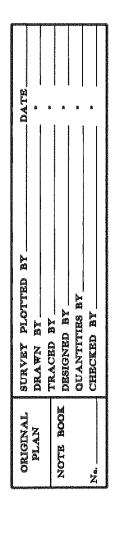
	GEOLABS, IN				Soil Log Le
s J G			ΕΙΟΛΤ		SYSTEM (USC
	MAJOR DIVISION			CS	DE
		CLEAN GRAVELS	0000	GW	WELL-GRADED GR MIXTURES, LITTLE
COARSE-	GRAVELS	LESS THAN 5% FINES	000	GP	POORLY-GRADED (MIXTURES, LITTLE
GRAINED SOILS	MORE THAN 50% OF COARSE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GI MIXTURES
	FRACTION RETAINED ON NO. 4 SIEVE	MORE THAN 12% FINES		GC	CLAYEY GRAVELS, MIXTURES
		CLEAN SANDS	0	sw	WELL-GRADED SAI
MORE THAN 50% OF MATERIAL	SANDS	LESS THAN 5% FINES	- <u>n</u>	SP	POORLY-GRADED S SANDS, LITTLE OR
RETAINED ON NO. 200 SIEVE	D. 50R MORE OF COARSE FRACTION PASSING FINES			SM	SILTY SANDS, SAN
	THROUGH NO. 4 SIEVE	MORE THAN 12% FINES		sc	CLAYEY SANDS, SA
				ML	INORGANIC SILTS A ROCK FLOUR, SILT OR CLAYEY SILTS
FINE- GRAINED	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		CL	INORGANIC CLAYS PLASTICITY, GRAVI CLAYS, SILTY CLAY
SOILS				OL	ORGANIC SILTS AN CLAYS OF LOW PL
				МН	INORGANIC SILT, M DIATOMACEOUS FI SOILS
50R MORE OF MATERIAL PASSING THROUGH NO. 200	AND	LIQUID LIMIT 50 OR MORE		СН	INORGANIC CLAYS
SIEVE	CLAYS	CLAYS		ОН	ORGANIC CLAYS O PLASTICITY, ORGA
				PT	PEAT, HUMUS, SWA ORGANIC CONTEN
NOTE: DUAL SY	MBOLS ARE USE	D TO INDICATE I	BORDE	ERLIN	E SOIL CLASSIFI
LEGEND (2-INCH) O.I	D. STANDARD PENETF	RATION TEST		LL	LIQUID LIMIT (NP=N
(3-INCH) O	D. MODIFIED CALIFOF	RNIA SAMPLE		PI	PLASTICITY INDEX
SHELBY TU	BE SAMPLE			TV	TORVANE SHEAR (t
G GRAB SAMI	PLE			PEN	POCKET PENETRO
	PLE			UC	UNCONFINED COM
CORE SAMPLE UC UNCONFINED CO Z WATER LEVEL OBSERVED IN BORING UU UNCONSOLIDATE					



_egend	
SCS)	
TYPICAL ESCRIPTIONS	
RAVELS, GRAVEL-SAN E OR NO FINES	ID
) GRAVELS, GRAVEL-S/ E OR NO FINES	AND
GRAVEL-SAND-SILT	
S, GRAVEL-SAND-CLAY	
ANDS, GRAVELLY SANI NES	DS,
D SANDS, GRAVELLY R NO FINES	
ND-SILT MIXTURES	
SAND-CLAY MIXTURES	
S AND VERY FINE SAND LTY OR CLAYEY FINE S S WITH SLIGHT PLASTIC	ANDS
'S OF LOW TO MEDIUM VELLY CLAYS, SANDY AYS, LEAN CLAYS	
AND ORGANIC SILTY PLASTICITY	
MICACEOUS OR FINE SAND OR SILTY	
'S OF HIGH PLASTICITY	(
OF MEDIUM TO HIGH SANIC SILTS	
VAMP SOILS WITH HIGH	1
FICATIONS	anna ann an Aonaichtean ann an Aonaichtean Aonaichtean Aonaichtean Aonaichtean Aonaichtean Aonaichtean Aonaichte
NON-PLASTIC)	
(NP=NON-PLASTIC)	
(tsf)	
OMETER (tsf)	
MPRESSION (psi)	
D UNDRAINED ESSION (ksf)	Plate A-0.1



GEOLABS, INC.

