

GROUP SYMBOLS AND NAMES

Graphic / Symbol	Group Names	Graphic / Symbol	Group Names
	Well-graded GRAVEL		Lean CLAY
	Well-graded GRAVEL with SAND		Lean CLAY with SAND Lean CLAY with GRAVEL SANDY lean CLAY SANDY lean CLAY with GRAVEL GRAVELLY lean CLAY GRAVELLY lean CLAY with SAND
	Poorly graded GRAVEL		SILTY CLAY
	Poorly graded GRAVEL with SAND		SILTY CLAY with SAND SILTY CLAY with GRAVEL SANDY SILTY CLAY SANDY SILTY CLAY with GRAVEL GRAVELLY SILTY CLAY GRAVELLY SILTY CLAY with SAND
	Well-graded GRAVEL with SILT		SILT
	Well-graded GRAVEL with SILT and SAND		SILT with SAND SILT with GRAVEL SANDY SILT SANDY SILT with GRAVEL GRAVELLY SILT GRAVELLY SILT with SAND
	Well-graded GRAVEL with CLAY (or SILTY CLAY)		ORGANIC lean CLAY
	Well-graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		ORGANIC lean CLAY with SAND ORGANIC lean CLAY with GRAVEL SANDY ORGANIC lean CLAY SANDY ORGANIC lean CLAY with GRAVEL GRAVELLY ORGANIC lean CLAY GRAVELLY ORGANIC lean CLAY with SAND
	Poorly graded GRAVEL with SILT		ORGANIC SILT
	Poorly graded GRAVEL with SILT and SAND		ORGANIC SILT with SAND ORGANIC SILT with GRAVEL SANDY ORGANIC SILT SANDY ORGANIC SILT with GRAVEL GRAVELLY ORGANIC SILT GRAVELLY ORGANIC SILT with SAND
	Poorly graded GRAVEL with CLAY (or SILTY CLAY)		Fat CLAY
	Poorly graded GRAVEL with CLAY and SAND (or SILTY CLAY and SAND)		Fat CLAY with SAND Fat CLAY with GRAVEL SANDY fat CLAY SANDY fat CLAY with GRAVEL GRAVELLY fat CLAY GRAVELLY fat CLAY with SAND
	SILTY GRAVEL		Elastic SILT
	SILTY GRAVEL with SAND		Elastic SILT with SAND Elastic SILT with GRAVEL SANDY elastic SILT SANDY elastic SILT with GRAVEL GRAVELLY elastic SILT GRAVELLY elastic SILT with SAND
	CLAYEY GRAVEL		ORGANIC fat CLAY
	CLAYEY GRAVEL with SAND		ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
	SILTY, CLAYEY GRAVEL		ORGANIC elastic SILT
	SILTY, CLAYEY GRAVEL with SAND		ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
	Well-graded SAND		ORGANIC SOIL
	Well-graded SAND with GRAVEL		ORGANIC SOIL with SAND ORGANIC SOIL with GRAVEL SANDY ORGANIC SOIL SANDY ORGANIC SOIL with GRAVEL GRAVELLY ORGANIC SOIL GRAVELLY ORGANIC SOIL with SAND
	Poorly graded SAND		ORGANIC fat CLAY
	Poorly graded SAND with GRAVEL		ORGANIC fat CLAY with SAND ORGANIC fat CLAY with GRAVEL SANDY ORGANIC fat CLAY SANDY ORGANIC fat CLAY with GRAVEL GRAVELLY ORGANIC fat CLAY GRAVELLY ORGANIC fat CLAY with SAND
	Well-graded SAND with SILT		ORGANIC elastic SILT
	Well-graded SAND with SILT and GRAVEL		ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
	Well-graded SAND with CLAY (or SILTY CLAY)		ORGANIC elastic SILT
	Well-graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
	Poorly graded SAND with SILT		ORGANIC elastic SILT
	Poorly graded SAND with SILT and GRAVEL		ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
	Poorly graded SAND with CLAY (or SILTY CLAY)		ORGANIC elastic SILT
	Poorly graded SAND with CLAY and GRAVEL (or SILTY CLAY and GRAVEL)		ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
	SILTY SAND		ORGANIC elastic SILT
	SILTY SAND with GRAVEL		ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
	CLAYEY SAND		ORGANIC elastic SILT
	CLAYEY SAND with GRAVEL		ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
	SILTY, CLAYEY SAND		ORGANIC elastic SILT
	SILTY, CLAYEY SAND with GRAVEL		ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND
	PEAT		ORGANIC elastic SILT
	COBBLES COBBLES and BOULDERS BOULDERS		ORGANIC elastic SILT with SAND ORGANIC elastic SILT with GRAVEL SANDY elastic ELASTIC SILT SANDY ORGANIC elastic SILT with GRAVEL GRAVELLY ORGANIC elastic SILT GRAVELLY ORGANIC elastic SILT with SAND

