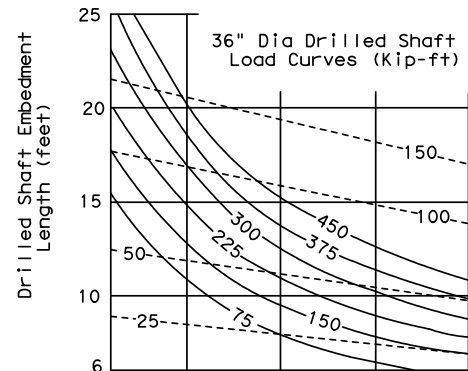


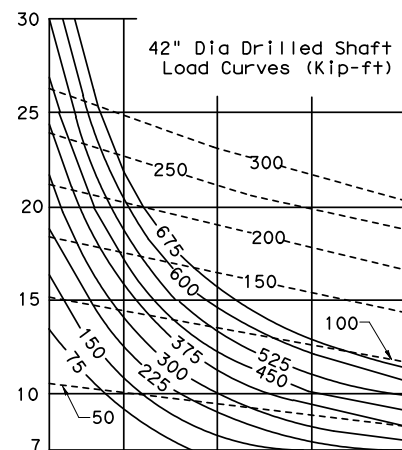
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DATE: FILE:



①	28.5°	30°	32°	34°	36°
②	12	21	35	50	65

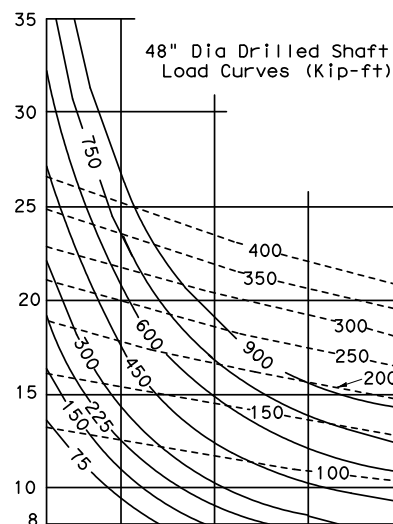
- ① ϕ = Angle of internal friction of soil (degrees)
- ② N = Texas cone penetrometer value (blows per ft)
- ④ C(psi) = Cohesive shear strength of soil (psi)
- ⑤ C(psf) = Cohesive shear strength of soil (psf)



①	28.5°	30°	32°	34°	36°
②	12	21	35	50	65

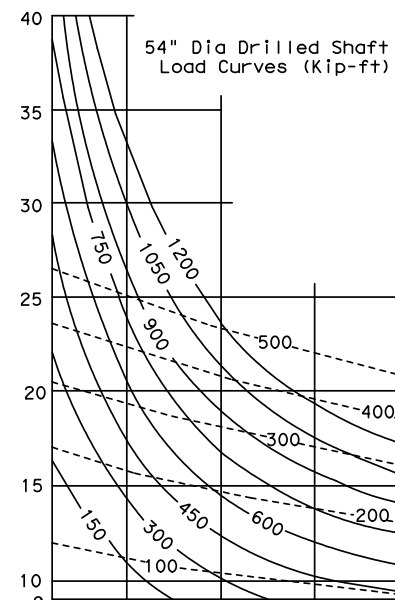
③ **SUBMERGED SAND SOIL (COHESIONLESS)**

Moment —————
Torsion - - - - -

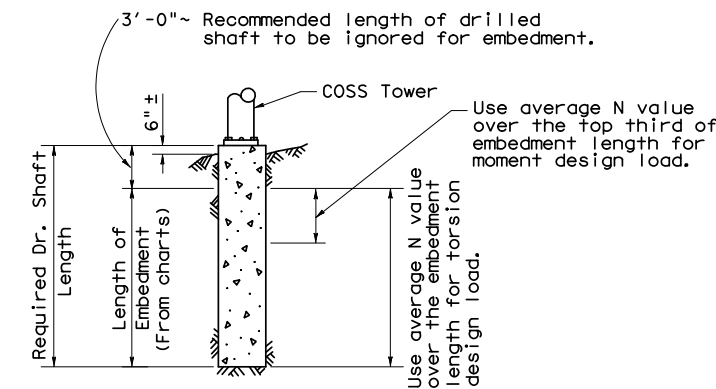


①	28.5°	30°	32°	34°	36°
②	12	21	35	50	65

③ Note: For unsubmerged sands and clayey sands the charts for clay soil will give a conservative foundation design.