Geotechnical Engineering

Rock Log Leger

ROCK DESCRIPTIONS BASALT FINGER CORAL 11/ BOULDERS LIMESTONE BRECCIA SANDSTONE CLINKER SILTSTONE COBBLES TUFF CORAL VOID/CAVITY

ROCK DESCRIPTION SYSTEM

ROCK FRACTURE CH	ARACTERISTICS
The following terms describe	general fracture spacing of a rock:
Massive:	Greater than 24 inches apart
Slightly Fractured:	12 to 24 inches apart
Moderately Fractured:	6 to 12 inches apart
Closely Fractured:	3 to 6 inches apart
Severely Fractured:	Less than 3 inches apart
DEGREE OF WEATHE	RING
The following terms describe	the chemical weathering of a rock:
Unweathered:	Rock shows no sign of discoloration or loss of strength.
Slightly Weathered:	Slight discoloration inwards from open fractures.
Moderately Weathered:	Discoloration throughout and noticeably weakened though not able to break by har
Highly Weathered:	Most minerals decomposed with some corestones present in residual soil mass. Ca
Extremely Weathered:	Saprolite. Mineral residue completely decomposed to soil but fabric and structure p
HARDNESS	
The following terms describe	the resistance of a rock to indentation or scratching:
Very Hard:	Specimen breaks with difficulty after several "pinging" hammer blows. Example: Dense, fine grain volcanic rock
Hard:	Specimen breaks with some difficulty after several hammer blows. Example: Vesicular, vugular, coarse-grained rock
Medium Hard:	Specimen can be broked by one hammer blow. Cannot be scraped by knife. SPT n ~25 blows per inch with bounce. Example: Porous rock such as clinker, cinder, and coral reef
Soft:	Can be indented by one hammer blow. Can be scraped or peeled by knife. SPT can ~100 blows per foot. Example: Weathered rock, chalk-like coral reef
Very Soft:	Crumbles under hammer blow. Can be peeled and carved by knife. Can be indente pressure. Example: Saprolite

		FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
		HAWAII	HAW.	H1E-01-11MR	2013	47	49
aan ar 19-10 laad barraan waaraa ah ay ah	I GEOTEC	CHNICA	I NC	DTFS			
d	1. A geotec entitled Explorat	chnical er "Geotechi tion, Aiea	ngineer nical E Strea	ing report Ingineering m Bank Erc ted June 30,	•		
	copy of	the repoi f the Eng	rt is c	Geolabs, Inc. on file at the for review	е		
	2. For bor	ing locati	ons, s	ee Sheet BL	-1.		
	borings encounte and at t only. Van from the	depict th ered at th the time of riations of ose depice may occu	he sub hat sp of the of sub ted in	nted in the l surface con- ecified locat field explor soil condition the logs of veen and be	ditions tion cation ns		
	logs of blows re type use to be fa	borings i equired f ed. The s actored to	ndicat or the blow c o obtai	ance shown e the numbe specific sa ounts may n n the Stand blow count	er of mpler need ard		
d. In be broken by hand. reserved.	only. Bid the bori conclusi characte encounte assume subsoil at the b	ders sha ng data a ons there er of mat ered. The responsit quality of poring loc	all exa and dr from Engir bility f cond ations	general info mine the sit aw their ow as to the to be for variation itions other shown and ere taken.	te and In s of than	n	
ay penetrate by penetrate by							
d by finger Plate A-0.2							
			DEPAI	STATE OF HAV		ATION	
	CHALD Y. S. CHALD Y. S. PROFESSIONAL ENGINEER No. 5635-C	E		HIGHWAYS DIV NOTES	ISION EGEI		=
	THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. MATURE EXPIRATION DAT OF THE LICENSI	4	<u>EA ST</u> Pro	TERSTATE ROS REAM EROS	DUTE H	<u>ONTRO</u> IR	
1		-			•		2

