

GEOTECHNICAL & CORROSION TESTING SCHEDULE OF CHARGES

CLASSIFICATION & INDEX TESTS

Atterberg Limits (ASTM D4318)	
Liquid & Plastic Limits	
Wet Prep method	210
Dry Prep method (CTL default)	150
Moisture Content , (ASTM D2216)	15
Moisture & Density (ASTM D2937)	
2.0 to 2.5" Diameter	20
3.0" Diameter	30
4.0" Diameter	80
6.0" Diameter	130
Chunk Density (USACE) (for irregularly shaped samples of soil or rock)	80
Particle Size Analysis (ASTM D 422)	
Bulk Sieve > 5000 grams add	60
Sieve Analysis w/200 wash	100
Sieve & Hydrometer	165
#200 Sieve Wash (ASTM D 1140)	70
Specific Gravity (Particle Density)	
(ASTM D854) - #4 Sieve	80
(ASTM C127) + #4 Sieve	140
Organic Content (ASTM D2974)	75
Porosity	
Total (API RP40) (Includes Moisture Content, Dry Density & Specific Gravity)	100
Effective, (ASTM D6836 mod.)	215

MOISTURE DENSITY RELATIONS

Standard Proctor (ASTM D698)	
4-inch mold	235
6-inch mold	285
Modified Proctor (ASTM D1557)	
4-inch mold (w/ assumed Gs for rock corr.)	235
6-inch mold (w/ assumed Gs for rock corr.)	285
For Measured Gs for Rock Correction add	140

Cal-Impact (Caltrans 216) 300

Max Index Density -Vibratory Table (ASTM D4253) 0.1/0.5 ft³ mold 220/330

Minimum Density (ASTM D 4254) 0.1/0.5 ft³ mold 110/220

STRENGTH TESTS

Unconfined Comp. (ASTM D2166)	65
Soil Cement (ASTM D1633)	
Precast	160
Remolded w/admix	220

STRENGTH TESTS (cont.)

Soil Lime Mixtures (ASTM D5102)	
Precast	160
Remolded w/admix	220
Direct Shear per point	
(CD), (ASTM D3080),	190
(UU), Modified ASTM	85
(CU), Modified ASTM	85
⇒ DSUU & DSCU are not ASTM approved	

RESIDUAL STRENGTH TESTS

Torsional Ring Shear (ASTM D 6467)	
(all prices are per point)	
A) Peak	280
B) Residual	280
C) Peak & Residual	520
⇒ All Torsional tests can be run undisturbed or remolded. All above tests are Drained (effective stress).	
⇒ Remolded 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 add \$50.	

TRIAXIAL COMPRESSION

Isotropic per point:	
Unconsolidated-Undrained	
ASTM D2850, (TX-IUU)	125
Back Press, Saturated	add 90
Consolidated-Drained	
(USACE) (TX-ICD)	655
Consolidated-Undrained w/pp	
ASTM D4767 (TX-ICU-PP)	435
Consolidated-Undrained	
ASTM D4767 Modified (TX-ICU)	210

Anisotropic add to above prices 150
K₀ add to above prices 500

Large Scale Triax Testing (w/ remolding):
4.0" diameter Triax per point add 495
6.0" dia. Triax per point add 1045

High Confining Pressures 100 to 500 psi cell pressure add \$55 per point to all above tests. This applies to all points in an envelope if cell pressure for one point exceeds 100 psi.

Staged Tests multiply the price of a single point by two for a two or three point envelope. (for all above tests)

Before and After Test Photos
per sample, add 40

CONSOLIDATION TESTS

Consolidation (ASTM D2435)	340
<i>Includes full curve with 3 points on the virgin curve, timed readings and rebound.</i>	
Rebound-Reload Loop Per Point	30
Constant Rate of Strain Consolidation (ASTM D4186), 2-3" diameter 420	
K₀ Consolidation measured lateral pressure (2-3" diam.)	600

EXPANSION / COLLAPSE TESTS

Expansion Pressure Curve (ASTM D3877m)	
	145
Multi point expansion pressure curve to free swell	
⇒ 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 combined with method B (below) is the most comprehensive and thorough procedure, giving real world values, while taking into account all possible conditions. This is our default expansion test procedure.	

Shrink-Swell (ASTM D3877m) 145
⇒ Multi point volume change curve including field, saturated, air-dried and oven dried conditions.

Shrink-Swell w/Expansion Pressure Curve (ASTM D3877m) 260
⇒ Air dried prior to test add 20

Expansion Index
(UBC) 380
(ASTM D4829) 360
⇒ This test is run at %50 saturation.

ISRM
Part-2 300
Part-4* 500
⇒ *More than 10 loads at \$30 per load

One Dimensional Swell/Collapse of Soils (ASTM D4546)
Part-A (4 point curve) 800
Part-B (per point) 300

% Collapse (ASTM D5333) 150
⇒ Incrementally loaded to requested surcharge pressure. Includes 4 load increments.
⇒ Additional loads, per point 30

HYDRAULIC CONDUCTIVITY

Constant Head Rigid Wall

(ASTM D2434) 2-3" diameter samples 290
 ⇒ (For clean sand and gravel with less than 10% fines and a K value > 10⁻³ cm/sec).

