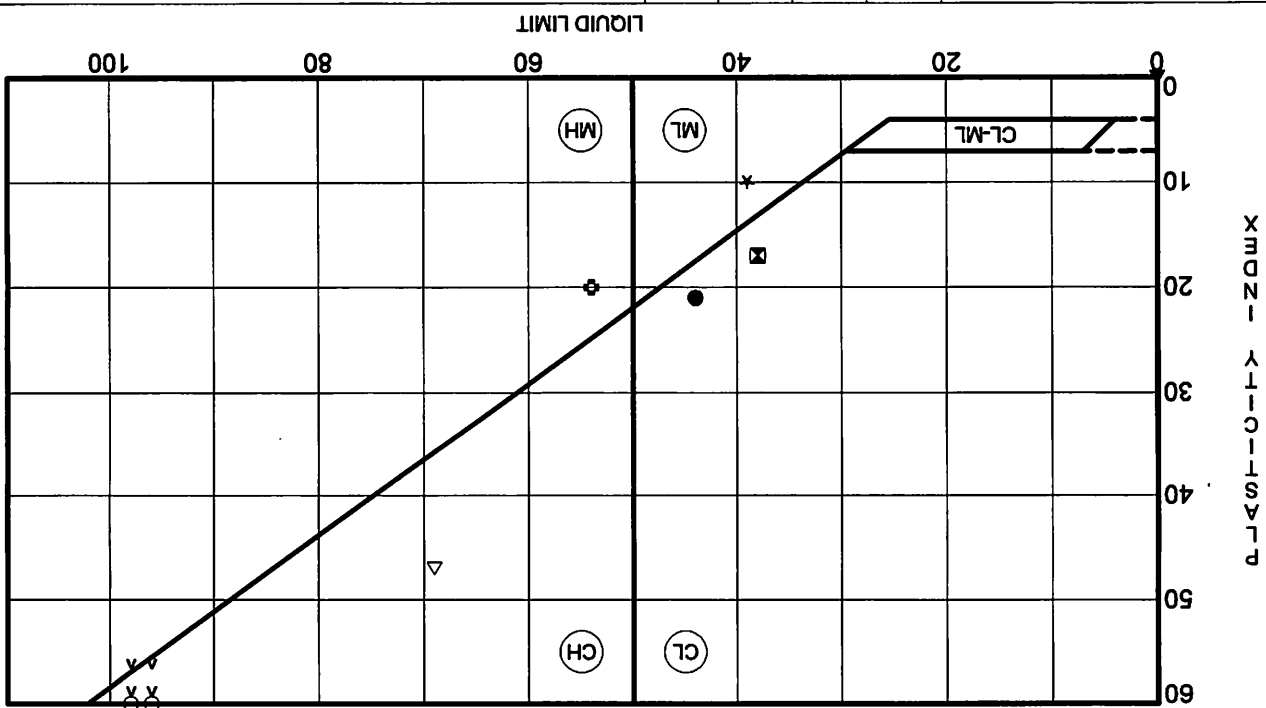


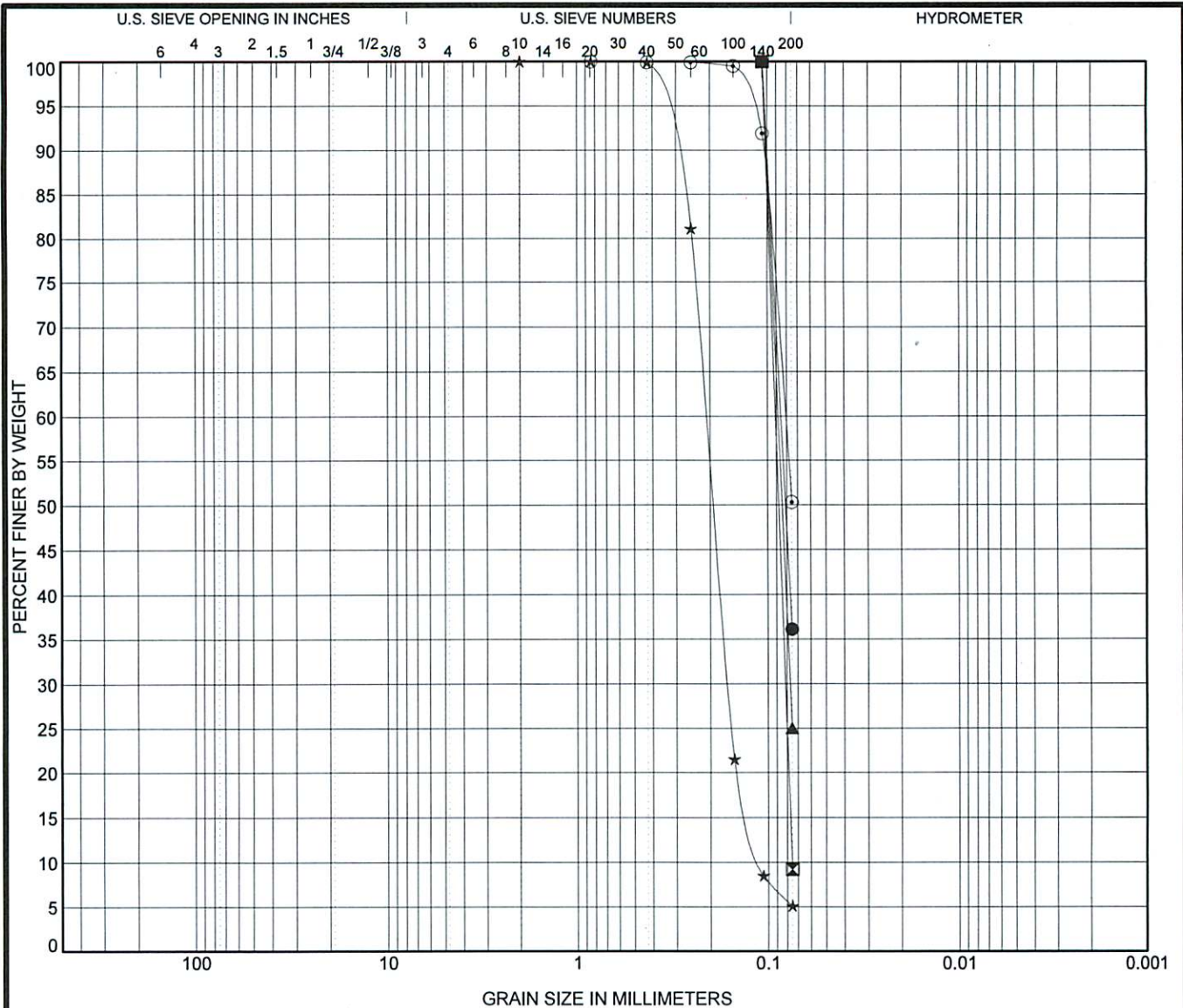
LOG OF BORING 2002 WL J024824.02.GPJ GTINC 0638301.GPJ 11/9/17

Project No. J066666.01

Example Site B

ATTERBERG LIMITS RESULTS

[illegible]



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification				LL	PL	PI	Cc	Cu
●	B- 2	28.5	SILTY SAND(SM)								
☒	B- 5	28.5	SAND with SILT(SP-SM)							0.96	1.21
▲	B- 7	33.5	SILTY SAND(SM)								
★	B- 7	43.5	SAND with SILT(SP-SM)							1.13	1.89
⊙	B-13	28.5	SILT(ML)								
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	
●	B- 2	28.5	0.106	0.085			0.0	63.9	36.1		
☒	B- 5	28.5	0.106	0.091	0.081	0.075	0.0	90.8	9.2		
▲	B- 7	33.5	0.106	0.088	0.077		0.0	75.0	25.0		
★	B- 7	43.5	2	0.209	0.161	0.11	0.0	94.9	5.1		
⊙	B-13	28.5	0.84	0.081			0.0	49.7	50.3		