		G	EOLABS,
A A		Ge	otechnical Engi
			UNIFIE
			MAJOR DIVISI
	COARS	iE-	GRAVELS
	GRAINE	ED	MORE THAN 509 OF COARSE FRACTION RETAINED ON NO. 4 SIEVE
l			

INC.

ineering

ED SOIL CLASSIFICATION SYSTEM (

			-		1	
	US	CS				
		GRAVELS GRAVELS LESS THAN 5% FINES		GW	WELL-GRADE MIXTURES, L	
COARSE-	GRAVELS			GP	POORLY-GRA MIXTURES, L	
GRAINED SOILS	MORE THAN 50% OF COARSE	GRAVELS WITH FINES	000	GM	SILTY GRAVE MIXTURES	
	FRACTION RETAINED ON NO. 4 SIEVE	MORE THAN 12% FINES		GC	CLAYEY GRA MIXTURES	
		CLEAN SANDS	0.	SW	WELL-GRADE	
MORE THAN 50% OF MATERIAL	SANDS	LESS THAN 5% FINES		SP	POORLY-GRA SANDS, LITTL	
RETAINED ON NO. 200 SIEVE	50% OR MORE OF COARSE FRACTION PASSING	SANDS WITH FINES		SM	SILTY SANDS	
	THROUGH NO. 4 SIEVE	MORE THAN 12% FINES		SC	CLAYEY SAN	
			ML		INORGANIC S ROCK FLOUR OR CLAYEY S	
FINE- GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		CL	INORGANIC C PLASTICITY, CLAYS, SILTY	
00120				OL	ORGANIC SIL CLAYS OF LC	
				MH	INORGANIC S DIATOMACEC SOILS	
50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE		СН	INORGANIC C	
0.2.1.2				ОН	ORGANIC CLA PLASTICITY,	
HIGHLY ORGANIC SOILS					PEAT, HUMUS ORGANIC CO	
<i>NOTE: DUAL SYMBC</i> LEGEND	DLS ARE USED TO INI	DICATE BORDERLIN	E SOIL C	CLASSI	FICATIONS	
(2-INCH) O.D.	STANDARD PENET	RATION TEST	I	LL	LIQUID LIMIT (I	
(3-INCH) O.D.	I	PI	PLASTICITY IN			
SHELBY TUB	E SAMPLE	-	TV	TORVANE SHE		
G GRAB SAMPL	E	I	PEN	POCKET PENE		
CORE SAMPL	_E		I	UC	UNCONFINED	
DRILLING	WATER LEVEL OBSERVED IN BORING AT TIME OF TXUU UNCONSOLID DRILLING TRIAXIAL CON WATER LEVEL OBSERVED IN BORING AFTER DRILLING					
YWATER LEVEL OBSERVED IN BORING AFTER DRILLINGYWATER LEVEL OBSERVED IN BORING OVERNIGHT						

ORLIGINAL SURVEY PLOT PLAN DRAWN BY NOTE BOOK DESIGNED BY NaCHECKED BY

				FISCAL	SHEET	TOTAL
	FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	NO.	SHEETS
	HAWAII	HAW.	H1E-01-11MR	2013	<u>C.O.</u>	49
				2013	47S-1	13

Soil Log Legend

USCS)	
ΤΥΡΙΟ	·Δ1

		Г	IU.			
DES	С	R	IP ⁻	ΤI	O	٧S

DED GRAVELS, GRAVEL-SAND LITTLE OR NO FINES

RADED GRAVELS, GRAVEL-SAND LITTLE OR NO FINES

/ELS, GRAVEL-SAND-SILT

AVELS, GRAVEL-SAND-CLAY

DED SANDS, GRAVELLY SANDS, NO FINES

RADED SANDS, GRAVELLY TLE OR NO FINES

S, SAND-SILT MIXTURES

NDS, SAND-CLAY MIXTURES

SILTS AND VERY FINE SANDS, JR, SILTY OR CLAYEY FINE SANDS SILTS WITH SLIGHT PLASTICITY C CLAYS OF LOW TO MEDIUM Y, GRAVELLY CLAYS, SANDY TY CLAYS, LEAN CLAYS

