

## GEOTECHNICAL / ENVIRONMENTAL & CORROSION TESTING SCHEDULE OF CHARGES

CLASSIFICATION & INDEX TESTS	
<b>Atterberg Limits</b> (ASTM D4318)	
Liquid & Plastic Limits	
Wet Prep method	245
Dry Prep method (CTL default)	171
<b>Moisture Content</b> (ASTM D2216)	21
<b>Moisture &amp; Density</b> (ASTM D7263b)	
2.0 to 2.5" Diameter	25
3.0" Diameter	36
4.0" Diameter	93
6.0" Diameter	148
<b>Chunk Density</b> (ASTM D7263a)	93
<b>Particle Size Analysis</b> (ASTM D 422)	
Sieve Analysis w/#200 Wash	115
Bulk Sieve (if gravelly or >5Kg) add	71
Sieve & Hydrometer	192
<b>#200 Sieve Wash</b> (ASTM D 1140)	83
<b>Specific Gravity</b> (Particle Density)	
(ASTM D854) - #4 Sieve	93
(ASTM C127) + #4 Sieve	165
(ASTM C128) - #4 Sieve	116
<b>Organic Content</b> (ASTM D2974)	93
<b>Fraction Organic Carbon (FOC)</b>	
By Walkley Black (subcontracted)	59
<b>Porosity</b>	
<b>Total</b> (ASTM D7263 / API RP40)	
(Includes Moisture Content, Dry Density & Specific Gravity)	115
<b>Effective</b> (ASTM D6836m)	
(Includes Total Porosity, Moisture Content, Dry Density & Specific Gravity)	247
MOISTURE DENSITY RELATIONS	
<b>Standard Proctor</b> (ASTM D698)	
4-inch mold	274
6-inch mold	327
<b>Modified Proctor</b> (ASTM D1557)	
4-inch mold (w/ assumed Gs for rock corr.)	274
6-inch mold (w/ assumed Gs for rock corr.)	327
For Measured Gs for Rock Correction add	165
Free draining material add	44
Insufficient quantity add per point	66
<b>Cal-Impact</b> (Caltrans 216)	344
<b>Max Index Density</b> (ASTM D4253)	
0.1 ft <sup>3</sup> mold	252
0.5 ft <sup>3</sup> mold	380
<b>Minimum Density</b> (ASTM D4254)	
0.1 ft <sup>3</sup> mold	125
0.5 ft <sup>3</sup> mold	252

STRENGTH TESTS	
<b>Unconfined Comp.</b> (ASTM D2166)	77
<b>Direct Shear</b> per point	
(CD) (ASTM D3080)	219
(UU) Modified ASTM	98
(CU) Modified ASTM	98
⇒ DSUU & DSCU are not ASTM approved	

TORSIONAL RING SHEAR	
(All prices are per point)	
* Overconsolidated Peak	343
* Fully Softened Peak (ASTM D7608)	322
* Residual (ASTM D6467)	322
* Residual Additional Points, per	300
⇒ 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 52	

TRIAXIAL COMPRESSION	
(All prices are per point for 2-3" diameter samples)	
<b>Unconsolidated-Undrained</b>	
ASTM D2850 (TX-UU)	142
Back Press. Saturated add	104
<b>Consolidated-Undrained</b>	
ASTM D4767 Modified (TX-ICU)	242
<b>Consolidated-Undrained w/pp</b>	
ASTM D4767 (TX-ICU-PP)	494
<b>Consolidated-Drained</b>	
ASTM D7181 (TX-ICD)	630
<b>Confining Stress Conditions</b>	
Isotropic	default
Anisotropic add to above prices	175
K <sub>o</sub> add to above prices	274
<b>Large Scale Triax Testing (w/ remolding):</b>	
4.0" diameter Triax per point add	554
6.0" diameter Triax per point add	1158
<b>Large Scale Triax (undisturbed)</b>	
4.0" diameter Triax per point add	359
6.0" diameter Triax per point add	599
<b>Triaxial Consolidation</b> on large samples will be limited to a maximum consolidation phase of 5 days, unless requested otherwise. Over 5 days add-per-day 70	

TRIAX (continued)	
<b>Staged Tests</b> multiply the price of a single point by two for a two or three point envelope. (for all triaxial tests above)	
<b>Before and After Test Photos</b>	
per sample	add 49

CONSOLIDATION TESTS	
<b>Consolidation</b> (ASTM D2435)	395
<i>Includes full curve with 3 points on the virgin curve, timed readings and rebound.</i>	
<b>Preliminary Reports Add</b>	14
<b>Rebound-Reload, per load</b>	40
<b>Triaxial K<sub>0</sub> Consolidation</b> measured lateral pressure (2-3" diam.) 674	
Large Scale K <sub>0</sub> (For sample diameter larger than 2-3" see large Scale Triaxial Testing)	

