NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL ENGINEERING UNIT
Estimated Driven Pile Axial Resistance Table for Piles in Residual Material and Rock

SPT-N (bpf)	Estimated Resistance (kips/ft)		SPT-N (bpf)	Estimated Resistance (kips/ft)	
	HP 12 x 53 Steel Piles	12" P/S Concrete Piles		HP 12 x 53 Steel Piles	12" P/S Concrete Piles
1			51	25.00	31.58
2			52	25.71	32.73
3			53	26.47	33.96
4			54	26.87	35.29
5	2.00	1.91	55	27.69	36.00
6	2.25	2.34	56	28.57	36.73
7	2.48	2.81	57	29.03	37.50
8	2.73	3.19	58	30.00	39.13
9	2.98	3.53	59	30.51	40.00
10	3.24	3.87	60	31.58	40.91
11	3.53	4.24	61	32.14	41.86
12	3.83	4.68	62	33.33	43.90
13	4.14	5.14	63	33.96	45.00
14	4.50	5.63	64	35.29	46.15
15	4.96	6.21	65	36.00	47.37
16	5.45	6.90	66	36.73	48.65
17	5.90	7.41	67	38.30	50.00
18	6.43	8.00	68	39.13	52.94
19	6.92	8.57	69	40.91	54.55
20	7.35	9.14	70	41.86	56.25
21	7.83	9.68	71	43.90	58.06
22	8.26	10.29	72	45.00	60.00
23	8.78	10.98	73	46.15	61.65
24	9.23	11.39	74	47.37	63.70
25	9.73	12.00	75	50.00	65.83
26	10.29	12.86	76	51.43	68.06
27	10.84	13.43	77	52.94	70.37
28	11.39	14.06	78	54.55	72.78
29	12.00	14.75	79	58.06	75.29
30	12.59	15.38	80	60.00	77.90
31	13.04	16.22	81	61.81	80.62
32	13.74	16.51	82	64.22	83.45
33	14.29	17.14	83	66.74	86.40
34	14.88	18.00	84	69.40	89.47
35	15.38	18.56	85	72.19	92.66
36	16.07	19.35	86	75.12	95.98
37	16.67	20.00	87	78.19	99.44
38	17.14	20.69	88	81.42	103.03
39	18.00	21.69	89	84.80	106.76
40	18.37	22.50	90	88.35	110.65
41	18.95	23.08	91	92.06	114.68
42	19.57	24.00	92	95.95	118.88
43	20.00	24.66	93	100.02	123.23
44	20.69	25.71	94	104.28	127.76
45	21.43	26.47	95	108.73	132.45
46	21.95	27.27	96	113.39	137.33
47	22.50	28.13	97	118.25	142.39
48	23.08	29.03	98	123.33	147.63
49	23.68	30.00	99	128.63	153.08
50	24.32	31.03	100	134.16	158.72

Notes and References

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 360 kips plus 2 additional drives or auger refusal in the Piedmont
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.

References:

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

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