ILTS AND ORGANIC SILTY .OW PLASTICITY

SILT, MICACEOUS OR EOUS FINE SAND OR SILTY

CLAYS OF HIGH PLASTICITY

LAYS OF MEDIUM TO HIGH , ORGANIC SILTS

JS, SWAMP SOILS WITH HIGH ONTENTS

(NP=NON-PLASTIC)

NDEX (NP=NON-PLASTIC)

- HEAR (tsf)
- IETROMETER (tsf)
- D COMPRESSION (ksf)

DATED UNDRAINED MPRESSION (ksf)

A-0.1

Plate



GEOLABS, INC.

Geotechnical Engineering

ROCK DESCRIPTIONS

(1)	BASALT		FINGER CORAL
22	BOULDERS		LIMESTONE
$\begin{array}{c} \Delta & \Delta \\ \Delta & \Delta & 2 \\ \Delta & \Delta & - \end{array}$	BRECCIA		SANDSTONE
ו × × × × × × × ×	CLINKER	× × × × × × × × × × × × × × × × × × ×	SILTSTONE
× × ×	COBBLES		TUFF
`*`* *`*	CORAL		VOID/CAVITY

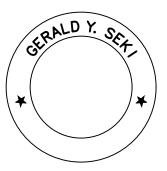
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ROCK FRACTURE CHARACTERISTICS				
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DEGREE OF WEATHERING				

The following terms describe	the chemical weathering of a rock:
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Extremely Weathered:	Saprolite. Mineral residue completely decomposed to soil but fabric and structu
HARDNESS	
The following terms describe	the resistance of a rock to indentation or scratching:
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Hard:	Specimen breaks with some difficulty after several hammer blows. Example: Vesicular, vugular, coarse-grained rock
Medium Hard:	Specimen can be broked by one hammer blow. Cannot be scraped by knife. SF ~25 blows per inch with bounce. Example: Porous rock such as clinker, cinder, and coral reef
Soft:	Can be indented by one hammer blow. Can be scraped or peeled by knife. SPT ~100 blows per foot. Example: Weathered rock, chalk-like coral reef
Very Soft:	Crumbles under hammer blow. Can be peeled and carved by knife. Can be indepressure. Example: Saprolite

<u>GEOTECHNICAL NOTES:</u>

- A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Aiea Stream Bank Erosion Control, Remedial Measures At Aiea Shopping Center, Aiea, Oahu, Hawaii" dated July 31, 2015 has been prepared by Geolabs, Inc. A copy of the report is on file at the office of the Engineer for review by the Contractor.
- For boring locations, see Sheet BL-1A. 2.
- 3. The information presented in the logs of borings depict the subsurface conditions encountered at that specified location and at the time of the field exploration only. Variations of subsoil conditions from those depicted in the logs of borings may occur between and beyond the borings.
- 4. The penetration resistance shown on the logs of borings indicate the number of blows required for the specific sampler type used. The blow counts may need to be factored to obtain the Standard Penetration Test (SPT) blow counts.
- 5. The data given is for general information only. Bidders shall examine the site and the boring data and draw their own conclusions therefrom as to the character of materials to be encountered. The Engineer will not assume responsibility for variations of subsoil quality or conditions other than at the boring locations shown and at the time the borings were taken.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

GE	OLABS,	INC.
ICENSE	EXPIRES	4-30-16

10/14/15	Added New Sheet
Date	Revision
DEP	STATE OF HAWAI'I ARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
BORING	G LOG LEGENDS & NOTES
Scale: None	
SHE	ET NO. BL-2A OF 4 SHEETS
C.(D. 47S-1

Rock Log Legend

by hand. ss. Can be broken by hand. ture preserved.