EXPANSION / COLLAPSE TESTS	
<b>Expansion Pressure Curve</b>	
(ASTM D3877m)	165
Multi point expansion pressure curve to free swell.	
<b>Shrink-Swell</b> (ASTM D3877m)	165
⇒ Multi point volume change curve including field, saturated, air-dried and oven dried conditions.	
<b>Shrink-Swell w/Expansion Pressure Curve</b> (ASTM D3877m) 300	
⇒ 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 29	
<b>Expansion Index</b> (ASTM D4829) 412	
⇒ This test is run at 48-52% saturation.	
<b>ISRM</b> (swelling tests for rock)	
Part-2	344
Part-4*	577
⇒ *More than 10 loads add per load 40	
<b>One Dimensional Swell/Collapse of Soils</b> (ASTM D4546)	
Part-A (4 point curve, loaded-wetted)	904
Part-B (rebound-reload upon request only)	344
Part-C (wetted-loaded)	388

EXPANSION / COLLAPSE TESTS (continued)	
<b>% Collapse</b> (ASTM D5333)	175
⇒ <i>Incrementally loaded to requested surcharge pressure. Includes 4 load increments.</i>	
⇒ <i>Additional loads, per point</i>	40

HYDRAULIC CONDUCTIVITY	
<b>Constant Head Rigid Wall</b> (ASTM D2434) 2-3" diameter samples	334
⇒ <i>(For clean sand and gravel with less than 10% fines and a K value &gt; 10<sup>-3</sup> cm/sec).</i>	
<b>Falling Head Rising Tail Water</b> (ASTM D5084) 2-3" diameter samples	334
<b>Large Scale Falling Head Permeability Testing:</b> (ASTM D5084)	334
Undisturbed or Core Samples:	
4" Diameter	add 359
6" Diameter	add 600
Remolded Samples:	
4" Diameter	add 554
6" Diameter	add 1158

<b>Constant Head on &lt;1" Drain Rock</b> includes remolding	
6" Diameter Cell (ASTM D2434)	439
12" Diameter Cell (can test up to 2" rock) (There is no ASTM procedure for >0.75" rock)	878
<b>Air Permeability</b> (ASTM D6539)	
Effective (In-Situ Moisture)	439
Intrinsic (air-dried)	484
Either Test Includes:	
Moisture Content	
Volumetric Air & Water Content	
Bulk Density	
Large Scale Undisturbed or Core Samples:	
4" Diameter	add 359
6" Diameter	add 600
Large Scale Remolded Samples:	
4" Diameter	add 554
6" Diameter	add 1158

ROCK TESTS	
<b>Unconfined Strength of Rock w/ Young's Modulus</b> (ASTM D7012-d)	230
Before and After test photos	add 49
<b>Point Load Strength Index of Rock Core</b> (ASTM D5731)	82
<b>Slake Durability</b> (ASTM D4644)	203
<b>Splitting Tensile Strength-Brazilian Splitting Test</b> (ASTM D3967), Per Point	115

REQUIRED LIME CONTENT	
<b>Soil-Lime Proportion</b> (ASTM D6276)	290
⇒ 6 point curve to determine optimum lime content of soil lime mixtures.	

## CAL-TRANS / AGGREGATE TESTS

<b>CBR</b> (ASTM D1883)	
With compaction	867
Compaction Provided by Client	540
<b>R-value</b> (Cal 301)	262
A) with batching of gravel	add 34
B) Admix (lime, cement etc.)	add 59
<b>Sand Equivalent</b> (CT 217)	115
<b>Durability Index</b> (CT 229)	
A) Coarse	164
B) Fine	136
<b>Class II AB Specification Tests Suite</b>	
⇒ R-value	
⇒ Sieve Analysis	
⇒ Durability Index	
⇒ Sand Equivalent	
Cal Spec Package Price	788
<b>% Crushed Particles</b> (CT 205)	
Hourly @	142
<b>Cal impact</b> ( <i>see moisture-density relations</i> )	
<b>Sodium Sulfate Soundness</b> (ASTM C88) (per fraction)	164
<b>Cleanness Value</b> (CT 227)	
1" x #4 (or finer)	203
1.5" x 3/4"	433
2.5" x 1.5"	692
Pit Run	252
<b>LA Abrasion</b>	
500 revolutions (ASTM C131/CT 211)	252
1000 revolutions (ASTM C535)	344
<b>Clay Lumps &amp; Friable Particles</b> (ASTM C142)	123

WATER TESTS	
<b>Particle Size Distribution</b> (ASTM D3977C) full gradation curve	308
<b>Total Suspended Solids</b> (ASTM D3977b)	48
<b>Total Dissolved Solids</b> (SM2540C)	48
<b>Total Solids</b> (SM2540B)	48

LIME / CEMENT TREATING		
<b>R-value</b>	add	59
<b>Atterberg Limits</b>	add	39
<b>Compaction Tests</b>	add	87
<b>CBR with compaction</b>	add	285