①	28.5°	30°	32°	34°	36°
②	12	21	35	50	65

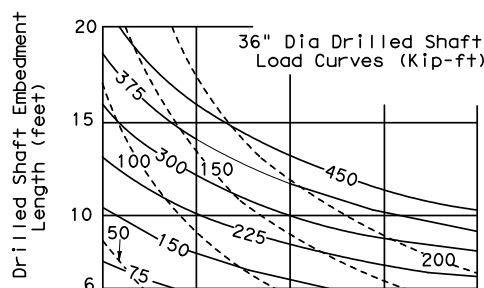


PROCEDURE:

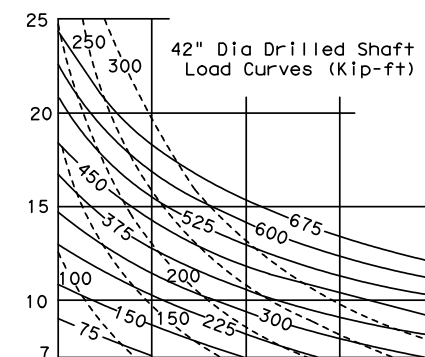
1. Determine design moment and torsion, and the required drilled shaft diameter as outlined in the selection example sheet COSS-SE.
2. Make an initial estimate of the required embedment length.
3. From soil exploration data determine type of soil and average N value or soil property along the upper third of the drilled shaft.
4. Enter chart (for the correct shaft diameter and soil type) from the bottom at the average N value or soil property determined in step 3.
5. Proceed vertically into chart and locate intersection with design moment. Interpolate between moment curves (solid lines) as needed.
6. From intersection point turn 90° to left and read embedment length along vertical scale.
7. If embedment length differs significantly from estimated value return to step 3 with the embedment length determined in step 6.
8. From soil exploration data determine average N value or soil property over the entire length of the embedment.
9. Enter chart (for correct shaft diameter and soil type) from the bottom at the average N value or soil property determined in step 8.
10. Proceed vertically into chart and locate intersection with design torsion. Interpolate between torsion curves (dashed lines) as needed.
11. From intersection point turn 90° to left and read embedment length along vertical scale.
12. Compute the required length of drilled shaft by adding 3'-0" to longer embedment length required for moment or torsion.

GENERAL NOTES:

These charts are for use with Cantilever Overhead Sign Supports with one shaft per tower.
 Solid curves are base moment in Kip-ft.
 Dash curves are base torsion in Kip-ft.
 Minimum embedment of drilled shaft is two diameters.
 Add 3'-0" to the required embedment length to determine the required length of drilled shaft.



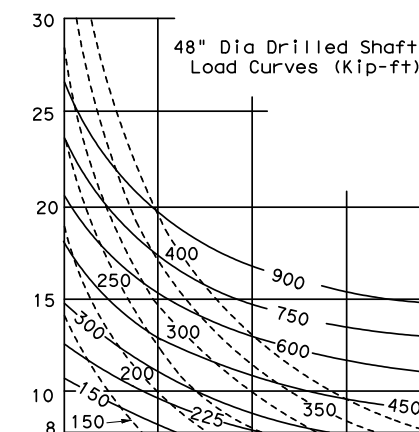
④	4	8	12	16	20
⑤	576	1152	1728	2304	2880
②	10	20	30	40	50



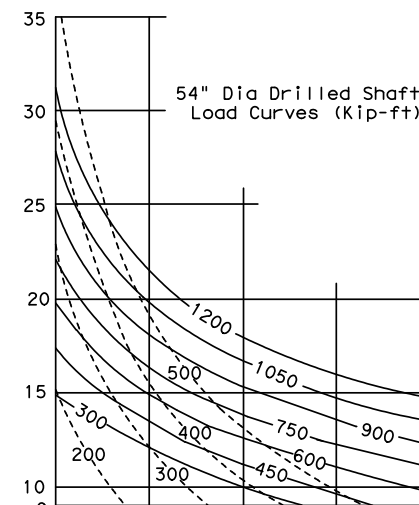
④	4	8	12	16	20
⑤	576	1152	1728	2304	2880
②	10	20	30	40	50

CLAY SOIL (COHESIVE)

Moment —————
Torsion - - - - -



④	4	8	12	16	20
⑤	576	1152	1728	2304	2880
②	10	20	30	40	50



④	4	8	12	16	20
⑤	576	1152	1728	2304	2880
②	10	20	30	40	50



FOUNDATION EMBEDMENT SELECTION CHARTS

COSS-FD

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COUNTY	SECTION	JURISDICTION	HIGHWAY				
DISTRICT	COUNTY		SHEET NO.				