FIELD AND LABORATORY TESTS

- C** Consolidation (ASTM D 2435-04)
- CL** Collapse Potential (ASTM D 5333-03)
- CP** Compaction Curve (CTM 216 - 06)
- CR** Corrosion, Sulfates, Chlorides (CTM 643 - 99; CTM 417 - 06; CTM 422 - 06)
- CU** Consolidated Undrained Triaxial (ASTM D 4767-02)
- DS** Direct Shear (ASTM D 3080-04)
- EI** Expansion Index (ASTM D 4829-03)
- M** Moisture Content (ASTM D 2216-05)
- OC** Organic Content (ASTM D 2974-07)
- P** Permeability (CTM 220 - 05)
- PA** Particle Size Analysis (ASTM D 422-63 [2002])
- PI** Liquid Limit, Plastic Limit, Plasticity Index (AASHTO T 89-02, AASHTO T 90-00)
- PL** Point Load Index (ASTM D 5731-05)
- PM** Pressure Meter
- PP** Pocket Penetrometer
- R** R-Value (CTM 301 - 00)
- SE** Sand Equivalent (CTM 217 - 99)
- SG** Specific Gravity (AASHTO T 100-06)
- SL** Shrinkage Limit (ASTM D 427-04)
- SW** Swell Potential (ASTM D 4546-03)
- TV** Pocket Torvane
- UC** Unconfined Compression - Soil (ASTM D 2166-06)
Unconfined Compression - Rock (ASTM D 2938-95)
- UU** Unconsolidated Undrained Triaxial (ASTM D 2850-03)
- UW** Unit Weight (ASTM D 4767-04)
- VS** Vane Shear (AASHTO T 223-96 [2004])

SAMPLER GRAPHIC SYMBOLS

- Standard Penetration Test (SPT)
- Standard California Sampler
- Modified California Sampler
- Shelby Tube
- Piston Sampler
- NX Rock Core
- HQ Rock Core
- Bulk Sample
- Other (see remarks)

DRILLING METHOD SYMBOLS

- Auger Drilling
- Rotary Drilling
- Dynamic Cone or Hand Driven
- Diamond Core

WATER LEVEL SYMBOLS

- First Water Level Reading (during drilling)
- Static Water Level Reading (short-term)
- Static Water Level Reading (long-term)

BORING RECORD LEGEND



LA SELVA BEACH TRESTLE STRUCTURE RETROFIT

SANTA CRUZ, CALIFORNIA

Date:

Job No.: 2011-157-LSB

This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate: **5A**

CONSISTENCY OF COHESIVE SOILS

Descriptor	Unconfined Compressive Strength (tsf)	Pocket Penetrometer (tsf)	Torvane (tsf)	Field Approximation
Very Soft	< 0.25	< 0.25	< 0.12	Easily penetrated several inches by fist
Soft	0.25 - 0.50	0.25 - 0.50	0.12 - 0.25	Easily penetrated several inches by thumb
Medium Stiff	0.50 - 1.0	0.50 - 1.0	0.25 - 0.50	Can be penetrated several inches by thumb with moderate effort
Stiff	1.0 - 2.0	1.0 - 2.0	0.50 - 1.0	Readily indented by thumb but penetrated only with great effort
Very Stiff	2.0 - 4.0	2.0 - 4.0	1.0 - 2.0	Readily indented by thumbnail
Hard	> 4.0	> 4.0	> 2.0	Indented by thumbnail with difficulty

APPARENT DENSITY OF COHESIONLESS SOILS

Descriptor	SPT N ₆₀ - Value (blows / foot)
Very Loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	> 50

MOISTURE

Descriptor	Criteria
Dry	Absence of moisture, dusty, dry to the touch
Moist	Damp but no visible water
Wet	Visible free water, usually soil is below water table

PERCENT OR PROPORTION OF SOILS

Descriptor	Criteria
Trace	Particles are present but estimated to be less than 5%
Few	5 to 10%
Little	15 to 25%
Some	30 to 45%
Mostly	50 to 100%

SOIL PARTICLE SIZE

Descriptor	Size	
Boulder	> 12 inches	
Cobble	3 to 12 inches	
Gravel	Coarse	3/4 inch to 3 inches
	Fine	No. 4 Sieve to 3/4 inch
Sand	Coarse	No. 10 Sieve to No. 4 Sieve
	Medium	No. 40 Sieve to No. 10 Sieve
	Fine	No. 200 Sieve to No. 40 Sieve
Silt and Clay	Passing No. 200 Sieve	

PLASTICITY OF FINE-GRAINED SOILS

Descriptor	Criteria
Nonplastic	A 1/8-inch thread cannot be rolled at any water content.
Low	The thread can barely be rolled, and the lump cannot be formed when drier than the plastic limit.
Medium	The thread is easy to roll, and not much time is required to reach the plastic limit; it cannot be rerolled after reaching the plastic limit. The lump crumbles when drier than the plastic limit.
High	It takes considerable time rolling and kneading to reach the plastic limit. The thread can be rerolled several times after reaching the plastic limit. The lump can be formed without crumbling when drier than the plastic limit.