SPT may penetrate by

PT can penetrate by

dented by finger

Plate A-0.2

			LABS, I nical Engir			ŀ	AIEA STREAM BANK EROSION AIEA, OAHU, HAWAII	Log of Boring 1				_ABS, II			A	AIEA STREAM BANK ER AIEA, OAHU, HAWA
stear LL=60 PI=26 Direct Shear	41 45	06 Core Recovery (%)	Penetration 10 10 10 10 10 10 10 10 10 10	(tst) >4.5 >4.5 >4.5	E	GP SW MH	Approximate Ground Surface Elevation (feet MSL): 58 * Description 3-inch ASPHALTIC CONCRETE Gray GRAVEL (fill) Grayish tan GRAVELLY SAND (CORALLI medium dense, damp (fill) Brown CLAYEY SILT with some fine sand stiff, moist (alluvium) grades to stiff at 2.5 feet grades with some gravel, hard at 5 feet Brown with gray CLAY with some sand ar	, very	Direct Shear LL=50 PI=24	28 50 32	92 6 Dry Unit Weight (pcf) Core Recovery (%)	RQD (%) RQD (%) 43 75 75 75 75 75 75 75 75 75 75 75 75 75	-4.5 >4.5 >4.5 3.0		MH CH ML CH- CL	Approximate Elevation (f Des 2-inch ASPHALTIC CON Brown GRAVELLY SILT stiff, damp (fill) Brown SILTY CLAY with very hard, damp (alluviu Light brown SANDY SIL (alluvium) Brown SILTY CLAY with and boulders, hard, dar
	21	104	94	>4.2	15	CH	cobbles, very hard, moist (alluvium) Brown and gray SILTY CLAY with gravel, and boulders, very hard, moist (alluvium)	cobbles,	Direct Shear	31	88	64	>4.5	15		grades to very hard
	33		54 10/0' Ref.		20				LL=53 Pl=22	20 18	92	53 26/3"				Orangish brown GRAVE some sand and cobbles (alluvium) COBBLES AND BOULI
UC=	31	100	52 10/0'		30-35-3-		Gray vesicular BASALT, severely to mode fractured, moderately weathered, very ha	*	LL=55 PI=21	32 32	88		>4.5	30		(alluvium) Brown with gray mottling and some weathered g (alluvium)
322 psi UC= 889 psi UC= 021 psi		77	27		40- 40- 45- 45-	q	Tannish gray CLINKER, severely fracture weathered, medium hard Reddish gray vesicular BASALT, closely fi moderately to highly weathered, medium	actured,	Direct Shear	32 50	72	26 53	3.5 4.0	40		grades to very stiff, wet grades to hard
					50- 55-		hard Boring terminated at 46 feet * Elevations estimated from Topographic Map transmitted by PB Americas on 2/1	Survey		46		37/4"		50		grades to very hard Boring terminated at 50
					60- 65-									60- 65-		
					70-				S.GDT 6/28/10					70-		
Date Sta	rted:	Febru	ary 19, 2010		75		Water Level: v Not Encountered		B Date Sta	arted:	Febru	ary 17, 2010		75		Water Level: ♀ 43.0 ft.
Date Con Logged I Total Dep Work Ore	mplete 3y: pth:	ed: Febru D. Gr 46 fe	iary 19, 2010 emminger				Drill Rig:CME-45Drilling Method:4" Auger & HQ CoringDriving Energy:140 lb. wt.,30 in. drop		Date Co Logged Total De Work Or	mplet By: pth:	ed: Febru	ary 18, 2010 emminger eet				Drill Rig: CME-48 Drilling Method: 4" Auge Driving Energy: 140 lb.

2

DATE	9	B		P	6	
SURVEY PLOTTED BY	DRAWN BY	TRACED BY	DESIGNED BY	QUANTITIES BY	CHECKED BY	
ORIGINAL	PLAN		NOTE BOOK		Ne.	

