



GEOTECHNICAL LABORATORY TESTING

SOILS AND AGGREGATE TESTS	METHOD
IDENTIFICATION & INDEX PROPERTIES	
Moisture Content	ASTM D 2216
Moisture Content & Density (<i>6 inch tube or rings</i>)	ASTM D 2937
Moisture Content & Density (<i>Shelby tube or requires cutting</i>)	ASTM D 2937
Atterberg Limits	ASTM D 4318
Single Point/Non-plastic	ASTM D 4318
Particle Size – Sieve ($\frac{3}{4}$ " to –#200)	ASTM D 422
– Hydrometer only	ASTM D 422
– Sieve & Hydrometer	ASTM D 422
Specific Gravity – Fine (passing #4)	ASTM D 854
– Coarse (retained on #4)	ASTM C 127
% Passing # 200	ASTM D 1140
Total Porosity	
Sand Equivalent	DOT CA Test 217
Cleanness	DOT CA Test 227
Durability Index	DOT CA Test 229
Los Angeles Rattler	ASTM C 131
SOIL CHEMISTRY	
Ph	DOT CA 643
Minimum Resistivity (<i>minimum of 3 points</i>)	DOT CA Test 643
Sulfate Content – Turbidimetric	DOT CA Test 417/Part II
Sulfate Content – 10:1 Dilution/Gravimetric	County of Orange Modified Test Method
Chloride Content	DOT CA Test 422
Corrosion Suite (pH, Resistivity, Chloride, Sulfate)	DOT CA 417/422/643
Organic Matter Content	ASTM 2974
SHEAR STRENGTH	
Direct Shear (<i>3 points</i>)	ASTM D 3080
Residual Shear (<i>price per pass after shear</i>)	
Remolding or Hand Trimming of specimens (per point)	
Unconfined Compression (<i>with stress/strain plot</i>)	ASTM D 2166
UU Test – Unconsolidated/Undrained (<i>per confining stress</i>)	ASTM D 2850
Consolidated Undrained (CU,R) with Back Pressure Saturation and Pore Pressure Readings (<i>per confining stress</i>)	ASTM D 4767
COMPACTION & BEARING CAPACITY	
R-Value – <i>Untreated/Treated</i>	ASTM D 2844
Standard Proctor Compaction - <i>4 points</i>	ASTM D 698
4 inch mold/6 inch mold	Methods A&B/Method C
Modified Proctor Compaction (Max Density) - <i>4 points</i>	
4 inch mold/6 inch mold	Method A & B/Method C
Check Point	
Correction of Soils w/ Oversize Particles	ASTM D 4718
California Bearing Ratio (CBR) – 3 point	ASTM D 1883
California Bearing Ratio (CBR) – 1 point	ASTM D 1884
California Impact Test	DOT CA 216

CONSOLIDATION AND SWELL TESTS	
Consolidations <i>(includes up to 8 loading increments w/ water up to 10 ksf & unloading with Strain vs. P curve)</i>	ASTM D 2435
Time Reading & Curve per Increment	
Expansion Index	ASTM D 4829
Swell/Collapse Test – Method A <i>(Up to 10 loading/unloading saturation increments w/o time curves)</i>	ASTM D 4546 Method A
Single Load Swell/Collapse Test - Method B <i>(Seat, load, and inundate only)</i>	ASTM D 4546 Method B
Swell/Collapse Test – Method C	ASTM D 4546 Method C
Collapse Potential of Soils	ASTM D 5333
HYDRAULIC TESTS	
Permeability of Granular soils (Constant Head)	ASTM D 2434
– Undisturbed Tube Sample	
– Remolded Sample	
Triaxial Permeability in Flexible-Wall Permeameter with Backpressure Saturation - at One Effective Stress	EPA 9100/ASTM D 5084 (Falling Head Method C)
- Each Additional Effective Stress	
- Hand Trimming of Soil Samples for Horizontal K	
- Daily charge for Long Term Tests <i>(exceeds 7 days)</i>	
Remolding of Test Specimens	