



Zone	Soil Behavior Type
1	Sensitive fine grained
2	Organic material
3	Clay
4	Silty Clay to clay
5	Clayey silt to silty clay
6	Sandy silt to clayey silt
7	Silty sand to sandy silt
8	Sand to silty sand
9	Sand
10	Gravelly sand to sand
11	Very stiff fine grained*
12	Sand to clayey sand*

* Overconsolidated or cemented

Figure 1 SBT chart by Robertson et al (1986) based on CPT cone resistance, q_t , and friction ratio, R_f (where $R_f = (f_s/q_c)100\%$)

COHESIVE SOILS

Consistency	SPT (N)	Undrained shear strength C_u (kPa)	Unit Weight (kN/m ³)	Cone Resistance q_c (kPa)	DCP blows/150mm
Very soft	0-2	0-12	16-17	0-180	
Soft	2-4	12-25	17-19	180-375	0-1.5
Firm	4-8	25-50	17-20	375-750	1.5-3
Stiff	8-16	50-100	19-21	750-1500	3-6
Very stiff	16-32	100-200	20-22	1500-3000	6-12
Hard	<32	>200	22-23	>3000	>12

NON-COHESIVE SOILS

Consistency	Relative Density (%)	SPT (N)	Friction Angle (degrees)	Unit Weight (kN/m ³)	Cone Resistance q_c (MPa)	DCP blows/150mm
Very loose	0-15	0-4	25-30	11-16	0-2	0-1
Loose	15-35	4-10	27-32	14-18	2-5	1-3
Medium dense	35-65	10-30	30-35	17-20	5-15	3-8
Dense	65-85	30-50	35-40	17-22	15-25	8-15
Very dense	85-100	>50	39-43	20-23	>25	>15