OTHER TESTS	
<b>Total Solids for Sediments</b>	33
<b>Pinhole Test</b> (ASTM D4647)	445
<b>Double Hydrometer</b> (ASTM D4221 & D422)	445
<b>Logging of Shelby Tubes</b>	92
With digital photo	add 49
<b>Iron Quantification</b> (per 4" sample length) Magnetic Separation, (uncoated iron)	
Gravimetric loss by ignition— (iron coated w/GAC)	164 92
<b>Lead Shot Characterization or Quantification</b> (Call for quote)	
<b>X-Ray of samples</b> (Three sample minimum)	203
<b>Thermal Conductivity</b> (ASTM D5334)	
As Received	210
As Received & Air Dried	420
4 Point from As Received to Oven Dry	840
6 Point from As Received to Oven Dry	1260

LABORATORY TIME	
<b>Lab Technician Per Hour:</b>	
A) Junior Tech	115
B) Senior Tech	142
C) Principal	175
<b>Sample Pickup (Bay Area)</b>	87
⇒ <i>No charge for jobs over \$2000</i>	
⇒ <i>Long distance pickups call for quote</i>	
⇒ <i>Price subject to change</i>	
<b>Witness Testing</b>	
per person, per hour	67
<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>	
<b>Minimum Charge</b>	85
⇒ <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

Individual Tests	Price	Standard	Sample Quantity (Excluding Gravel)
<u>Resistivity</u> (as received) <i>(Gravelly Samples: Class II AB, Drain Rock etc. add \$31)</i>	\$71	ASTM G57	500g
<u>Resistivity</u> (100% saturated) <i>(Gravelly Samples: Class II AB, Drain Rock etc. add \$31)</i>	71	ASTM G57	500g
<u>Resistivity</u> (minimum) <i>(Gravelly Samples: Class II AB, Drain Rock, etc. add \$86)</i>	154	CT 643/AASHTO T288	500g
<u>pH</u>	34	ASTM G51/CT 643/ AASHTO T289	150g
<u>Sulfate</u>	52	ASTM D4327/CT 417	150g
<u>Redox Potential / ORP</u>	49	ASTM G200	150g
<u>Chloride</u>	48	ASTM D4327/CT 422m	150g
<u>Sulfide</u>	44	Qualitative by Lead Acetate Paper	150g
Soil Corrosivity Packages <small>(add \$45 for insufficient Sample)</small>	Price	Package	Sample Quantity
<u>Minimum Resistivity, pH, Chloride and Sulfate</u>	\$254	Caltrans	1000g
<u>Resistivity (100% Sat.), pH, Chloride and Sulfate</u>	180	A	1000g
<u>Resistivity (As Received), pH, Chloride and Sulfate</u>	180	B	1000g
<u>Resistivity (As Received), pH, Chloride, Sulfate and Redox</u>	223	C	1000g
<u>Resistivity (100% Sat.), pH, Chloride, Sulfate and Redox</u>	223	D	1000g
<u>Resist. (100% Sat.), pH, Chloride, Sulfate, Sulfide and Redox</u>	261	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> ( $\theta_t$ ) ASTM D7263	<u>Total Porosity</u> ( $\theta_t$ ) ASTM D7263	<u>Total Porosity</u> ( $\theta_t$ ) ASTM D7263	<u>Total Porosity</u> ( $\theta_t$ ) 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> ( $\theta_w$ )	<u>Volumetric Water Content</u> ( $\theta_w$ )	<u>Volumetric Water Content</u> ( $\theta_w$ )	<u>Volumetric Water Content</u> ( $\theta_w$ )
<u>Volumetric Air Content</u> ( $\theta_a$ )	<u>Volumetric Air Content</u> ( $\theta_a$ )	<u>Volumetric Air Content</u> ( $\theta_a$ )	<u>Volumetric Air Content</u> ( $\theta_a$ )
<u>Bulk Density</u> ( $\rho_s$ ) (wet & dry) ASTM D7263b	<u>Bulk Density</u> ( $\rho_s$ ) (wet & dry) ASTM D7263b	<u>Bulk Density</u> ( $\rho_s$ ) (wet & dry) ASTM D7263b	<u>Bulk Density</u> ( $\rho_s$ ) (wet & dry) ASTM D7263b
<u>TOC</u> Percent Organics ASTM D2974 <u>OR</u> <u>FOC</u> (Walkley-Black) (TOC is CTL default)	<u>TOC</u> Percent Organics ASTM D2974 <u>OR</u> <u>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 Distribution</u> ASTM D422	<u>Grain Size Distribution</u> ASTM D422	<u>Grain Size Distribution</u> ASTM D422	<u>Grain Size Distribution</u> ASTM D422
<u>Soil Classification</u> by USCS (USDA by request)	<u>Soil Classification</u> by USCS (USDA by request)	<u>Soil Classification</u> by USCS (USDA by request)	<u>Soil Classification</u> by USCS (USDA by request)
\$747	\$368	\$742	\$592



**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 65

**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 47



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](mailto:requests@coopertestinglabs.com)

**\*Optimum Turn-Around-Times**

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
Cleanness 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 <sub>0</sub> add 2 to 4 days per point	
*High Confining Pressure add 2 days per point	

\* 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.