	Log of Boring	FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
ISION	2	HAWAII	HAW.	HIE-01-11MR	2013	48	49
Ground Surface et MSL): 62 *							
iption CRETE	 						
vith clay and sa	nd, very						
some weathered n) with clay, hard,							
ome gravel, co o (alluvium)	bbles,						
LY SILT with cla very hard, mois							
ERS (BASALTIO							
SILTY CLAY with vel, very hard, o							
3 feet 2/18/2010 1218 HR							
				STATE OF HAV	VAII	anina invento i a constanto ni inventi da tra de se se	
,30 in. drop	GERALD Y. SA LICENSED PROFESSIONAL ENGINEER	·		RTMENT OF TRA HIGHWAYS DIVI	SION		
	No. 5635-C HAWAII, U.S.F. THIS WORK WAS PREPARED E OR UNDER MY SUPERVISIO	/ BY ME DN. AII	INT	TERSTATE ROS	DUTE H	-1	
	SIGNATURE EXPIRATION	5	Pro	oject No. HIE	<u>-01-11M</u>		

					3 <mark>S, IN</mark> Engine		C		ŀ	AIEA STREAM BANK EROSIOI AIEA, OAHU, HAWAII
Other Tests		Dry Unit Weight (pcf)			Penetration Resistance (blows/foot)		Depth (feet)	ple	S	Approximate Grour Elevation (feet M
Othe	₩ 8 30	2 2 76	Core Rec	RQI	a blo S S S S S S S S S S S S S S S S S S S	0.6 (fsf)	Dep	X Sample Graphic	MH	
LL=55 PI=24 Direct Shear	12 37	69			47 43	2.5 >4.5	5		MH	Orangish brown CLAYEY SIL and gravel, medium stiff to sti Brown CLAYEY SILT, very stif grades to hard at 2.5 feet grades with fine sand and son
	29				37	4.0	10	-	MH	Grayish brown CLAYEY SILT cobbles, and some boulders, (alluvium)
	21	80			36/5"		15		СН	Gray-brown CLAY with sand, very hard, moist (alluvium)
	21				41/6" +10/1"	3.5	20		X	BOULDERS (BASALTIC)
	23	92			90	>4.5	25		СН	Brown with gray mottling CLA (alluvium)
	34				27	2.5	30			grades to very stiff
Direct Shear	31	88			87	>4.5	35		СН	Brown with gray mottling SILT moist (alluvium)
	36				21	1.5	40		MH	Brown CLAYEY SILT with san (alluvium)
	38	83			41	3.0	45			grades with weathered gravel
	36				43	4.0 ³	² 50 ⁻			Boring terminated at 51.5 fee
							55			
							60			
							65			
							70			
			e e e e e e e e e e e e e e e e e e e	ana mana katala kata			75 [.]			
Date Sta Date Co					7, 2010 7, 2010					Water Level:
Logged I Total De	By:		D. Gr 51.5 f	emmi						Drill Rig: CME-45 Drilling Method: 4" Auger
Work Or	A		<u>5395</u> -)					Driving Energy: 140 lb. wt.,30 in

DATE	£ :	3 9	ß	9	
ORIGINAL SURVEY PLOTTED BY DATE			BY		
SURVEY PLOTTED BY	DRAWN BY	TRACED BY	QUANTITIES BY	CHECKED BY	
ORIGINAL	PLAN	NOTE BOOK		N.	