Falling Head Rising Tail Water

(ASTM D5084) 290
 (For most soil types) There are several different methods to determine K. The method used depends on the soil type, otherwise there is little to no difference in the final results. The difference in the hydraulic gradient or the head will not effect the final K if the gradient (head/length of

Large Scale Falling Head

Permeability Testing (w/ remolding):

4" Diameter add 495
 6" Diameter add 1045

Constant Head on <1" Drain Rock

6" Diameter Cell (includes remolding) 380

CAL-TRANS / AGGREGATE TESTS

CBR (ASTM D1883)

With compaction 715
 Compaction Provided by Client 465

R-value (Cal 301)

A) with batching of gravel 220
 B) Admix (lime, cement etc.) 250

Sand Equivalent (Cal 217)

100

Durability Index (Cal 229)

A) Coarse 140
 B) Fine 120

Class II AB Specification Tests Suite

⇒ R-value
 ⇒ Sieve Analysis
 ⇒ Durability Index
 ⇒ Sand Equivalent
 Cal Spec Package Price 650

% Crushed Particles (Cal 205)

Hourly @ 110

Lime Treated UC Strength (Cal 373)

850

Cal impact (see moisture-density relations)

LA Abrasion

500 revolutions (ASTM C131/CAL 211) 220
 1000 revolutions (ASTM C535) 300

Cleanness Value (CAL 227)

1" x #4 (or finer) 175
 1.5" x 3/4" 375
 2.5" x 1.5" 600
 Pit Run 220

Sodium Sulfate Soundness (ASTM C88)

(per fraction) 140

Rapid Chloride Permeability

(ASTM C 1202) 480

REQUIRED LIME CONTENT

Eades & Grimm (ASTM D6276) 250

⇒ To determine optimum lime content

ROCK TESTS

Unconfined Strength of Rock w/ Young's Modulus (ASTM D7012-D) 200

Before and After test photos add 40

Point Load Strength Index of Rock Core (ASTM D5731) 70

Slake Durability (ASTM D4644) 175

WATER TESTS

Particle Size Distribution (ASTM D422m & SM2540 C,D) 250

Total Suspended Solids (SM2540D) 40

Total Dissolved Solids (SM2540C) 40

Total Solids (SM2540B) 40

OTHER TESTS

Pinhole Test (ASTM D4647) 385

Double Hydrometer (ASTM D4221&D422) 385

Logging of Shelby Tubes 60

*With picture add \$40

LABORATORY TIME

Lab Technician Per Hour:

A) Junior Tech 100
 B) Senior Tech 125
 C) Principal 150

Sample Pickup (Bay Area) 75

⇒ No charge for jobs over \$1500
 ⇒ Long distance pickups call for quote
 ⇒ Price subject to change

Witness Testing

per person, per hour 55
 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, the more slowly things go.

Minimum Charge 55

⇒ For samples delivered but not tested there will be a handling charge of \$2 per sample.
 ⇒ Consult lab about tests not listed.



Permeability



Direct Shear



All tests that can be automated are.



Triaxial Stations

Corrosion Testing

Individual Tests	Price	Standard
<u>Resistivity</u> (as received) (Gravelly Samples: Class II AB, Drain Rock etc. Add \$25)	\$62	ASTM G57
<u>Resistivity</u> (100% saturated) (Gravelly Samples: Class II AB, Drain Rock etc. Add \$25)	62	ASTM G57
<u>Resistivity</u> (minimum) (Gravelly Samples: Class II AB, Drain Rock, etc. Add \$80)	135	Caltrans 643/AASHTO T288
<u>pH</u>	26	ASTM G51/Caltrans 643/AASHTO T289
<u>Sulfate</u>	47	Caltrans 417 (m)
<u>Redox Potential</u>	42	Standard Methods 2580B (m)
<u>Chloride</u>	36	Caltrans 422 (m)
<u>Sulfide</u>	36	Qualitative by Lead Acetate Paper
Soil Corrosivity Packages	Price	Package
<u>Minimum Resistivity, pH, Chloride and Sulfate</u>	\$222	Caltrans
<u>Resistivity (100% Sat.), pH, Chloride and Sulfate</u>	156	A
<u>Resistivity (As Received), pH, Chloride and Sulfate</u>	156	B
<u>Resistivity (As Received), pH, Chloride, Sulfate, and Redox</u>	194	C
<u>Resistivity (100% Sat.), pH, Chloride, Sulfate and Redox</u>	194	D
*When insufficient sample is delivered to the lab requiring extra time add \$40 per sample.		
Required Sample Quantities	Grams (less Gravel)	Grams (With Gravel)
<u>Resistivity, (minimum, As Received & Saturated)</u>	500	Consult Lab
<u>pH, Chloride, Sulfate, Redox</u>	150 for each test	Consult Lab
<u>Packages A - D</u>	1000 (1 kg) or 1 Mod Cal. liner	Consult Lab

Notes on Corrosion

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.

Website: Secure Online Reporting & Online Test Request @
<http://www.coopertestinglabs.com>

NOTES & POLICY

All prices are based upon 2.0 to 2.5" California and Modified California sample diameters unless noted otherwise.

Cutting of pitcher tubes or 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 add \$55 per point

Rush testing add 40%. 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.

Even though our client (you) requests us to bill a third party **you are ultimately responsible for payment** if the third party does not pay us.

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, 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.

Drive samples not tested will be stored at a rate of \$0.5 per sample per day. Samples will be stored for 30 days after the report goes out, unless notified otherwise. Long term storage will be charged as stated above. Bulk samples will be discarded after 5 days unless notified otherwise. Consult lab regarding the cost of long term bulk storage.



Consolidation



Triaxial Stations



Torsional Ring Shear, Cooper, Stark, Riley



Torsional Ring Shear, Bromhead

*Optimum Turn-Around-Times

TEST	Bus. DAYS
Compaction.....	3
Collapse.....	6+
Consolidation.....	11+
CRS.....	4+
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
Rapid Chloride Permeability.....	4
Pinhole.....	4
Torsional Ring Shear (per pt).....	2
Triax (isotropic)	
UU.....	3
CU.....	5
CU-PP.....	5
CD.....	6+
*Anisotropic add 2 days per point	
*K _o 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.