CEMENTATION

Descriptor	Criteria
Weak	Crumbles or breaks with handling or little finger pressure.
Moderate	Crumbles or breaks with considerable finger pressure.
Strong	Will not crumble or break with finger pressure.

NOTE: This legend sheet provides descriptors and associated criteria for required soil description components only.

REFERENCE: Caltrans Soil and Rock Logging, Classification, and Presentation Manual (2010).

BORING RECORD LEGEND



PARIKH CONSULTANTS, INC.
Geotechnical & Materials Engineering

LA SELVA BEACH TRESTLE STRUCTURE RETROFIT

SANTA CRUZ, CALIFORNIA

Date:

Job No.: 2011-157-LSB

This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate: **5B**

LOGGED BY El. S. Bhango	BEGIN DATE 12-14-12	COMPLETION DATE 12-14-12	BOREHOLE LOCATION (Lat/Long or North/East and Datum)	HOLE ID B-1
DRILLING CONTRACTOR Pitcher Drilling			BOREHOLE LOCATION (Offset, Station, Line)	SURFACE ELEVATION
DRILLING METHOD Rotary Wash			DRILL RIG CME 55	BOREHOLE DIAMETER 5 in
SAMPLER TYPE(S) AND SIZE(S) (ID) SPT, MC			SPT HAMMER TYPE Automatic, 140 lb	HAMMER EFFICIENCY, ERI 75%
BOREHOLE BACKFILL AND COMPLETION			GROUNDWATER DURING DRILLING AFTER DRILLING (DATE) READINGS 14.0 ft	TOTAL DEPTH OF BORING 91.0 ft

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Depth	Sample Number	Blows per 6 in.	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Recovery (%)	RQD (%)	Drilling Method	Casing Depth	Remarks
0			ASPHALT 3" of AC over 6"AB.												
1			Poorly graded SAND with SILT (SP-SM); dense; gray; moist; fine SAND.												
2															
3															
4															
5															
6				1	10 20 21	41									DS
7															
8															
9															
10															
11			(+#4=0%, #200=8.2%).	2	11 16 22	38		14							PA
12															
13															
14															
15			Wet.	3	14 17 25	42		18							
16															
17															
18															
19															
20															
21				4	12 20 20	40		18							DS
22															
23															
24															
25															

(continued)

LOG OF TEST BORING

LA SELVA BEACH TRESTLE STRUCTURE RETROFIT

SANTA CRUZ, CALIFORNIA



PARIKH CONSULTANTS, INC.
Geotechnical & Materials Engineering

Date:

Job No.: 2011-157-LSB

This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate:

6A

PCI:CT 5 BR 2011-157-LSB.GPJ TEMPLATE 7-22-11.GDT 1/31/13

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Depth	Sample Number	Blows per 6 in.	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Recovery (%)	RQD (%)	Drilling Method	Casing Depth	Remarks
25			Poorly graded SAND with SILT (SP-SM); dense; gray; moist; fine SAND. <i>layer description continued from previous page</i>	X	5	9 16 26	42	27							
26			Poorly graded SAND with SILT (SP-SM) (continued).												
27															
28															
29															
30			Medium to fine SAND; (+#4=0%, -#200=7.9%).	X	6	5 21 26	47	21							PA
31															
32															
33															
34															
35			Very dense; dark gray.	X	7	19 40 50	90	17							
36															
37															
38															
39															
40															
41				X	8	19 39 43	82	23							
42															
43															
44															
45															
46				▲	9	18 50/6"	50	19	108						DS
47															
48															
49															
50															
51			(+#4=0.3%, -#200=7.9%).	X	10	25 30 30	60	21							PA
52															
53															
54															
55															

(continued)

LOG OF TEST BORING

LA SELVA BEACH TRESTLE STRUCTURE RETROFIT

SANTA CRUZ, CALIFORNIA



PARIKH CONSULTANTS, INC.
Geotechnical & Materials Engineering

Date:

Job No.: 2011-157-LSB

This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate:

