NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
Estimated Driven Pile Axial Resistance Table

SPT-N	Estimated Resistance (tons/ft)		SPT-N	Estimated Resistance (tons/ft)		SPT-N	Estimated Resistance (tons/ft)	
(bpf)	HP 12 x 53 Steel Piles	12" P/S Concrete Piles	(bpf)	HP 12 x 53 Steel Piles	12" P/S Concrete Piles	(bpf)	HP 12 x 53 Steel Piles	12" P/S Concrete Piles
1			44	10.34	12.86	87	39.10	49.72
2			45	10.71	13.24	88	40.71	51.51
3			46	10.98	13.64	89	42.40	53.38
4			47	11.25	14.06	90	44.17	55.32
5	1.00	0.96	48	11.54	14.52	91	46.03	57.34
6	1.13	1.17	49	11.84	15.00	92	47.97	59.44
7	1.24	1.41	50	12.16	15.52	93	50.01	61.62
8	1.36	1.59	51	12.50	15.79	94	52.14	63.88
9	1.49	1.76	52	12.86	16.36	95	54.37	66.23
10	1.62	1.94	53	13.24	16.98	96	56.69	68.66
11	1.76	2.12	54	13.43	17.65	97	59.12	71.19
12	1.91	2.34	55	13.85	18.00	98	61.66	73.82
13	2.07	2.57	56	14.29	18.37	99	64.31	76.54
14	2.25	2.81	57	14.52	18.75	100	67.08	79.36
15	2.48	3.10	58	15.00	19.57			
16	2.73	3.45	59	15.25	20.00			
17	2.95	3.70	60	15.79	20.45			
18	3.21	4.00	61	16.07	20.93			
19	3.46	4.29	62	16.67	21.95			
20	3.67	4.57	63	16.98	22.50			
21	3.91	4.84	64	17.65	23.08			
22	4.13	5.14	65	18.00	23.68			
23	4.39	5.49	66	18.37	24.32			
24	4.62	5.70	67	19.15	25.00			
25	4.86	6.00	68	19.57	26.47			
26	5.14	6.43	69	20.45	27.27			
27	5.42	6.72	70	20.93	28.13			
28	5.70	7.03	71	21.95	29.03			
29	6.00	7.38	72	22.50	30.00			
30	6.29	7.69	73	23.08	30.83			
31	6.52	8.11	74	23.68	31.85			
32	6.87	8.26	75	25.00	32.92			
33	7.14	8.57	76	25.71	34.03			
34	7.44	9.00	77	26.47	35.19			
35	7.69	9.28	78	27.27	36.39			
36	8.04	9.68	79	29.03	37.64			
37	8.33	10.00	80	30.00	38.95			
38	8.57	10.34	81	30.90	40.31			
39	9.00	10.84	82	32.11	41.73			
40	9.18	11.25	83	33.37	43.20			
41	9.47	11.54	84	34.70	44.73			
42	9.78	12.00	85	36.09	46.33			
43	10.00	12.33	86	37.56	47.99			

References

1. "NCDOT Geotechnical Unit Engineering Analysis Manual", Keane, 1978
2. "Some Practical Aspects of Foundation Studies for Highway Bridges", Harned, 1959

Notes

1. N values less than 5 will be ignored.
2. The required axial resistance should be determined during project initiation, but should not be less than 180 tons plus
   - 2 additional drives or auger refusal in the Piedmont
   - 4 additional drives in the Coastal Plain
3. The original tables presented by Keane did not list factors for N values greater than 80 for HP 12 x 53 steel piles or greater than 72 for 12 inch concrete piles. Factors for N values greater than 80 for HP 12 x 53 piles and N values greater than 72 for 12 inch concrete piles are based on regression analysis and extrapolation of the tables presented by Keane.

Last Updated: 10/2/2015