

GEOTECHNICAL / ENVIRONMENTAL & CORROSION TESTING

SCHEDULE OF CHARGES

CLASSIFICATION & INDEX TESTS

Atterberg Limits (ASTM D4318)	
Liquid & Plastic Limits	
Wet Prep method	293
Dry Prep method (CTL default)	204
Moisture Content (ASTM D2216)	26
Moisture & Density (ASTM D7263b)	
2.0 to 2.5" Diameter	30
3.0" Diameter	45
4.0" Diameter	111
6.0" Diameter	178
Chunk Density (ASTM D7263a)	112
Particle Size Analysis	
Bulk Sieve (if gravelly or >5Kg) add	86
Sieve Analysis (ASTM D 422)	136
with Hydrometer (ASTM D 422)	230
Sieve Analysis (ASTM D 6913)	147
with Hydrometer (ASTM D 7928)	242
#200 Sieve Wash (ASTM D 1140)	97
Specific Gravity (Particle Density)	
(ASTM D854) - #4 Sieve	112
(ASTM C127) + #4 Sieve	198
(ASTM C128) - #4 Sieve	221
Organic Content (ASTM D2974)	112
Fraction Organic Carbon (FOC)	
By Walkley Black (subcontracted)	71
Porosity	
Total (ASTM D7263 / API RP40)	
(Includes Moisture Content, Dry Density & Specific Gravity)	138
Effective (ASTM D6836m)	
(Includes Total Porosity, Moisture Content, Dry Density & Specific Gravity)	297

MOISTURE DENSITY RELATIONS

Standard Proctor (ASTM D698)	
4-inch mold	328
6-inch mold	392
Modified Proctor (ASTM D1557)	
4-inch mold (w/ assumed Gs for rock corr.)	328
6-inch mold (w/ assumed Gs for rock corr.)	392
For Measured Gs for Rock Correction add	198
Insufficient quantity add per point	89
Cal-Impact (Caltrans 216)	441
Max Index Density (ASTM D4253)	
0.1 ft ³ mold	303
0.5 ft ³ mold	457
Minimum Density (ASTM D4254)	
0.1 ft ³ mold	152
0.5 ft ³ mold	303

STRENGTH TESTS

Unconfined Comp. (ASTM D2166)	91
Direct Shear per point	
(CD) (ASTM D3080)	262
(UU) Modified ASTM	115
(CU) Modified ASTM	115
⇒ DSUU & DSCU are not ASTM approved	

TORSIONAL RING SHEAR

(All prices are per point)	
* Overconsolidated Peak	412
* Fully Softened Peak (ASTM D7608)	387
* Residual (ASTM D6467)	387
* Residual Additional Points, per	360
⇒ Torsional tests can be run on intact (undisturbed) or reconstituted specimens. All above tests are Drained.	
⇒ Reconstituted samples are typically tested near the liquid limit and are prepared over the #40 sieve.	
⇒ For the Stark method of testing only the -#200 material, Per Envelope	add 63

TRIAXIAL COMPRESSION

(All prices are per point for 2-3" diameter samples)	
Unconsolidated-Undrained	
ASTM D2850 (TX-UU)	167
Back Press. Saturated	add 113
Consolidated-Undrained	
ASTM D4767 Modified (TX-ICU)	303
Consolidated-Undrained w/pp	
ASTM D4767 (TX-ICU-PP)	587
Consolidated-Drained	
ASTM D7181 (TX-ICD)	751
Confining Stress Conditions	
Isotropic	default
Anisotropic	add to above prices 212
K _o	add to above prices 328

Large Scale Triax Testing (w/ remolding):	
4.0" diameter Triax per point	add 664
6.0" diameter Triax per point	add 1388
Large Scale Triax (undisturbed)	
4.0" diameter Triax per point	add 431
6.0" diameter Triax per point	add 719

Triaxial Consolidation on large samples will be limited to a maximum consolidation phase of 5 days, unless requested otherwise. Over 5 days add-per-day 83

TRIAX (continued)

Staged Tests multiply the price of a single point by two for a two or three point envelope. (for all triaxial tests above)	
Before and After Test Photos	
per sample	add 60