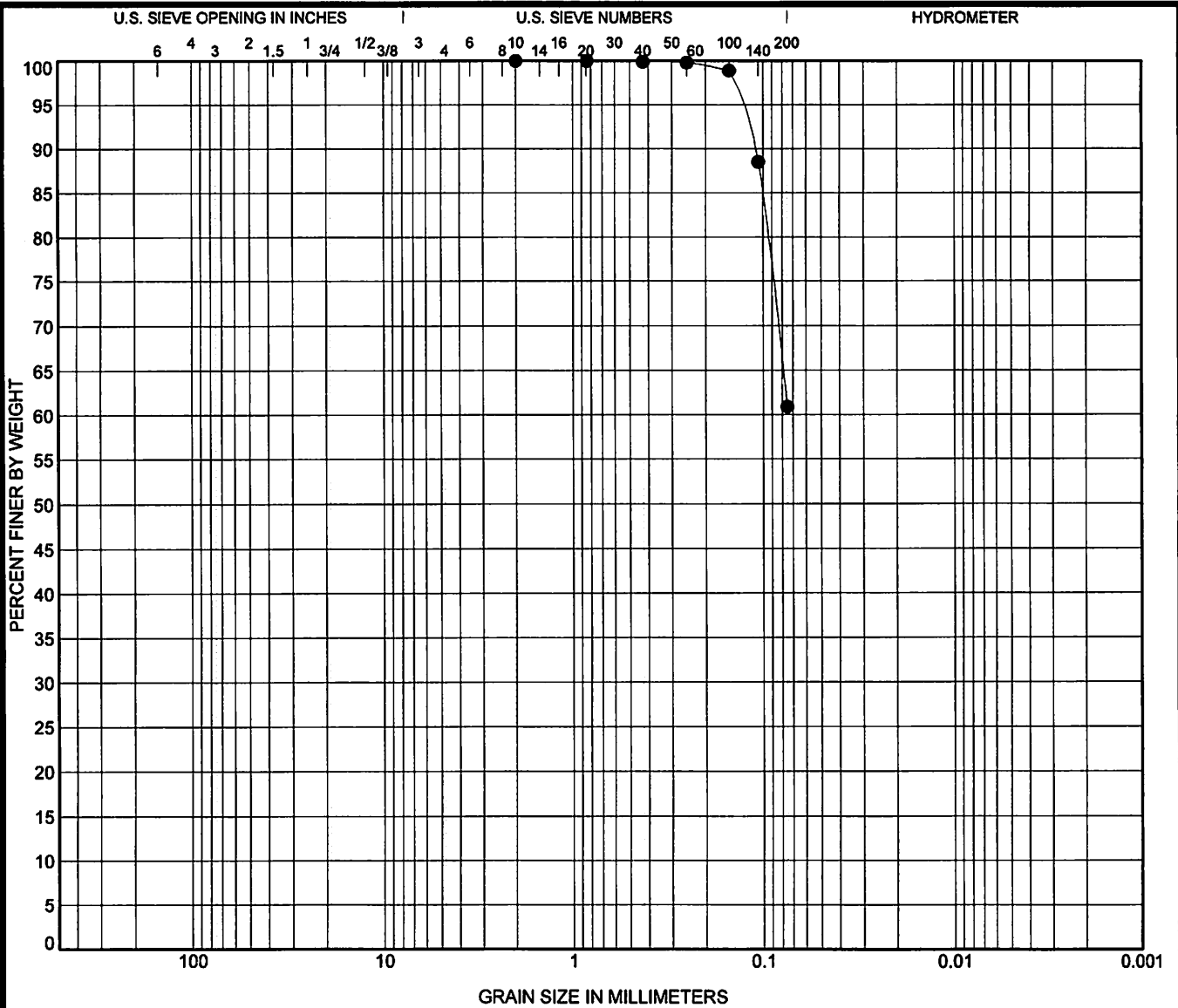


GEOTECHNOLOGY
FROM THE GROUND UP

GRAIN SIZE DISTRIBUTION

Example Site B

J066666.01



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	LL	PL	PI	Cc	Cu
● B-14 8.0						

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● B-14 8.0	2				0.0	39.1	60.9	



GRAIN SIZE DISTRIBUTION

Example Site B

J066666.01

Table 2.6 Unified classification system—group symbols for sandy soil

Group symbol	Criteria
SW	Less than 5% passing No. 200 sieve; $C_u = D_{60}/D_{10}$ greater than or equal to 6; $C_z = (D_{30})^2/(D_{10} \times D_{60})$ between 1 and 3
SP	Less than 5% passing No. 200 sieve; not meeting both criteria for SW
SM	More than 12% passing No. 200 sieve; Atterberg's limits plot below A-line (Figure 2.12) or plasticity index less than 4
SC	More than 12% passing No. 200 sieve; Atterberg's limits plot above A-line (Figure 2.12); plasticity index greater than 7
SC-SM	More than 12% passing No. 200 sieve; Atterberg's limits fall in hatched area marked CL-ML in Figure 2.12
SW-SM	Percent passing No. 200 sieve is 5 to 12; meets the criteria for SW and SM
SW-SC	Percent passing No. 200 sieve is 5 to 12; meets the criteria for SW and SC
SP-SM	Percent passing No. 200 sieve is 5 to 12; meets the criteria for SP and SM
SP-SC	Percent passing No. 200 sieve is 5 to 12; meets the criteria for SP and SC