6B

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Depth	Sample Number	Blows per 6 in.	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Recovery (%)	RQD (%)	Drilling Method	Casing Depth	Remarks	
56			Poorly graded SAND with SILT (SP-SM); dense; gray; moist; fine SAND. <i>layer description continued from previous page</i>	X	11	20 33 36	69	17								
57																
58																
59			Fine SAND.													
60																
61																
62			Poorly graded SAND (SP); very dense; gray; wet; fine SAND; (+#4=0%, -#200=3.2%).													
63																
64																
65			Poorly graded SAND (SP); very dense; gray; wet; fine SAND; (+#4=0%, -#200=3.2%).	X	13	50/6"	REF	20	106						PA	
66																
67																
68			Yellowish brown; (+#4=0%, -#200=4.3%).													
69																
70																
71			Yellowish brown; (+#4=0%, -#200=4.3%).	X	14	36 50/5.5"	50	19								
72																
73																
74			Yellowish brown; (+#4=0%, -#200=4.3%).													
75																
76																
77			Yellowish brown; (+#4=0%, -#200=4.3%).	X	15	35 50/6"	50	18								
78																
79																
80			Yellowish brown; (+#4=0%, -#200=4.3%).													
81																
82																
83			Yellowish brown; (+#4=0%, -#200=4.3%).													
84																
85																

(continued)

LOG OF TEST BORING

LA SELVA BEACH TRESTLE STRUCTURE RETROFIT

SANTA CRUZ, CALIFORNIA



PARIKH CONSULTANTS, INC.
Geotechnical & Materials Engineering

Date:

Job No.: 2011-157-LSB


This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.

Plate:

6C

ELEVATION (ft)	DEPTH (ft)	Material Graphics	DESCRIPTION	Sample Depth	Sample Number	Blows per 6 in.	Blows per foot	Moisture Content (%)	Dry Unit Weight (pcf)	Shear Strength (tsf)	Recovery (%)	RQD (%)	Drilling Method	Casing Depth	Remarks
86			Poorly graded SAND (SP) <i>(continued)</i> . Poorly graded SAND (SP); very dense; gray; wet; fine SAND; (+#4=0%, #200=3.2%). <i>layer description continued from previous page</i>												
87															
88															
89															
90															
91			SILTY SAND (SM); very dense; dark gray; wet; fine SAND; (-#200=34.7%).	X	17	38 50/6"	50	18							
92			Bottom of borehole at 91.0 ft bgs/Elev. 0 ft.												
93			This Boring Record was developed in accordance with the Caltrans Soil & Rock Logging, Classification, and Presentation Manual (2010) except as noted on the Soil or Rock Legend or below.												
94															
95															
96															
97															
98															
99															
100															
101															
102															
103															
104															
105															
106															
107															
108															
109															
110															
111															
112															
113															
114															
115															

PCI-CT 5 BR 2011-157-LSB.GPJ TEMPLATE 7-22-11.GDT 1/31/13

LOG OF TEST BORING	LA SELVA BEACH TRESTLE STRUCTURE RETROFIT		
 PARIKH CONSULTANTS, INC. <i>Geotechnical & Materials Engineering</i>	SANTA CRUZ, CALIFORNIA		
Date:	Job No.: 2011-157-LSB		Plate:
This log is part of the report prepared by Parikh Consultants, Inc. for the named project and should be read together with that report for complete interpretation. This summary applies only at the location of this boring and at the time of drilling. Subsurface conditions may differ at other locations and may change at this location with the passage of time. The data presented is a simplification of actual conditions encountered.			6D

Borehole	Sample Number	Depth	Classification	Water Content	Dry Density	Liquid Limit	Plastic Limit	Plasticity Index	% > Sieve 4	% < Sieve 200	Unconfined Compressive Strength (tsf)
B-1	1	6.0	SP-SM	-	-						
B-1	2	11.0	SP-SM	13.9	-					8.2	
B-1	3	16.0	SP-SM	18.4	-						
B-1	4	21.0	SP-SM	17.5	-						
B-1	5	26.0	SP-SM	26.7	-						
B-1	6	31.0	SP-SM	20.5	-					7.9	
B-1	7	36.0	SP-SM	17.1	-						
B-1	8	41.0	SP-SM	22.7	-						
B-1	9	46.0	SP-SM	19.4	108.3						
B-1	10	51.0	SP-SM	21.2	-				0.3	7.9	
B-1	11	56.0	SP-SM	16.7	-						
B-1	12	61.0	SP-SM	18.3	-						
B-1	13	65.0	SP	20.3	105.7					3.2	
B-1	15	70.5	SP	18.9	-						
B-1	16	75.5	SP	18.3	-						
B-1	17	80.5	SP	21.8	-					4.3	
B-1	18	90.0	SM	17.5	-						