CONSOLIDATION TESTS

Consolidation (ASTM D2435)	473
Includes full curve with 3 points on the virgin curve, timed readings and rebound.	
Preliminary Reports Add	19
Rebound-Reload, per load	49
Client Provided Loads Add	47
Triaxial K_o Consolidation measured lateral pressure (2-3" diam.)	808
Large Scale K _o (For sample diameter larger than 2-3" see large Scale Triaxial Testing)	

EXPANSION / COLLAPSE TESTS

Expansion Pressure Curve	
(ASTM D3877m)	194
Multi point expansion pressure curve to free swell.	
Shrink-Swell (ASTM D3877m)	194
⇒ Multi point volume change curve including field, saturated, air-dried and oven dried conditions.	
Shrink-Swell w/Expansion Pressure Curve (ASTM D3877m)	352
⇒ This procedure was originally developed for lime treated soils. We have found it to be useful for untreated soils. There are many different types of expansion tests. In our opinion this procedure is the most comprehensive and thorough procedure. This is our default expansion test procedure.	
⇒ Air dried prior to test	add 36

Expansion Index	
(ASTM D4829)	493
⇒ This test is run at 48-52% saturation.	
ISRM (swelling tests for rock)	
Part-2	405
Part-4*	679
⇒ *More than 10 loads add per load	49

One Dimensional Swell/Collapse of Soils (ASTM D4546)	
Part-A (4 point curve, loaded-wetted)	1062
Part-B (rebound-reload upon request only)	404
Part-C (wetted-loaded)	457

EXPANSION / COLLAPSE TESTS (continued)		
% Collapse (ASTM D5333)		206
⇒ <i>Incrementally loaded to requested surcharge pressure. Includes 4 load increments.</i>		
⇒ <i>Additional loads, per point</i>		49

HYDRAULIC CONDUCTIVITY & PERMEABILITY TESTS		
Constant Head Rigid Wall		
(ASTM D2434) 2-3" diameter samples		401
⇒ <i>(For clean sand and gravel with less than 10% fines and a K value > 10⁻³ cm/sec).</i>		
Falling Head Rising Tail Water		
(ASTM D5084) 2-3" diameter samples		401
Large Scale Falling Head Permeability		
(ASTM D5084) Undisturbed Core Samples)		
4" Diameter		832
6" Diameter		1120
Remolded Samples:		
4" Diameter		1065
6" Diameter		1789
Large Scale Constant Head Permeability (ASTM D2434) includes remolding		
6" Diameter Cell		528
Bio-retention		528
SFPUC Method for Bio-retention		792
12" Diameter Cell (can test up to 2" rock)		1056
(There is no ASTM procedure for >0.75" rock)		
Air Permeability (ASTM D6539)		
Effective (In-Situ Moisture)		528
Intrinsic (air-dried)		580
Either Test Includes:		
Moisture Content		
Volumetric Air & Water Content		
Bulk Density		
Large Scale Undisturbed or Core Samples:		
4" Diameter	add	431
6" Diameter	add	719
Large Scale Remolded Samples:		
4" Diameter	add	664
6" Diameter	add	1388

ROCK TESTS		
Unconfined Strength of Rock w/ Young's Modulus (ASTM D7012-d)		
Before and After test photos	add	60
Point Load Strength Index of Rock Core (ASTM D5731)		
		99
Slake Durability (ASTM D4644)		
		244
Splitting Tensile Strength-Brazilian Splitting Test (ASTM D3967), Per Point		
		138

REQUIRED LIME CONTENT		
Soil-Lime Proportion		
(ASTM D6276)		352
⇒ 6 point curve to determine optimum lime content of soil lime mixtures.		