Table 2.7 Unified classification system—group symbols for silty and clayey soils

Group symbol	Criteria
CL	Inorganic; $LL < 50$; $PI > 7$; plots on or above A-line (see CL zone in Figure 2.12)
ML	Inorganic; $LL < 50$; $PI < 4$ or plots below A-line (see ML zone in Figure 2.12)
OL	Organic; $(LL - \text{oven-dried})/(LL - \text{not dried}) < 0.75$; $LL < 50$ (see OL zone in Figure 2.12)
CH	Inorganic; $LL \geq 50$; PI plots on or above A-line (see CH zone in Figure 2.12)
MH	Inorganic; $LL \geq 50$; PI plots below A-line (see MH zone in Figure 2.12)
OH	Organic; $(LL - \text{oven-dried})/(LL - \text{not dried}) < 0.75$; $LL \geq 50$ (see OH zone in Figure 2.12)
CL-ML	Inorganic; plot in the hatched zone in Figure 2.12
Pt	Peat, muck, and other highly organic soils

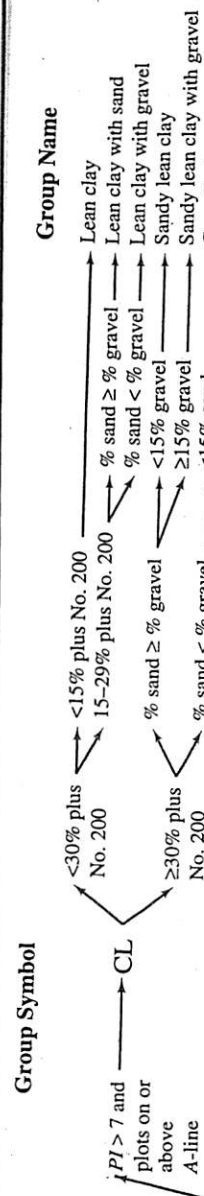
Group Symbol		Group Name
GW	<15% sand	Well-graded gravel
	≥15% sand	Well-graded gravel with sand
GP	<15% sand	Poorly graded gravel
	≥15% sand	Poorly graded gravel with sand
GW-GM	<15% sand	Well-graded gravel with silt
	≥15% sand	Well-graded gravel with silt and sand
GW-GC	<15% sand	Well-graded gravel with clay (or silty clay)
	≥15% sand	Well-graded gravel with clay and sand (or silty clay and sand)
GP-GM	<15% sand	Poorly graded gravel with silt
	≥15% sand	Poorly graded gravel with silt and sand
GP-GC	<15% sand	Poorly graded gravel with clay (or silty clay)
	≥15% sand	Poorly graded gravel with clay and sand (or silty clay and sand)
GM	<15% sand	Silty gravel
	≥15% sand	Silty gravel with sand
GC	<15% sand	Clayey gravel
	≥15% sand	Clayey gravel with sand
GC-GM	<15% sand	Silty clayey gravel
	≥15% sand	Silty clayey gravel with sand
SW	<15% gravel	Well-graded sand
	≥15% gravel	Well-graded sand with gravel
SP	<15% gravel	Poorly graded sand
	≥15% gravel	Poorly graded sand with gravel
SW-SM	<15% gravel	Well-graded sand with silt
	≥15% gravel	Well-graded sand with silt and gravel
SW-SC	<15% gravel	Well-graded sand with clay (or silty clay)
	≥15% gravel	Well-graded sand with clay and gravel (or silty clay and gravel)
SP-SM	<15% gravel	Poorly graded sand with silt
	≥15% gravel	Poorly graded sand with silt and gravel
SP-SC	<15% gravel	Poorly graded sand with clay (or silty clay)
	≥15% gravel	Poorly graded sand with clay and gravel (or silty clay and gravel)
SM	<15% gravel	Silty sand
	≥15% gravel	Silty sand with gravel
SC	<15% gravel	Clayey sand
	≥15% gravel	Clayey sand with gravel
SC-SM	<15% gravel	Silty clayey sand
	≥15% gravel	Silty clayey sand with gravel

FIGURE 2.13 Flowchart group names for gravelly and sandy soil (After ASTM, 1998)

for the proper *group name* of the soil. If $F_1 \geq (100 - F)/2$, then it is a sandy soil. Go to Table 2.6 and Figure 2.12 to determine the group symbol, and to Figure 2.13 for the group name of the soil.