A	AIEA STREAM BANK EROSION AIEA, OAHU, HAWAII	Log of Boring
-		3
S	Approximate Ground Surface Elevation (feet MSL): 62 *	
H H NSCS	Description 2-inch ASPHALTIC CONCRETE Orangish brown CLAYEY SILT with some and gravel, medium stiff to stiff, damp (fill Brown CLAYEY SILT, very stiff, damp (all grades to hard at 2.5 feet grades with fine sand and some gravel at	ll) uvium)
MH	Grayish brown CLAYEY SILT with sand, g cobbles, and some boulders, very stiff, m (alluvium)	
СН	Gray-brown CLAY with sand, gravel, and very hard, moist (alluvium)	cobbles,
	BOULDERS (BASALTIC)	
СН	Brown with gray mottling CLAY, very hard (alluvium)	I, moist
	grades to very stiff	-
СН	Brown with gray mottling SILTY CLAY, ver moist (alluvium)	ry hard,
MH	Brown CLAYEY SILT with sand, very stiff, (alluvium)	, moist
	grades with weathered gravel, hard	- -
		-
	Boring terminated at 51.5 feet	-
		-
		-
		- - -
147 414419 4-142		-
	Water Level: ☑ 49.0 ft. 02/17/2010 1329 HRS Drill Rig: CME-45	S
	Drill Rig: CME-45 Drilling Method: 4" Auger	
	Driving Energy: 140 lb. wt.,30 in. drop	

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FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HIE-01-11MR	2013	49	49

SHEET No. $BL-4$ OF 4 SHEETS
Scale: NTS Date: September 2012
Project No. H1E-01-11MR
AIEA STREAM EROSION CONTROL
INTERSTATE ROUTE H-1
<u>BORING LOGS - 2</u>
DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
STATE OF HAWAII

GEOLABS, Geotechnical Eng	I REMEDIAL MEASURES AT AIEA SHOPPING CENTER I	GEOLABS, INC. Geotechnical Engineering	AIEA STREAM BANK EROSION CONTROL MEDIAL MEASURES AT AIEA SHOPPING CENTER AIEA, OAHU, HAWAII 102	FED. ROAD DIST. NO. STATE PROJ. NO. FISCAL YEAR SHEET NO. TOTAL SHEETS HAWAII HAW. H1E-01-11MR 2013 C.O. 49S-1 49
Other Tests Moisture Content (%) Dry Unit Weight (pcf) Core Recovery (%) RQD (%) Penetration Resistance	Approximate Ground Surface Lever Period (fst) Conserved Elevation (feet MSL): 58.5 * Description	Other Tests Moisture Content (%) Dry Unit Weight (pcf) Core Recovery (%) RQD (%) RQD (%) Penetration Resistance (blows/foot) (blows/foot) (blows/foot) (sf) Depth (feet)	Approximate Ground Surface Elevation (feet MSL): 59.6 * Description	
37 86 38 47 47 14 UC=4.2 56 64 26 ksf 64 26	dry (fill)	UC=6.8 ksf33 4086 4064 45>4.5 45TXUU Su=3.7 ksf47 595964 64>4.5	3-inch ASPHALTIC CONCRETE MH Tannish gray GRAVELLY SAND, medium dense, dry (fill) Brown CLAYEY SILT with some fine sand, hard, damp (alluvium)	
30 29		ksf 31 48 10	CH Brown and gray CLAY with some gravel (basaltic) and boulders, hard, moist (alluvium)	
16 33/ Re 22 41/		24 50/0" 15 Ref. 20	ري Gray vesicular BASALT, moderately fractured,	
TXUU 27 86 11/ Su=3.9 Re	2" >4.5 25	UC= 15910 38 27 25-		
ksf 30 42 UC= 96 50		psi 83 33 30 30 -		
11490 80 15 psi 15 UC= 15980	35 Gray vesicular BASALT, moderately fractured, moderately weathered, very hard 40	85 13 35		
psi 55 7 62 8	45 medium hard	47 0 40- 87 22 45-	🐔 🔰 medium hard	
67 17	Figure 1 Reddish gray vesicular BASALT, severely Image: 1 fractured, moderately weathered, hard Image: 2 Gray vesicular BASALT, severely fractured, moderately weathered, very hard Image: 2 Image: 2 Image: 2 Gray vesicular BASALT, severely fractured, moderately weathered, very hard Image: 2 Image: 2 Image: 2	73 30 50	grades to closely fractured, very hard	
UC= 8580 psi	55 60 Boring terminated at 60 fact	37 23 55	Reddish gray CLINKER, highly weathered, hard	SERALDY. SET
	60 Boring terminated at 60 feet 8 Boring terminated at 60 feet 8 Elevations estimated from Topographic Survey 65 Map transmitted by PB Americas on February 18, 2010.		weathered, very hard Boring terminated at 60 feet	THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.
J GEOLABS.GDT 7/2015				IO/14/15 Added New Sheet Date Revision STATE OF HAWAI'I
Date Started:February 19, 20Date Completed:February 23, 20Logged By:J. TurbanTotal Depth:60 feet	5 Drill Rig: CME-55D Drilling Method: 4" Solid-Stem Auger & HQ Coring	Date Started: February 24, 2015 Date Completed: February 26, 2015 Logged By: J. Turban Total Depth: 60 feet	Water Level: Drill Rig: DIEDRICH D-25 Drilling Method: 4" Solid-Stem Auger & HQ Coring	DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
Work Order: 5395-20(D)	Driving Energy: 140 lb. wt., 30 in. drop	Work Order: 5395-20(D)	Driving Energy: 140 lb. wt., 30 in. drop	<u>INTERSTATE ROUTE H-1</u> <u>AIEA STREAM EROSION CONTROL</u> <u>Project No. H1E-01-11MR</u> Scale: None Date: October 2012 SHEET No. BL-4A OF 4 SHEETS
				C.O. 49S-1