CAL-TRANS / AGGREGATE TESTS		
CBR (ASTM D1883)		
With compaction		1039
Compaction Provided by Client		647
R-value (Cal 301)		
A) with batching of gravel	add	45
B) Admix (lime, cement etc.)	add	71
Sand Equivalent (CT 217)		
		138
Durability Index (CT 229)		
A) Coarse		196
B) Fine		163
Class II AB Specification Tests Suite		
⇒ R-value		
⇒ Sieve Analysis		
⇒ Durability Index		
⇒ Sand Equivalent		
Cal Spec Package Price		954
% Crushed Particles (CT 205)		
Hourly @		172
Cal impact (see moisture-density relations)		
Sodium Sulfate Soundness (ASTM C88)		
(per fraction)		196
Cleanness Value (CT 227)		
1" x #4 (or finer)		244
1.5" x 3/4"		520
2.5" x 1.5"		830
Pit Run		303
LA Abrasion		
500 revolutions (ASTM C131/CT 211)		303
1000 revolutions (ASTM C535)		414
Clay Lumps & Friable Particles		
(ASTM C142)		147

WATER TESTS		
Particle Size Distribution (ASTM D3977C)		
full gradation curve		370
Total Suspended Solids		
(ASTM D3977b)		59
Total Dissolved Solids (SM2540C)		
		59
Total Solids (SM2540B)		
		59

LIME / CEMENT TREATING		
R-value		
	add	71
Atterberg Limits		
	add	48
Compaction Tests		
	add	105
CBR with compaction		
	add	343

OTHER TESTS		
Total Solids for Sediments		
		41
Pinhole Test (ASTM D4647)		
		534
Double Hydrometer		
(ASTM D4221 & D422)		534
Logging of Shelby Tubes		
With digital photo	add	60
Lead Shot Characterization or Quantification (Call for quote)		
X-Ray of samples		
(Three sample minimum)		244
Thermal Conductivity (ASTM D5334)		
As Received		251
As Received & Air Dried		502
4 Point from As Received to Oven Dry		1004
6 Point from As Received to Oven Dry		1506

LABORATORY TIME		
Lab Technician Per Hour:		
A) Junior Tech		138
B) Senior Tech		172
C) Principal		216
Sample Pickup (Bay Area)		
		105
⇒ <i>No charge for jobs over \$2000</i>		
⇒ <i>Long distance pickups call for quote</i>		
⇒ <i>Price subject to change</i>		
Witness Testing		
per person, per hour		81
<i>Due to the interruption of having outside personnel in the lab for witnessing testing, the above charge must be calculated into the overall project cost. From experience we have found that having witnesses in the lab during testing slows testing considerably and distracts other technicians working on other jobs. The more people, the more discussion that goes on, and the more slowly things go.</i>		
Minimum Charge		
		102
⇒ <i>For samples delivered but not tested there will be a handling charge of \$2 per sample.</i>		
⇒ <i>Consult lab about tests not listed.</i>		

Corrosion Testing

CORROSION TESTS	Price	Standard	Sample Quantity (Excluding Gravel)
<u>Resistivity</u> (as received) (Gravelly Samples: Class II AB, Drain Rock etc. add \$35)	\$86	ASTM G57	500g
<u>Resistivity</u> (100% saturated) (Gravelly Samples: Class II AB, Drain Rock etc. add \$35)	86	ASTM G57	500g
<u>Resistivity</u> (minimum) (Gravelly Samples: Class II AB, Drain Rock, etc. add \$95)	184	CT 643/AASHTO T288	500g
<u>pH</u>	42	ASTM G51/CT 643/ AASHTO T289	150g
<u>Sulfate</u>	62	ASTM D4327/CT 417	150g
<u>Redox Potential / ORP</u>	60	ASTM G200	150g
<u>Chloride</u>	62	ASTM D4327/CT 422m	150g
<u>Sulfide</u>	53	Qualitative by Lead Acetate Paper	150g
Soil Corrosivity Packages (add \$50 for insufficient Sample)	Price	Package	Sample Quantity
<u>Minimum Resistivity, pH, Chloride and Sulfate</u>	\$310	Caltrans	1000g
<u>Resistivity (100% Sat.), pH, Chloride and Sulfate</u>	223	A	1000g
<u>Resistivity (As Received), pH, Chloride and Sulfate</u>	223	B	1000g
<u>Resistivity (As Received), pH, Chloride, Sulfate and Redox</u>	276	C	1000g
<u>Resistivity (100% Sat.), pH, Chloride, Sulfate and Redox</u>	276	D	1000g
<u>Resist. (100% Sat.), pH, Chloride, Sulfate, Sulfide and Redox</u>	323	PG&E Corrosion Pkg.	1000g

Test results for the pH, sulfate and redox potential tests can be affected by the way the samples are collected and handled. Ideally, samples should be collected in such a way as to minimize contact between the soil and the air. For example, collect a full brass liner of soil then quickly seal it with caps and tape. Because these tests can be affected by microbial activity it is best to keep the sample in a cooler with ice until it is delivered to our lab.

