

## LABORATORY TESTING SOIL AND ROCK TESTS

### **CLASSIFICATION AND INDEX TESTS:**

Atterberg Limits, Plasticity Index (ASTM D4318)  
Moisture Content (ASTM D2216)  
Sieve Analysis % Passing #200 Sieve (ASTM D1140)  
Sieve Analysis w/o Hydrometer (ASTM D422)  
Sieve Analysis w/ Hydrometer (ASTM D422)  
pH of Soil (CTM 643)  
Soil Resistivity (CTM 643)  
Soluble Sulfate (CTM 417)  
Soil Chloride Content (CTM 422)  
Corrosivity Series; Sulfate, Chloride, pH, Resistivity  
(CTM643, 417, 422)  
Specific Gravity of Soil (ASTM D854)  
Unit Weight/Moisture Content, wax (ASTM D2937)  
Unit Weight/Moisture Content, shelly tube (ASTM  
D2937)  
Unit Weight/Moisture Content, ring sample (ASTM  
D2937)

### **STRENGTH TESTS:**

Direct Shear, Residual (ASTM D3080)  
Direct Shear, Consolidated (ASTM D3080)  
Direct Shear, Consolidated (ASTM D3080), Remolded  
R-Value, (ASTM D2844, CTM 301)  
R-Value, Lime Treated (ASTM D2844, CTM 301)  
R-Value, Aggregate Base (ASTM D2844, CTM 301)  
California Bearing Ratio (D1883)  
Triaxial Compressive Strength (CU with PP)  
Torsional Ring Shear (ASTM D7608)  
Vane Shear Test (ASTM D4648)  
Unconfined Compression (ASTM D2166)

### **VOLUMETRIC CHANGE:**

Consolidation Test (ASTM D2435), w/o time rate  
Consolidation Test (ASTM D2435), w/ time rate  
Consolidation Test (ASTM D2435), single point  
Free Swell  
Double Oedometer  
Expansion Index (ASTM D4829)  
Response to Wetting (ASTM D4546)  
Soil Suction (ASTM D5298)  
Freeze Thaw (ASTM D6035)

### **COMPACTION:**

Maximum Density and Optimum Moisture (ASTM  
D1557)  
Moisture Density of Soil-Cement Mixtures (ASTM  
D558)  
Maximum Density/Optimum Moisture with Rock  
(ASTM D4718)  
Maximum Density Check Point (ASTM D1557)  
California Impact Compaction, test only (CTM 216)

### **PERMEABILITY:**

Permeability of Granular Soil (ASTM D2434)  
Permeability, Flexible Wall (ASTM D5084)

### **AGGREGATE/SUBGRADE:**

Abrasion Test (ASTM C131/C535)  
Clay Lumps/Friable Particles (ASTM C142)  
Durability Index (ASTM D3744)  
Lime Stabilized Subgrade Mix Design  
Organic Impurities (ASTM C40)  
Percent Fractured Aggregate (ASTM D5821)  
Fine Aggregate Angularity  
Sand Equivalent (ASTM D2419)  
Sieve Analysis (ASTM C136)  
Specific Gravity and Absorption: fine aggregate (ASTM  
C128) & coarse aggregate (ASTM C127)  
Sulfate Soundness (ASTM C88)  
Cleanness Value (CTM 227)  
Durability Index (ASTM D3744, CTM 229)  
Flat & Elongated Particles, Size (ASTM D4791)  
Unit Weight of Aggregate, loose/dry rod (ASTM C29)