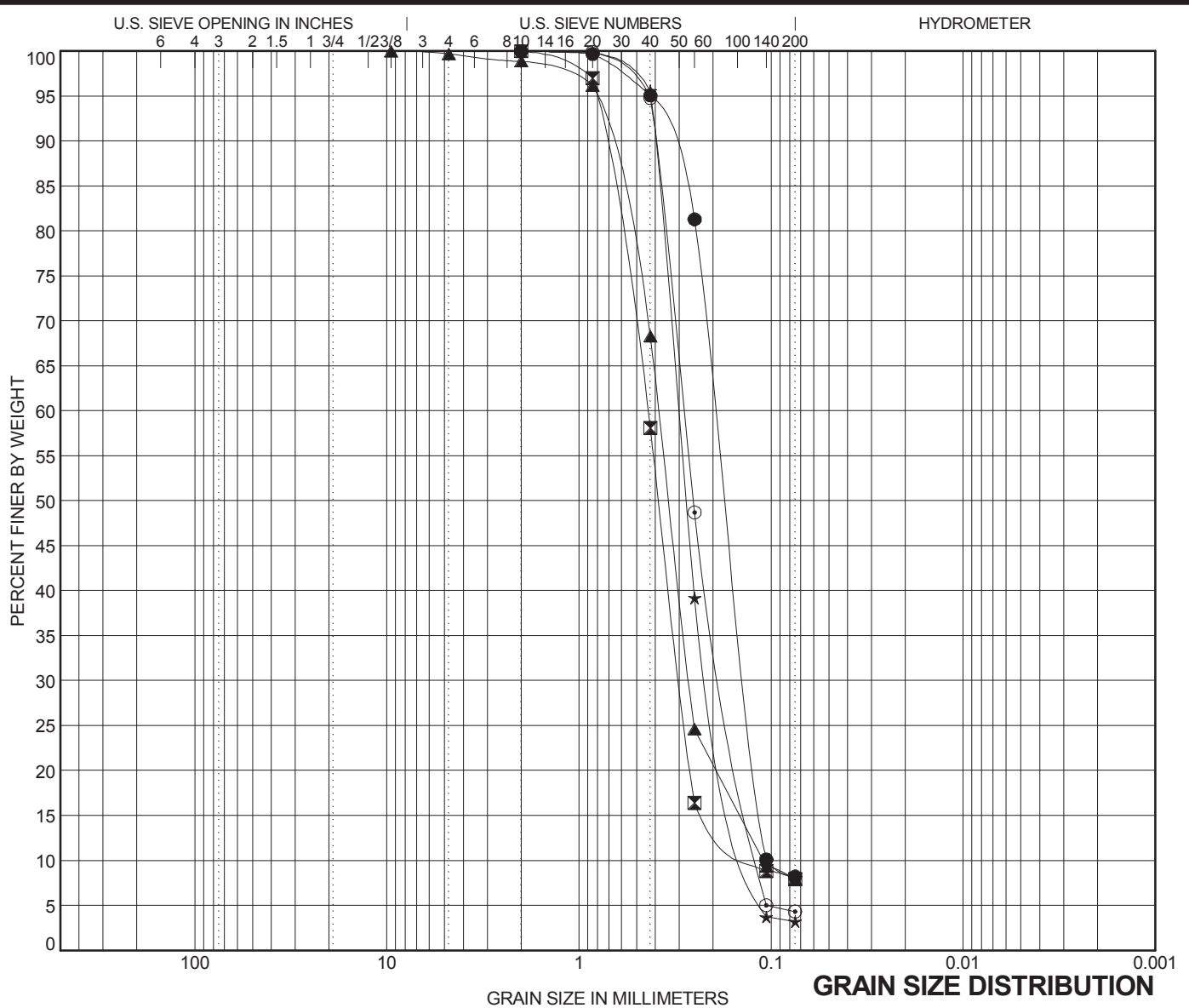


PARIKH CONSULTANTS, INC.
 GEOTECHNICAL CONSULTANTS
 MATERIALS ENGINEERING

La Selva Beach Trestle Structure Retrofit
 SANTA CRUZ, CALIFORNIA

JOB NO: 2011-157-LSB

PLATE NO: 7



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

BORING	SAMPLE #	DEPTH	Classification				LL	PL	PI	Cc	Cu
●	B-1	11.0	Poorly graded SAND with SILT							0.90	1.86
☒	B-1	31.0	Poorly graded SAND with SILT							1.66	3.62
▲	B-1	51.0	Poorly graded SAND with SILT							1.68	3.49
★	B-1	65.0	Poorly graded SAND							1.07	2.46
◎	B-1	80.5	Poorly graded SAND							0.90	2.43
BORING	SAMPLE #	DEPTH	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay	
●	B-1	11.0	2	0.193	0.135	0.104	0.0	91.8	8.2		
☒	B-1	31.0	2	0.44	0.297	0.121	0.0	92.1	7.9		
▲	B-1	51.0	9.5	0.384	0.267	0.11	0.3	91.8	7.9		
★	B-1	65.0	2	0.304	0.2	0.123	0.0	96.8	3.2		
◎	B-1	80.5	2	0.285	0.173	0.117	0.0	95.7	4.3		