Step 3: For a fine-grained soil, go to Table 2.7 and Figure 2.12 to obtain the *group symbol*. If it is an inorganic soil, go to Figure 2.14 to obtain the *group name*. If it is an organic soil, go to Figure 2.15 to get the *group name*.

Note that Figure 2.12 is the plasticity chart originally developed by Casagrande (1948) and modified to some extent here.



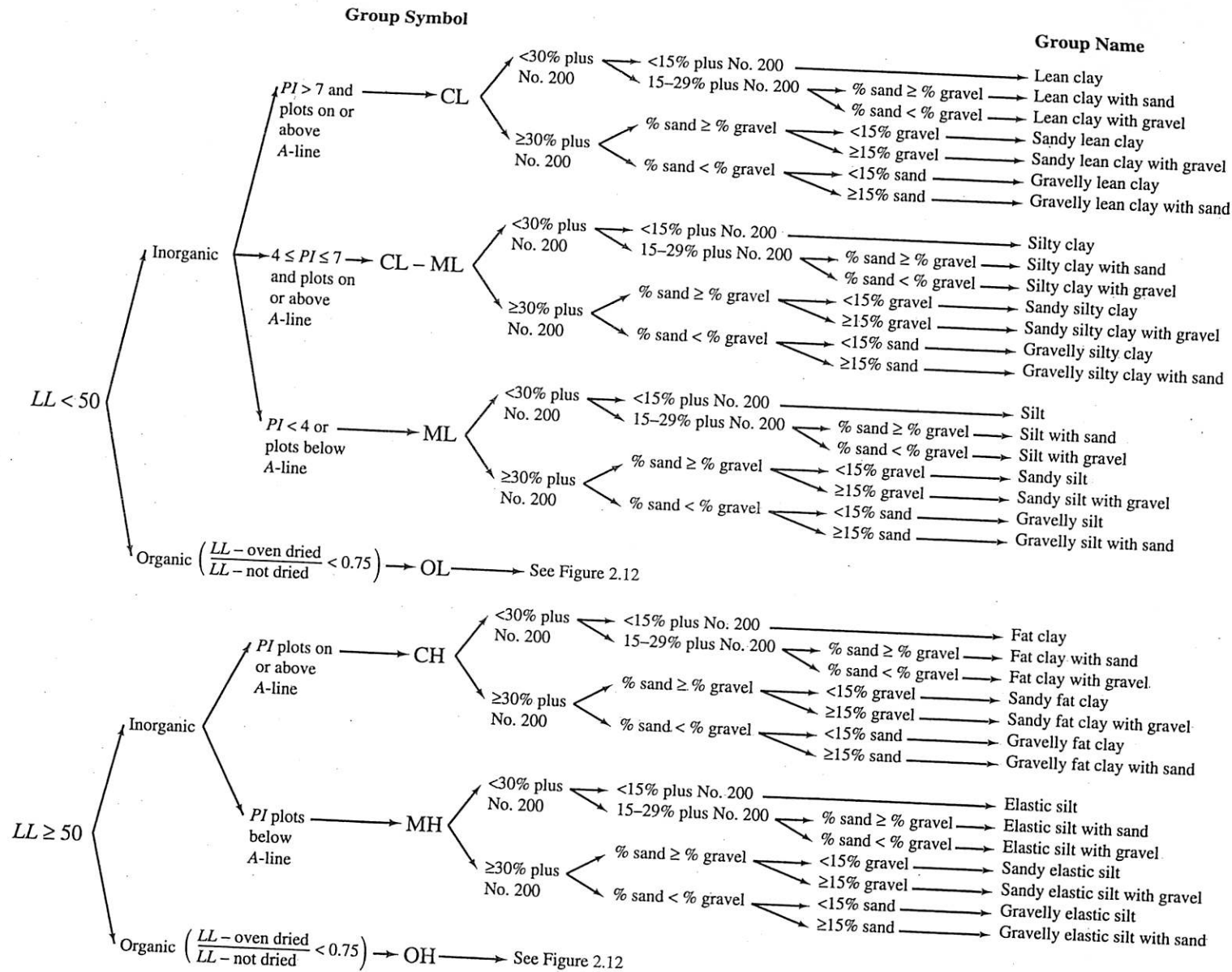


FIGURE 2.14 Flowchart group names for inorganic silty and clayey soils (After ASTM, 1998)