EXPLANATION OF TERMS FOR GEOTECHNICAL SOIL LOGS

1.0 SOIL CONSTITUENTS

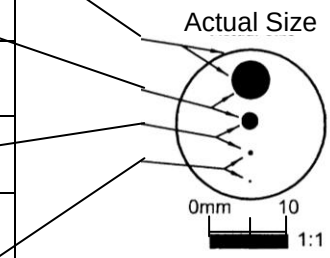
Based on particle size and distribution per the Modified Unified Soil Classification System as described in the following tables.

Proportions of Constituents:

Descriptive Term	Proportion by Weight
noun (e.g. sand, etc.)	over 50%
and (e.g. and sand, etc.)	over 35%
adjective (e.g. sandy, etc.)	20% to 35%
some (e.g. some sand, etc.)	10% to 20%
trace (e.g. trace sand, etc.)	0% to 10%

Particle Sizes:

Material	Fraction	Sieve Size (grain size)	Approx Scale
Boulders		> 200 mm	Larger than a soccer ball
Cobbles		Less than 200 mm & retained on 3-in (75 mm) sieve	Fist sized to soccer ball sized
Gravel	Coarse	Passes 3-in (75 mm) sieve & retained on ¾-in (19 mm) sieve	Thumb sized to fist sized
	Fine	Passes ¾-in (19 mm) sieve & retained on No. 4 (4.75 mm) sieve	Pea sized to thumb sized
Sand	Coarse	Passes No. 4 (4.75 mm) sieve & retained on No. 10 (2.00 mm) sieve	Rock salt sized to pea sized
	Medium	Passes No. 10 (2.00 mm) sieve & retained on No. 40 (425 μm) sieve	Sugar sized to rock salt sized
	Fine	Passes No. 40 (425 μm) sieve & Retained on No. 200 (75 μm) sieve	Flour sized to sugar sized
Fines (silt & clay)		Passes No. 200 (75 μm) sieve	Flour sized and smaller (indiscernible to naked eye)



Gradation of Coarse Fraction:

Descriptive Term	Field Identification
Well graded	contains particles of sizes assorted over a wide range with no one size predominating or missing
Poorly Graded	contains a limited range of particle sizes
Uniform Graded	contains a predominance of one size
Gap Graded	missing a size within a range

2.0 RELATIVE DENSITY / CONSISTENCY

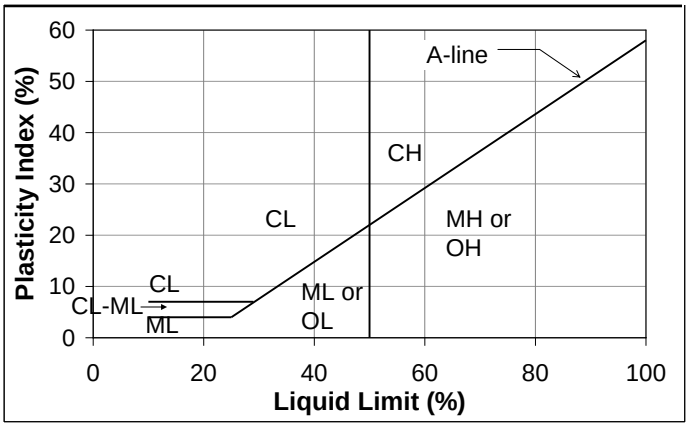
For Coarse Grained Soils:

Descriptive Term	Relative Density	SPT N-Value
Very Loose	0 - 20 %	0 – 4
Loose	20 – 40 %	4 – 10
Compact	40 – 70 %	10 – 30
Dense	70 – 90 %	30 – 50
Very Dense	90 – 100 %	> 50

For Fine Grained Soils:

Consistency	Field Identification	Undrained Strength (kPa)	SPT N Value
Very Soft	Easily penetrated several centimetres by the fist	< 12	0 - 2
Soft	Easily penetrated several centimetres by the thumb	12 – 25	2 - 4
Firm	Can be penetrated several centimetres by the thumb with moderate effort	25 – 50	4 - 8
Stiff	Readily indented by the thumb but penetrated only with great effort	20 – 100	8 - 15
Very Stiff	Readily indented by the Thumbnail	100 – 200	15 - 30
Hard	Indented with difficulty by the Thumbnail	> 200	> 30