PARIKH CONSULTANTS, INC.
 GEOTECHNICAL CONSULTANTS
 MATERIALS ENGINEERING

La Selva Beach Trestle Structure Retrofit
 SANTA CRUZ, CALIFORNIA

JOB NO: 2011-157-LSB

PLATE NO: 8

Parikh Consultants, Inc.
Direct Shear Test (ASTM D3080)



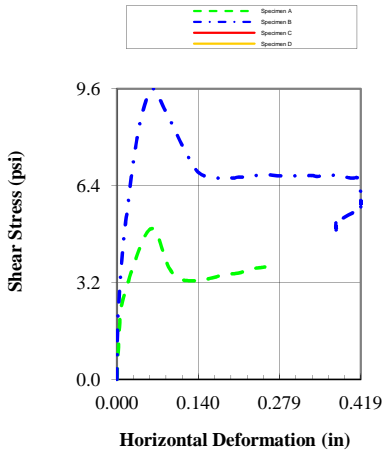
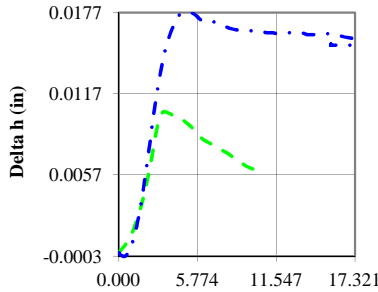
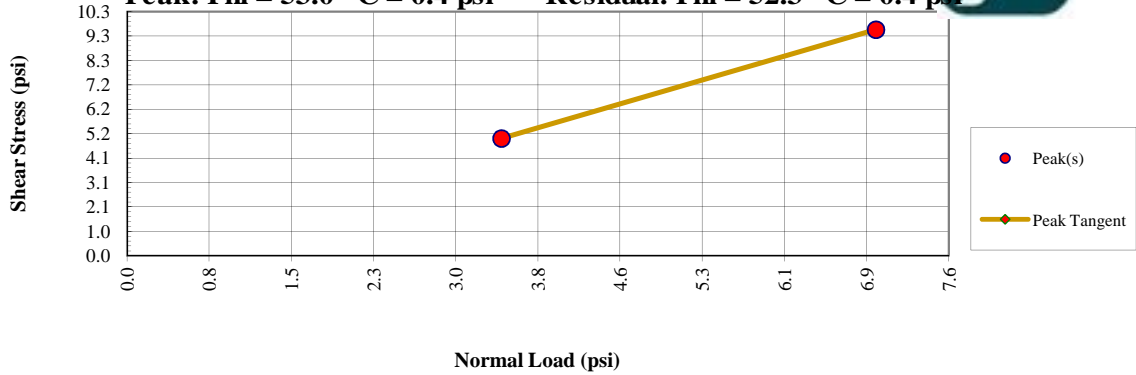
Date: 1/18/2013

Checked By: PD

Date 1/16/2013

Tested By: DPD

Peak: $\Phi = 53.0$ $C = 0.4$ psi Residual: $\Phi = 52.3$ $C = 0.4$ psi



Initial	Specimen			
	A	B	C	D
Moisture (%)	25.10	24.60		
Density (pcf)	93.48	96.65		
Void Ratio	0.770	0.712		
Saturation (%)	86.43	91.60		
Diameter (in)	2.420	2.420		
Height (in)	1.000	1.000		

Final	A	B	C	D
Moisture (%)	25.10	24.60		
Density (pcf)	100.63	103.69		
Void Ratio	0.644	0.595		
Saturation (%)	100.00	100.00		
Diameter (in)	2.420	2.420		
Height (in)	1.000	1.000		
Normal Stress (psi)	3.5	6.9		
Peak Stress (psi)	5.0	9.6		
Residual Stress (psi)				
Strain (%)	10.496	15.557		
Rate (in/min)	0.006	0.006		

