub>u</sub> ≤ 2000	-	36	16.0	42	15.5	42	16.0	42	16.5
	high Clay	S <sub>u</sub> ≥ 2000	-	36	13.0	42	12.5	42	13.0	42	13.5
151 to 176	Low Sand	-	5 ≤ N <sub>60</sub> ≤ 10	36	-	42	-	42	16.0	42	16.5
	Med Sand	-	10 ≤ N <sub>60</sub> ≤ 20	36	-	42	-	42	14.5	42	15.0
	High Sand	-	N <sub>60</sub> > 20	36	-	42	-	42	14.0	42	14.5
	Low Clay	500 ≤ S <sub>u</sub> ≤ 1000	-	36	-	42	-	42	21.0	42	22.0
	Med Clay	1000 ≤ S <sub>u</sub> ≤ 2000	-	36	-	42	-	42	16.5	42	17.5
	high Clay	S <sub>u</sub> ≥ 2000	-	36	-	42	-	42	13.5	42	14.0
177 to 200	Low Sand	-	5 ≤ N <sub>60</sub> ≤ 10	36	-	42	-	42	16.0	42	17.0
	Med Sand	-	10 ≤ N <sub>60</sub> ≤ 20	36	-	42	-	42	15.0	42	15.5
	High Sand	-	N <sub>60</sub> > 20	36	-	42	-	42	14.5	42	15.0
	Low Clay	500 ≤ S <sub>u</sub> ≤ 1000	-	36	-	42	-	42	22.0	42	22.5
	Med Clay	1000 ≤ S <sub>u</sub> ≤ 2000	-	36	-	42	-	42	17.5	42	18.0
	high Clay	S <sub>u</sub> ≥ 2000	-	36	-	42	-	42	14.0	42	14.0

As Shown on Plans

\* S<sub>u</sub> = Ultimate Undrained Shear Strength in Cohesive Soil (psf)

\* N<sub>60</sub> = Standard Penetration Resistance (Blows/Foot according to ASTM D-1586) Corrected to 60 % Hammer Efficiency Utilizing the Hammer's Calibrated Energy


\* Table based on Drilled Shaft Head Deflection ≤ 1 Inch, the Ground Water Table ≥ 3 feet below the ground surface, and the first 3.5 feet of soil modeled as Disturbed Soil assuming ground is disturbed to locate utilities

**NOTE: A Detailed Site Specific Design is Required for the Following Conditions**

- 1) If N<sub>60</sub> < 5 or S<sub>u</sub> < 500 psf
- 2) If Span Lengths are greater than 200 feet
- 3) If Rock Sockets are required for the drilled shaft

\*\*\* When using a tethered span take the required span length and multiply by a 1.3 factor, as an adjustment to obtain the equivalent un-tethered span length. This adjusted un-tethered span length can then be used on the Strain Pole Foundation Design Chart. For example, if a 120 ft span connected to 36 ft strain poles requires tethering, an adjusted un-tethered span length of 156 ft should be used on the Strain Pole Foundation Design Chart to determine the required foundation depth.

File: PW:Reference Documents/Traffic Reference/Signals/Design Guides/Final/SIG-DESIGN-153A.dgn

 TRAFFIC SIGNAL DESIGN	DESCRIPTION	DATE	TRAFFIC SIGNAL STRAIN POLE FOUNDATION DESIGN TABLE
	INITIAL POST TO WEB	02/15/11	
DRAWN BY:			SIG-DESIGN-153-A
CHECKED BY:			