

PRIMARY DIVISIONS			GROUP SYMBOL	SECONDARY DIVISIONS
COURSE GRAINED SOILS MORE THAN HALF OF MATERIAL IS LARGER THAN #200 SIEVE	GRAVELS MORE THAN HALF OF COARSE FRACTION IS LARGER THAN #4 SIEVE	CLEAN GRAVELS (LESS THAN 5% FINES)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVEL WITH FINES	GM	Silty gravels or gravel-sand mixtures, non-plastic fines.
			GC	Clayey gravels, gravel-sand-clay mixtures, plastic fines
	SANDS MORE THAN HALF OF COARSE FRACTION IS SMALLER THAN #4 SIEVE	CLEAN SANDS (LESS THAN 5% FINES)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES	SM	Silty sands, sand-silt mixtures, non-plastic fines.
			SC	Clayey-sands, sand-clay mixtures, plastic fines.
FINE GRAINED SOILS MORE THAN HALF OF MATERIAL IS SMALLER THAN #200 SIEVE	SILTS AND CLAYS LIQUID LIMIT IS LESS THAN 50%	ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, clayey silts with slight plasticity.	
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.	
		OL	Organic silts and organic silty clays of low plasticity.	
	SILTS AND CLAYS LIQUID LIMIT IS GREATER THAN 50%	MH	Organic silts, micaceous or diatomaceous fine sandy or silty soils, elastic soils.	
		CH	Inorganic clays of high plasticity, fat clays.	
		OH	Organic clays of medium to high plasticity, organic silts.	
HIGHLY ORGANIC SOILS			Pt	Peat and other highly organic soils.

DEFINITION OF TERMS

U.S. STANDARD SERIES SIEVE					SQUARE SIEVE CLEAR OPENING		
0.002 mm	#200	#40	#10	#4	3/4"	3"	12"
CLAYS AND SILTS	SAND			GRAVEL		COBBLES	BOULDERS
	FINE	MEDIUM	COARSE	FINE	COARSE		

GRAIN SIZES

SANDS AND GRAVELS	BLOWS / FOOT ¹	SILTS AND CLAYS	STRENGTH ²	BLOWS / FOOT ¹
VERY LOOSE	0 - 4	VERY SOFT	0 - 1/4	0 - 2
LOOSE	4 - 10	SOFT	1/4 - 1/2	2 - 4
MEDIUM DENSE	10 - 30	FIRM	1/2 - 1	4 - 8
DENSE	30 - 50	STIFF	1 - 2	8 - 16
VERY DENSE	OVER 50	VERY STIFF	2 - 4	16 - 32
		HARD	OVER 4	OVER 32

RELATIVE DENSITY

FIRMNESS

¹ Number of blows (N) of 140 pound hammer falling 30 inches to drive a 2 inch O.D. (1-3/8 inch I.D.) split spoon sampler (ASTM D-1586); Standard Penetration Test (SPT) unless noted by *.

² Unconfined compressive strength in tons/sq. ft. as determined by laboratory testing or approximated by the Standard Penetration Test (ASTM D-1586), Pocket Penetrometer, Torvane, or visual observation.

LAWRENCE B. KARP CONSULTING GEOTECHNICAL ENGINEER 100 TRES MESAS ORINDA, CALIFORNIA 94563 (925) 254 - 1222	KEY TO EXPLORATORY BORING LOGS Unified Soil Classification System (ASTM D-2487)		
	Sterbentz Residence 24 Saint Hill Road, Orinda		
	DATE	PROJECT	FIGURE:
	July 2006	206036	A