Project Date	
Date	1/16/2013

Project:	LA SELVA BEACH TRESTLE STRUCTURE			
Location:	Santa Cruz, California			
Project Number:	2011-157-LSB	N/A	N/A	N/A
Boring Number:	B-1			
Sample Number:	1			
Depth:	6'			
Sample Type:	Remolded to Native Density	Failure Photographs		
Description:	Poorly Graded Sand with SILT (SP-SM), gray			
Test Type:	Direct Shear - Consolidated Drained Conditions			
Remarks:				

Parikh Consultants, Inc.
Direct Shear Test (ASTM D3080)



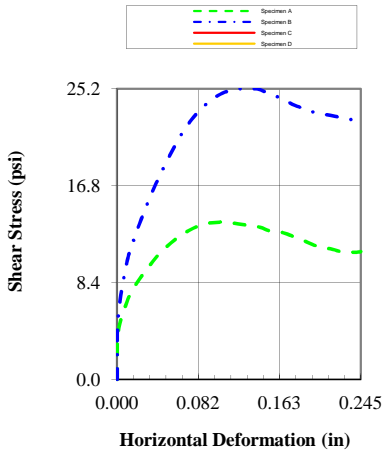
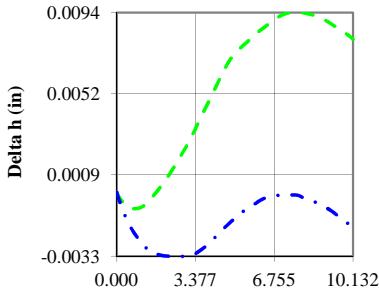
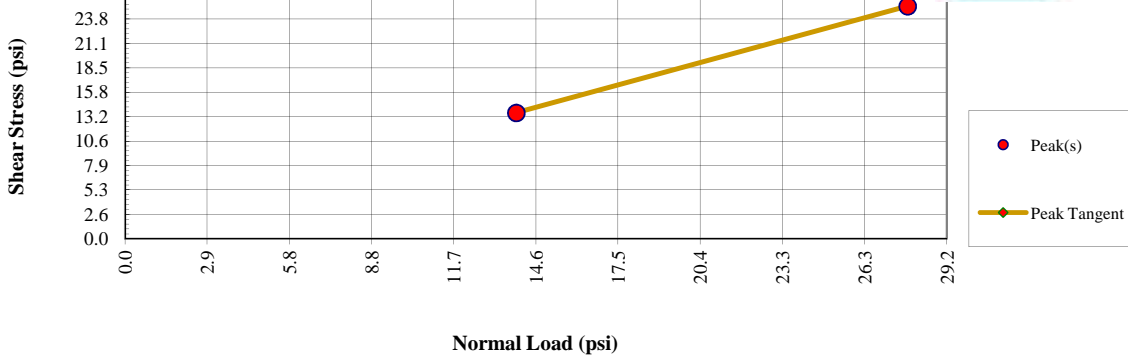
Date: 1/21/2013

Checked By: PD

Date 1/17/2013

Tested By: DPD

Peak: Phi = 39.7 C = 2.1 psi



Initial	Specimen			
	A	B	C	D
Moisture (%)	20.01	20.52		
Density (pcf)	108.14	106.52		
Void Ratio	0.530	0.553		
Saturation (%)	100.00	98.31		
Diameter (in)	2.420	2.420		
Height (in)	1.000	1.000		

Final	A	B	C	D
Moisture (%)	1.52	20.52		
Density (pcf)	129.39	108.99		
Void Ratio	0.279	0.518		
Saturation (%)	14.46	100.00		
Diameter (in)	2.420	2.420		
Height (in)	1.000	1.000		
Normal Stress (psi)	13.9	27.8		
Peak Stress (psi)	13.6	25.2		
Residual Stress (psi)				
Strain (%)	10.132	10.044		
Rate (in/min)	0.006	0.006		

Project Date	
Date	1/17/13

Project:	LA SELVA BEACH TRESTLE STRUCTURE			
Location:	Santa Cruz, California			
Project Number:	2011-157-LSB	N/A	N/A	N/A
Boring Number:	B-1			
Sample Number:	4			
Depth:	21'			
Sample Type:	Remolded to Native Density	Failure Photographs		
Description:	Poorly Graded Sand with SILT (SP-SM), gray			
Test Type:	Direct Shear - Consolidated Drained Conditions			
Remarks:				

Parikh Consultants, Inc.
Direct Shear Test (ASTM D3080)