Environmental Testing Packages (prices for samples up to 3" diameter)

Vadose Zone-Package 1	Vadose Zone-Package 2	Hydrogeology-Package 1	Hydrogeology-Package 2
<u>Air Permeability</u> (k) ASTM D6539	---	<u>Effective Porosity</u> ASTM D6836m	---
<u>Total Porosity</u> (θt) ASTM D7263	<u>Total Porosity</u> (θt) ASTM D7263	<u>Total Porosity</u> (θt) ASTM D7263	<u>Total Porosity</u> (θt) ASTM D7263
<u>Grain Density</u> ASTM D854	<u>Grain Density</u> ASTM D854	<u>Grain Density</u> ASTM D854	<u>Grain Density</u> ASTM D854
<u>Moisture Content</u> ASTM D2216	<u>Moisture Content</u> ASTM D2216	<u>Moisture Content</u> ASTM D2216	<u>Moisture Content</u> ASTM D2216
<u>Volumetric Water Content</u> (θw)	<u>Volumetric Water Content</u> (θw)	<u>Volumetric Water Content</u> (θw)	<u>Volumetric Water Content</u> (θw)
<u>Volumetric Air Content</u> (θa)	<u>Volumetric Air Content</u> (θa)	<u>Volumetric Air Content</u> (θa)	<u>Volumetric Air Content</u> (θa)
<u>Bulk Density</u> (ρs) (wet & dry) ASTM D7263b	<u>Bulk Density</u> (ρs) (wet & dry) ASTM D7263b	<u>Bulk Density</u> (ρs) (wet & dry) ASTM D7263b	<u>Bulk Density</u> (ρs) (wet & dry) ASTM D7263b
<u>TOC Percent Organics</u> ASTM D2974 <u>OR FOC</u> (Walkley-Black) (TOC is CTL default)	<u>TOC Percent Organics</u> ASTM D2974 <u>OR FOC</u> (Walkley-Black) (TOC is CTL default)	<u>Hydraulic Conductivity</u> ASTM D5084 or ASTM D2434 depending on material type	<u>Hydraulic Conductivity</u> ASTM D5084 or ASTM D2434 depending on material type
<u>Grain Size</u> ASTM D422	<u>Grain Size</u> ASTM D422	<u>Grain Size</u> ASTM D422	<u>Grain Size</u> ASTM D422
<u>Soil Classification</u> by USCS—determined by grainsize not Atterberg Limits (USDA classification by request)	<u>Soil Classification</u> by USCS—determined by grainsize not Atterberg Limits (USDA classification by request)	<u>Soil Classification</u> by USCS - determined by grainsize not Atterberg Limits (USDA classification by request)	<u>Soil Classification</u> by USCS - determined by grainsize not Atterberg Limits (USDA classification by request)
\$933	\$457	\$882	\$706

NOTES & POLICY

All prices are based upon 2.0, 2.5 & 3.0" O.D. California and Modified California sample diameters unless noted otherwise.

If your company requires contracts on a per job basis add 5% to all listed prices. This surcharge attempts to offset the added overhead expenses related to the contracting process and complying with any special provisions, etc.

Unusual Sample Sizes under 3.0" diameter add \$16. Larger sample prices are listed under specific test types.

Remolding of 2 to 3"Dia. Samples

Per Point add 92

Rush testing add 50%. Rush only guarantees that your project will be given top priority.

Super Rush testing add 100%. Accepted only on a case by case basis after consultation with a lab manager. With this level of service you get a dedicated technician who will run the testing as fast as humanly possible.

Testing of (low level) Contaminated Samples Add 50%. Samples will be returned to sender for proper disposal.