3.0 PLASTICITY



4.0 MOISTURE

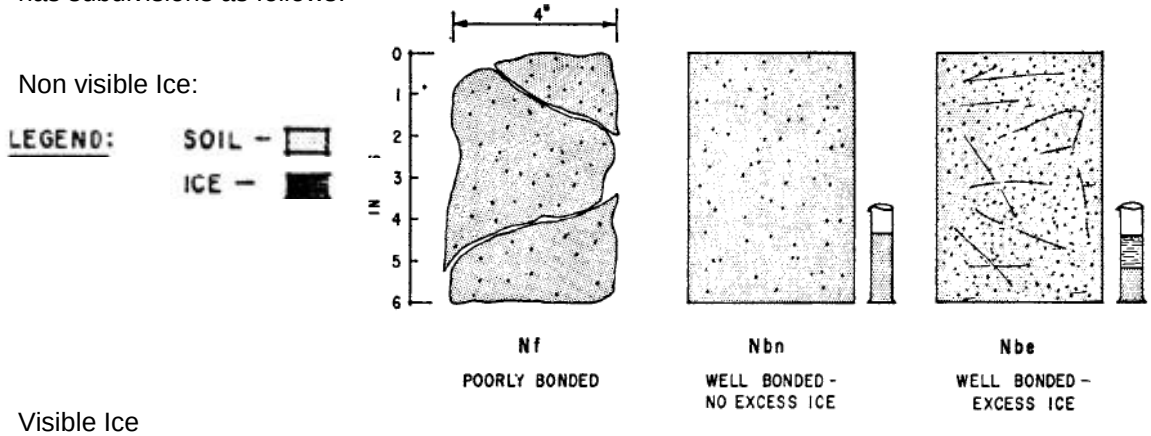
Descriptive Term	Field Identification
Dry	no visible moisture, dusty
Damp	slight moisture content but fingers do not become moistened when touching soil. Only fines sticks to fingers.
Moist	visible moisture, but no visible free water, finger becomes moistened when touching the soil. Soil does not stick to fingers. Near the plastic limit for cohesive soil.
Wet	a film of water is present on particle surface, soil sticks to fingers.
Free water	water is separated from soil particles.

5.0 FROZEN SOIL DESCRIPTION

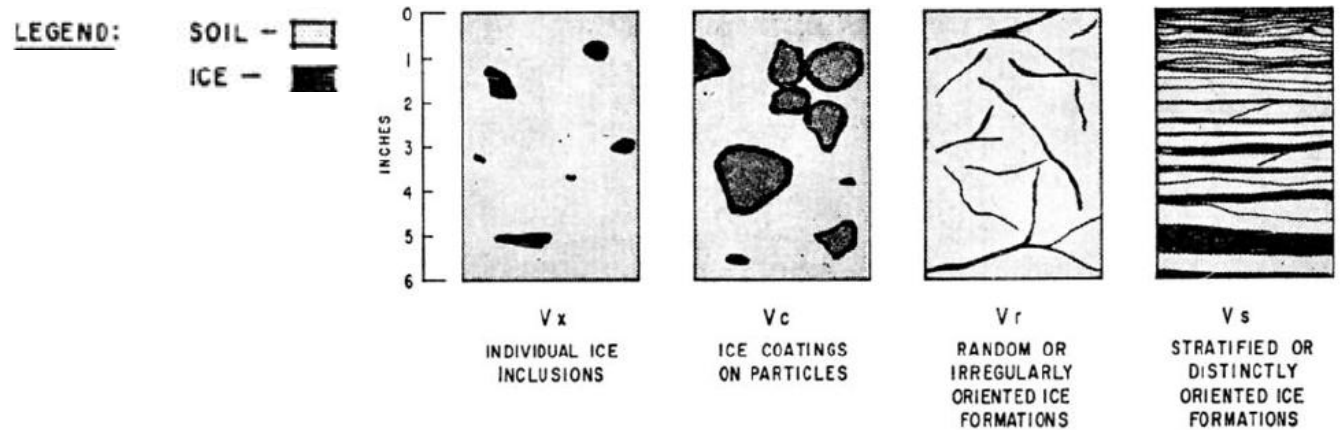
Permafrost (see ASTM D4083)

Three main categories – not visible (i.e. a frozen soil but ice is not visible to the naked eye), visible (can see ice but there is more soil than ice), and ice (>1" thickness where there is more ice than soil). Each has subdivisions as follows:

Non visible Ice:



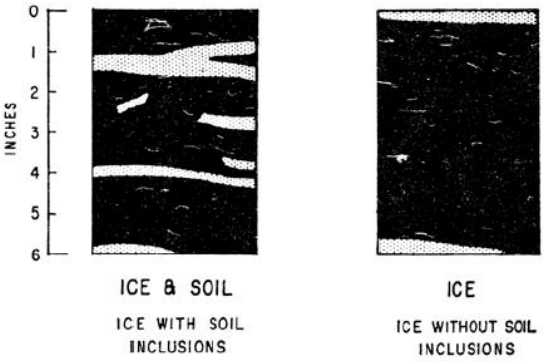
Visible Ice



Explanation of Terms for Geotechnical Logs

Ice

LEGEND: SOIL – ICE –



6.0 DEFINITION OF SYMBOLS USED ON LOGS

SOIL		SOIL		WELL DETAILS	
	GRAVEL, well graded, to and SAND little to no fines,(GW)		SILT, high plastic (MH)		Solid pipe with BACKFILL
	GRAVEL, poorly graded, to and SAND little to no fines (GP)		CLAY, low plastic (CL)		Solid Pipe with BENTONITE
	GRAVEL, silty to and SAND, and SILT(GM)		CLAY, medium plastic (CI)		Solid pipe with GROUT
	GRAVEL, clayey to and SAND, and CLAY (GC)		CLAY, high plastic (CH)		Solid pipe with SAND
	SAND, well graded, to gravely, little to no fines, (SW)		ORGANIC silt or clay, low plastic (OL)		Slotted pipe with SAND
	SAND, poorly graded, to gravely, little to no fines (SW)		ORGANIC silt or clay, high plastic (OH)		Slotted pipe with NO BACKFILL
	SAND, silty (SM)		PEAT (Pt)		SAND backfill
	SAND, clayey to SAND and CLAY (SC)	ROCK			GROUT backfill
	FILL		Granodiorite (GRDR)		GENERAL BACKFILL (e.g. drill cutting, slough)
	SILT, low plastic (ML)		Andesite (ANDS)		