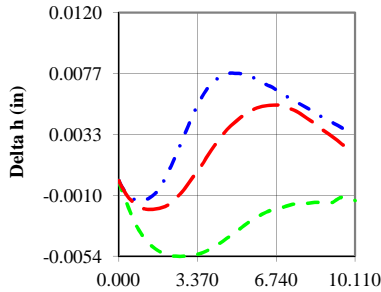
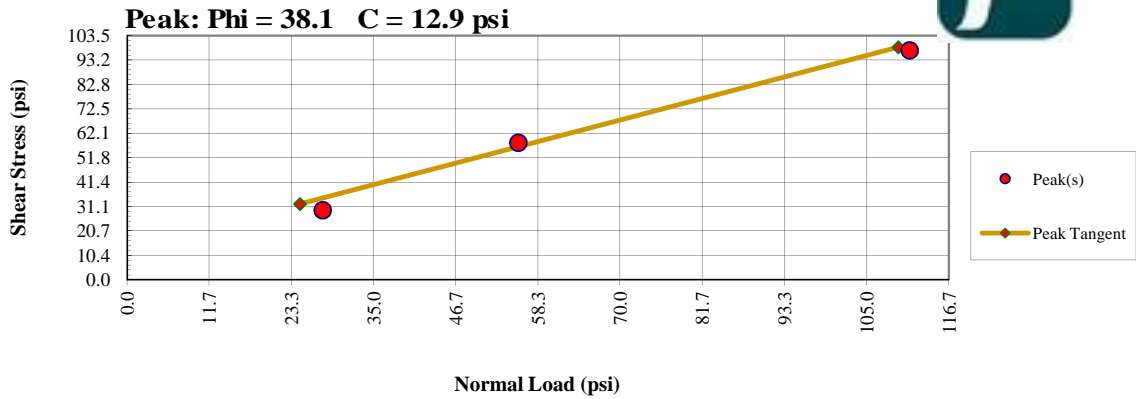


Date: 1/7/2013

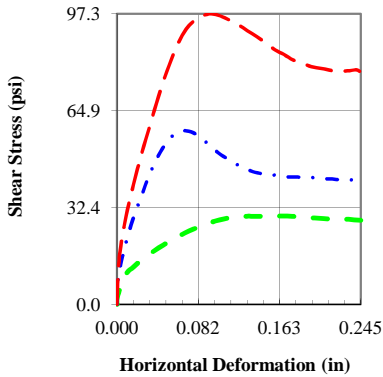
Checked By: PD

Date 12/26/2012

Tested By: DPD



	Specimen			
	Initial	A	B	C
Moisture (%)	19.43	23.38	19.24	
Density (pcf)	108.25	106.26	110.65	
Void Ratio	0.528	0.557	0.495	
Saturation (%)	97.49	100.00	100.00	
Diameter (in)	2.420	2.420	2.420	
Height (in)	1.000	1.000	1.000	



	Final	A	B	C	D
	Moisture (%)	21.96	22.60	20.13	
Density (pcf)	108.25	106.26	110.24		
Void Ratio	0.528	0.557	0.501		
Saturation (%)	100.00	100.00	100.00		
Diameter (in)	2.420	2.420	2.420		
Height (in)	0.997	0.997	0.997		
Normal Stress (psi)	27.8	55.6	111.1		
Peak Stress (psi)	29.5	58.1	97.3		
Residual Stress (psi)					
Strain (%)	10.110	10.044	10.044		
Rate (in/min)	0.006	0.006	0.006		

Project Date	
Date	12/26/12

Project:	LA SELVA BEACH TRESTLE STRUCTURE			
Location:	Santa Cruz, California			
Project Number:	2011-157-LSB	N/A	N/A	N/A
Boring Number:	B-1			
Sample Number:	9			
Depth:	45.5			
Sample Type:	Undisturbed	Failure Photographs		
Description:	Poorly Graded Sand with Silt (SP-SM)			
Test Type:	Direct Shear - Consolidated Drained Conditions			
Remarks:				



Sunland Analytical

11353 Pyrites Way, Suite 4
Rancho Cordova, CA 95670
(916) 852-8557

Date Reported 01/04/2013
Date Submitted 12/31/2012

To: Prav Dayah
Parikh Consultants, Inc.
2360 Qume Dr, Ste.A
San Jose, CA 95131

From: Gene Oliphant, Ph.D. \ Randy Horney
General Manager \ Lab Manager

The reported analysis was requested for the following location:
Location : JOB#2011-157-LSB Site ID : LA SILVA B1#2.
Thank you for your business.

* For future reference to this analysis please use SUN # 63734-131546.

EVALUATION FOR SOIL CORROSION

Soil pH	6.85		
Minimum Resistivity	2.20 ohm-cm	(x1000)	
Chloride	49.2 ppm	00.00492	%
Sulfate	13.7 ppm	00.00137	%

METHODS

pH and Min.Resistivity CA DOT Test #643
Sulfate CA DOT Test #417, Chloride CA DOT Test #422

