Table 1. Current SPT direct methods for prediction of pile bearing capacity

| No. | Method | Unit shaft resistance (KPa) | Unit base resistance (MPa) | Explanations |
|---|---|---|---|---|
| 1 | Aoki & De'Alencar [6] | $r_s=(ak/3.5)N_s$ | $r_t=(k/1.75)\ N_b$<br>$N_b$: average of three value of SPT blows around pile base | Failure criteria : Vander veen method<br>Energy ratio for N: 70%<br>For sand: a=14 & k=1 ,For clay: a=60 & k=0.2 |
| 2 | Shioi & Fukui [7] | $r_s=n_s\ N_s$ | For driven piles:<br>$r_t=(1+0.04(D_b/B))N_b \leq 0.3N_b$<br>For pipe piles:<br>$r_t=0.06(D_b/B)N_b \leq 0.3N_b$ | Energy ratio for N: 55%<br>$n_s$=2 for sand and 10 for clay |
| 3 | Meyerhof [8] | $r_s=n_s\ N_s$ | $r_t=0.4\ N_1\ C_1\ C_2$<br>$N_1$: N value at the base level | Failure criterion : Minimum slope of load-movement Curve<br>Energy ratio for N: 55%<br>Low disp. piles: $n_s$=1<br>High disp. piles: $n_s$=2 |
| 4 | Briaud & Tucker [23] | $r_S=\frac{0.1}{\frac{1}{k_s}+\frac{0.1}{r_{s,\max}+r_{s,res}}}-r_{s,res}$ | $r_t=\frac{0.1}{\frac{1}{k_t}+\frac{0.1}{r_{t,\max}-r_{t,res}}}+r_{t,res}$ | Failure criteria:<br>penetration of pile head equal 10% of pile Diameter |
| 5 | Bazaraa & Kurkur [10] | $r_s=n_s\ N_s$ | $r_t=n_b\ N_b$<br>$N_b$: average of N Between 1B above and 3.75b under pile base, $N_b \leq 50$ | $n_s$=2~4; $n_b$=0.06~0.2 |
| | $N_s$: average value of N around pile embedment depth. | | | |