



# GEOLABS, INC.

Geotechnical Engineering

## Soil Classification Log Key

(with deviations from ASTM D2488)

### GEOLABS, INC. CLASSIFICATION\*

#### GRANULAR SOIL (- #200 <50%)

- **PRIMARY** constituents are composed of the largest percent of the soil mass. Primary constituents are capitalized and bold (i.e., **GRAVEL, SAND**)
- **SECONDARY** constituents are composed of a percentage less than the primary constituent. If the soil mass consists of 12 percent or more fines content, a cohesive constituent is used (**SILTY** or **CLAYEY**); otherwise, a granular constituent is used (**GRAVELLY** or **SANDY**) provided that the secondary constituent consists of 20 percent or more of the soil mass. Secondary constituents are capitalized and bold (i.e., **SANDY GRAVEL, CLAYEY SAND**) and precede the primary constituent.
- **accessory descriptions** compose of the following:
  - with some: >12%
  - with a little: 5 - 12%
  - with traces of: <5%accessory descriptions are lower cased and follow the Primary and Secondary Constituents (i.e., **SILTY GRAVEL with a little sand**)

#### COHESIVE SOIL (- #200 ≥ 50%)

- **PRIMARY** constituents are based on plasticity. Primary constituents are capitalized and bold (i.e., **CLAY, SILT**)
- **SECONDARY** constituents are composed of a percentage less than the primary constituent, but more than 20 percent of the soil mass. Secondary constituents are capitalized and bold (i.e., **SANDY CLAY, SILTY CLAY, CLAYEY SILT**) and precede the primary constituent.
- **accessory descriptions** compose of the following:
  - with some: >12%
  - with a little: 5 - 12%
  - with traces of: <5%accessory descriptions are lower cased and follow the Primary and Secondary Constituents (i.e., **SILTY CLAY with some sand**)

**EXAMPLE:** Soil Containing 60% Gravel, 25% Sand, 15% Fines. Described as: **SILTY GRAVEL** with some sand

### RELATIVE DENSITY / CONSISTENCY

| Granular Soils       |         |                  | Cohesive Soils       |         |                   |              |
|----------------------|---------|------------------|----------------------|---------|-------------------|--------------|
| N-Value (Blows/Foot) |         | Relative Density | N-Value (Blows/Foot) |         | PP Readings (tsf) | Consistency  |
| SPT                  | MCS     |                  | SPT                  | MCS     |                   |              |
| 0 - 4                | 0 - 7   | Very Loose       | 0 - 2                | 0 - 4   |                   | Very Soft    |
| 4 - 10               | 7 - 18  | Loose            | 2 - 4                | 4 - 7   | < 0.5             | Soft         |
| 10 - 30              | 18 - 55 | Medium Dense     | 4 - 8                | 7 - 15  | 0.5 - 1.0         | Medium Stiff |
| 30 - 50              | 55 - 91 | Dense            | 8 - 15               | 15 - 27 | 1.0 - 2.0         | Stiff        |
| > 50                 | > 91    | Very Dense       | 15 - 30              | 27 - 55 | 2.0 - 4.0         | Very Stiff   |
|                      |         |                  | > 30                 | > 55    | > 4.0             | Hard         |

### MOISTURE CONTENT DEFINITIONS

Dry: Absence of moisture, dry to the touch

Moist: Damp but no visible water

Wet: Visible free water, usually soil is below water table

### ABBREVIATIONS

WOH: Weight of Hammer

WOR: Weight of Drill Rods

SPT: Standard Penetration Test Split-Spoon Sampler

MCS: Modified California Sampler

PP: Pocket Penetrometer

### GRAIN SIZE DEFINITION

| Description   | Sieve Number and / or Size          |
|---------------|-------------------------------------|
| Boulders      | > 12 inches (305-mm)                |
| Cobbles       | 3 to 12 inches (75-mm to 305-mm)    |
| Gravel        | 3-inch to #4 (75-mm to 4.75-mm)     |
| Coarse Gravel | 3-inch to 3/4-inch (75-mm to 19-mm) |
| Fine Gravel   | 3/4-inch to #4 (19-mm to 4.75-mm)   |
| Sand          | #4 to #200 (4.75-mm to 0.075-mm)    |
| Coarse Sand   | #4 to #10 (4.75-mm to 2-mm)         |
| Medium Sand   | #10 to #40 (2-mm to 0.425-mm)       |
| Fine Sand     | #40 to #200 (0.425-mm to 0.075-mm)  |

Plate

A-0.2

\*Soil descriptions are based on ASTM D2488-09a, Visual-Manual Procedure, with the above modifications by Geolabs, Inc. to the Unified Soil Classification System (USCS).