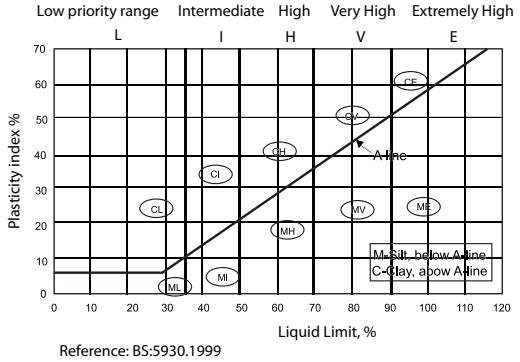
Soil name (Principal soil type and secondary constituents)

CLASS	GRAIN SIZE mm			TERMINOLOGY		
				Terminolory to be used as prefix, with the primary soil type		
COARSE SOIL (percentage of fines less than 35%)	>200	BOULDERS	clay + silt	less than 5%	5 to 20%	over 20%
	60-200	COBBLES		with little fines*	with some fines*	with much fines*
		(% is greater than sand/ gravel)	sand/gravel	less than 5%	5 to 20%	over 20%
				slightly sandy/gravely	sandy/gravely	very sandy/gravely
	coarse 20-60	GRAVEL	boulders/ cobbles	less than 5%	5 to 20%	over 20%
	medium 6-20	(% gravel greater than sand)		with occasional boulders/cabbles*	with some boulders/cabbles*	with many boulders/cabbles*
	fine 2-06		clay/silt	less than 5%	5 to 20%	over 20%
				slightly clayey/silty	clayey/silty	very silty/clayey
	coarse 0.6-2	SAND	sand (gravel is principal)	less than 5%	5 to 20%	over 20%
	medium 0.2-0.6	(% sand greater than gravel)		slightly sandy	sandy	very sandy
	lineo.0.06-0.2		gravel (sand is principal)	less than 5% slightly gravely	5 to 20% gravely	over 20% very gravely
FINE SOILS (percentage of fines more than 35%)	<0.6mm Classification of clay & silt is based on Plasticity chart & not on grain size	SILT	boulders/ cobbles	less than 5%	5 to 20%	over 20%
				with occasional boulder/cabbles*	with some boulders/cabbles*	with many boulders/cabbles*
		CLAY	sand/gravel	less than 35%	35 to 65%	over 65%
				slightly sandy/gravely	sandy/gravely	very sandy/gravely***
ORGANIC SOILS	fibrous	CLAY/SILT/SAND PEAT	organic matter	1-5% by weight	5-10% by weight	>10% by weight
				slightly organic	organic	very organic

* indicates term to be used as suffix with the principal soil type

*** indicates that soil can be classified as SAND/GRAVEL depending on the engineering behavior of the soil

Plasticity Chart for classification of Fine Soils



Reference: BS:5930.1999

Table (1.2): Soil Classification System

Soil Parameters		Loose to Medium dense	Medium dense to dense	Dense to very dense	Engineered fill
Bulk Density	(Mg/m^3)	1.6	1.8	1.9	2.0
Submerged Density	(Mg/m^3)	0.6	0.8	0.9	1.0
Internal Friction Phi	ϕ (degrees)	25 - 30	30 - 35	35 - 40	> 40
Coefficients of lateral earth pressures	K_0	0.58 - 0.50	0.50 - 0.43	0.43 - 0.36	0.36
	K_a	0.44 - 0.33	0.33 - 0.27	0.33 - 0.22	0.22
	K_p	2.46 - 3.00	3.00 - 3.60	3.00 - 4.50	4.50

Table (1.3): Soil Properties Correlations

Term	RQD (%)
Very Poor	0 - 25
Poor	25 - 50
Fair	50 - 75
Good	75 -110
Excellent	90 -100

Table (1.4): Rock Fracture State

Term	Field definition	Unconfined compressive strength (MN/m)
Very weak	Gravel size lumps can be crushed between finger and thumb.	<1.25
Weak	Gravel size lumps can be broken in half by heavy hand pressure.	1.25 to 5
Moderately weak	Only thin slabs, corners or edges can be broken off with heavy hand pressure	5 to 12.5
Moderately strong	When held in the hand rock can be broken by hammer blows.	12.5 to 50
Strong	When resting on a solid surface, rock can be broken by hammer blows.	50 to 100
Very strong	Rock chipped by heavy hammer blows.	100 to 200
Extremely strong	Rock rings on hammer blows. Only broken by sledgehammer.	<200

Table (1.5): Rock Strength Classification

Parameters	Sandstone	Conglomerate
Dry Density (Mg/m^3)	1.35 to 1.83	3.14 to 5.15
Unconfined Compressive Strength (MN/m^2)	0.81 to 3.18	1.50 to 1.63

Table (1.6): Sandstone / Conglomerate Properties

Type of Soil	Modulus of Elasticity (MN/m^3)	Poisson's Ratio
Loose Sand	10.35 - 24.15	0.20 - 0.40
Medium Dense Sand	17.25 - 27.60	0.25 - 0.40
Dense Sand	34.50 - 55.20	0.30 - 0.45
Silty Sand	10.35 - 17.25	0.20 - 0.40
Sand and Gravel	60.00 - 172.50	0.15 - 0.35
Soft Clay	4.10 - 20.70	
Medium Clay	20.70 - 41.40	0.20 - 0.50
Stiff Clay	41.40 - 96.60	

Table (1.7): Elastic Parameters for Various Soils