



ADVANCED TERRA TESTING

2023 PROCEDURES

ADVANCED TERRA TESTING

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SOIL TESTING

General Properties

Standard	Description	Notes
ASTM D2216	Moisture Content	
ASTM D7263	Moisture Content and Density	
ASTM D7263	Moisture Content and Density (Paraffin Coated)	
ASTM D854 AASHTO T100	Specific Gravity	
ASTM D2974 AASHTO T267	Organic Matter Content	

Classification

Standard	Description	Notes
ASTM D4318 AASHTO T89 T90	Atterberg Limits	
ASTM D1140	Percent Fines (Minus #200)	
ASTM D6913 AASHTO T311	Grain Size (3" Maximum)	
ASTM D7928 & D6913 AASHTO T88	Grain Size with Hydrometer	Replaces ASTM D422
ASTM D4943	Shrinkage Limits	
ASTM D2488	Visual Classification	
ASTM D5519	Particle Size of Rip Rap (Large Scale GSA)	

Compaction

Standard	Description	Notes
ASTM D698 AASHTO T99	Standard Proctor	
ASTM D1557 AASHTO T180	Modified Proctor	
ASTM D4718 AASHTO T224	Rock Correction	If Required (In accordance with ASTM C127)
ASTM D698 or D1557	One Point Proctor	
ASTM D558	Cement Amended Proctor	
ASTM D4253 & D4254	Relative Density	

Road Base

Standard	Description	Notes
ASTM D2844 AASHTO T190	R-Value	
ASTM D1883 AASHTO T193	California Bearing Ratio (3 Point)	Varying Moisture or Density
ASTM D1883 AASHTO T193	California Bearing Ratio (Single Point)	

Swell / Consolidation

Standard	Description	Notes
ASTM D2435 AASHTO T216	Consolidation Test	Includes 4 Timed readings
ASTM D4546	Swell / Collapse Test (Method A)	4 Samples Tested
ASTM D4546	Swell / Collapse Test (Method B)	
ASTM D4546	Swell / Collapse Test (Method C)	
State Method	Denver Swell	
ASTM D2435 (Modified)	Large Scale Consolidation Test	9" Diameter, Includes 4 Timed Readings
ASTM D4829	Expansion Index	

Strength

Standard	Description	Notes
ASTM D2166 AASHTO T208	Unconfined Compressive Strength (UCS)	Stress Strain Curve Reported
ASTM D3080 AASHTO T236	Direct Shear (Per Point)	2" or 2.5" Liners, up to 12,000 psf
ASTM D2850	Triaxial Shear - Unconsolidated, Undrained (Per Point)	TxUU
ASTM D2850	Triaxial Shear - Unconsolidated, Undrained, Saturated (Per Point)	TxUU (Modified)
ASTM D4767	Triaxial Shear - Consolidated, Undrained with Pore Pressure (Per Point)	TxCUPP
ASTM D7181	Triaxial Shear - Consolidated, Drained (Per Point)	Additional \$80 per day of shear time after 48 hours
ASTM D4767	Triaxial Shear - Constant Shear Drained (Per Point)	
ASTM D1633	UCS, Cement Amended Molded Specimens	
ASTM D4648	Laboratory Vane Shear	
ASTM D4832	UCS, Controlled Low Strength Material	
ASTM D8121	Torvane Shear	
OSHA ID-194	Pocket Penetrometer Test	

Permeability

Standard	Description	Notes
ASTM D5856	Fixed Wall Permeability Test	Falling Head or Constant Head Method
ASTM D5084	Flexible Wall Permeability	Flow Pump, Constant Head or Falling Head
ASTM D6836	Capillary Moisture Retention	Chilled Mirror, Pressure Chamber, or Filter Paper
ATT Method SP-57	Heap Height vs. Percolation Rate	12" Diameter Sample, Includes 5 Loads

Dispersion

Standard	Description	Notes
ASTM D4647	Pinhole Dispersion Test	
ASTM D4221	Double Hydrometer	
USBR Method 5400	Crumb Dispersion Test	

Bentonite

Standard	Description	Notes
ASTM D6910	Marsh Funnel Viscosity	
ASTM D4380	Mud Density	
API RP 13A & 13B	Gel Strength	
ASTM D5891	Filtrate Loss	
ASTM D5890	Bentonite Swell Index	
ASTM D5891	Bentonite Fluid Loss	
API RP 13A & 13B	Bentonite Conformance Testing	Includes gel strength, marsh funnel viscosity, and mud balance density.

Chemical

Standard	Description	Notes
ASTM C1580 / D516	Sulfate Content	Equivalent to FDOT FM5-553, AASHTO T290B
ASTM D1411 / D512B	Chloride Content	Equivalent to FDOT FM5-552, AASHTO T291A
ASTM G187	Resistivity	Equivalent to FDOT FM5-551, AASHTO T288
ASTM D4972	Soil pH	Equivalent to FDOT FM5-550, AASHTO T289
ASTM D4373	Calcium Carbonate Content	
ASTM D4658	Sulfide Content	Equivalent to HACH 8131
ASTM C837	Methylene Blue Index	
ASTM C40 AASHTO T21	Organic Impurities	
ASTM D1125	Electrical Conductivity of Water	Can be modified for use with soil
ASTM D1498	Oxidation Reduction Potential	
EPA 402-R-12-006	Gamma and Alpha Screening	