Client must provide fresh cement, bentonite or lime for admix testing. The manufacturers are always happy to send free product for admix testing. If the client requests us to use product on hand from other projects we do not take responsibility for bad product due to aging or hydration. The test results may be significantly affected due to aged or hydrated product.

We do not accept jobs that require 3rd party billing.

Payment terms are net 30 days. Once an invoice ages beyond 90 days the client is put on C.O.D. until the account is brought current.

Importing Foreign Soils add 15%

Our payment policy may conflict with consultants who do not pay until they have been paid by their client. We pay our subs even if we have not been paid and expect the same courtesy.

We expect to be notified prior to accepting the job if insurance certificates, or a subcontractors agreement, (or anything else that might slow payment to us) is needed. We would appreciate the courtesy of informing us of such policies.

Sample Storage Rates Per Sample:

<3" Diameter	\$0.05
3" Diameter	0.10
4" Diameter	0.15
Bulk (per bucket)	1.00

Samples will be stored for 30 days after the report goes out, unless otherwise requested. Bulk samples will be discarded after 5 days unless otherwise requested. Consult lab regarding the cost of long term storage.

When insufficient sample is delivered to the lab requiring extra time:

Per Sample add 60

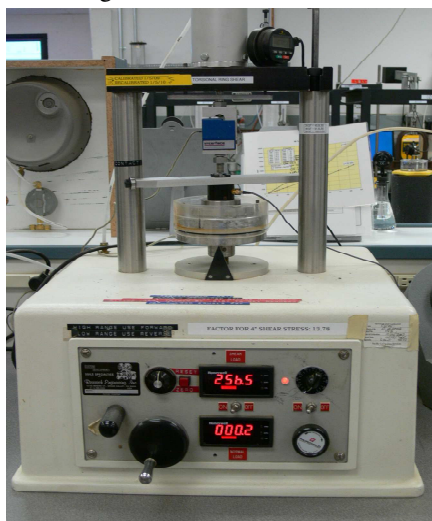
For clients who require invoices be submitted in a manner other than postal mail or email, an invoicing charge of up to \$50 will be added to your invoice.



Consolidation Stations



Large Scale Triaxial Stations



Torsional Ring Shear, Cooper, Stark, Riley



Torsional Ring Shear, Bromhead

Secure Online Reporting & Test Request

@
<http://www.coopertestinglabs.com>
Info At:
requests@coopertestinglabs.com

*Optimum Turn-Around-Times

* The turn-around times listed here are approximate under optimum circumstances. The time can vary greatly depending upon our workload and the number of tests requested. Consult lab when samples arrive.

TEST	Bus. DAYS
Compaction.....	3
Collapse.....	6+
Consolidation.....	11+
Direct Shear, drained.....	7+
Direct Shear, Undrained.....	3
Durability Index (Caltrans).....	4
Expansion Tests	
Shrink-Swell.....	6+
Expansion Pressure.....	6+
SS+Exp. Pressure.....	10+
The time can vary dramatically depending upon the plasticity of the material. A non-plastic soil may complete in 2-3 days while a plastic soil may take 2 weeks.	
Expansion Index.....	4+
Liquid & Plastic Limits	
Wet prep method.....	7+
Dry prep method.....	4
Moisture Density.....	3
Minimum Index Density.....	3
Maximum Index Density.....	3
Organics (TOC).....	3
Porosity	
Total.....	4+
Effective.....	10
Permeability	
Constant Head (rigid wall).....	4
Falling Head (flex wall).....	5+
Sand Equivalent.....	3
Sieve Analysis.....	4
Sieve & Hydrometer.....	6
-#200 Wash.....	4
Slake Durability.....	5
Specific Gravity.....	4
LA Abrasion.....	3
Cleaness Value.....	4
Sodium Sulfate Soundness	8
Pinhole	4
Thermal Conductivity.....	Call
Torsional Ring Shear (per pt).....	2
Triax (isotropic)	
UU.....	3
CU.....	5
CU-PP.....	5
CD.....	6+
*Anisotropic add 2 days per point	
*K ₀ add 2 to 4 days per point	
*High Confining Pressure add 2 days per point	