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IK EROSION CONTROL AT AIEA SHOPPING CENTER AHU, HAWAII					BS, IN al Engine		RE		A STREAM BANK EROSION CONTROL L MEASURES AT AIEA SHOPPING CENTER AIEA, OAHU, HAWAII	HAWAII HAW. HIE-01-11MR 2013 C.O. 495-1 49
oproximate Ground Surface levation (feet MSL): 58.5 * Description	Other Tests	Moisture Content (%) Drv I Init	<u>Weight (pcf)</u> Core	Recovery (%) RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet) Sample	Graphic USCS	Approximate Ground Surface Elevation (feet MSL): 59.6 * Description	
ALTIC CONCRETE	UC=6.8 ksf					>4.5		SV MH	Description 3-inch ASPHALTIC CONCRETE Tannish gray GRAVELLY SAND, medium dense, dry (fill)	
EY SILT with some fine sand, very Illuvium)	TXUU Su=3.7 ksf	47 5	59		64	>4.5			Brown CLAYEY SILT with some fine sand, hard, damp (alluvium)	
ray CLAY with some cobbles,		31			48		10-	CF	Brown and gray CLAY with some gravel (basaltic) and boulders, hard, moist (alluvium)	
ry hard		24			50/0" Ref.				grades to very hard	
			5	7 20			20	ななななな	Gray vesicular BASALT, moderately fractured, slightly weathered, very hard	
	UC= 15910 psi		3	8 27	,		25			
ry hard			8	3 33			30		grades to unweathered	
ar BASALT, moderately fractured, veathered, very hard			8	5 13			35		grades to closely fractured	
CLINKER, highly weathered,			4	7 0				, , , , , , , , , , , , , , , , , , ,	Reddish gray CLINKER, highly weathered, medium hard	
vesicular BASALT, severely			8	7 22	2		45	にたた	Gray massive BASALT, severely fractured, slightly weathered, hard	
ar BASALT, severely fractured,			7	3 30			50		grades to closely fractured, very hard	
			3	7 23	5		55	× × × × × × × × × × × × × × × × × × ×	Reddish gray CLINKER, highly weathered, hard	SERALD Y. SET
nated at 60 feet							60	,) _) 	Gray massive BASALT, closely fractured, slightly weathered, very hard Boring terminated at 60 feet	THIS WORK WAS PREPARED BY ME OR LINDER
estimated from Topographic Survey 1 nitted by PB Americas on February							65			MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION. GEOLABS, INC. LICENSE EXPIRES 4-30-16
4 4 4	BS.GDT 7/20/15						70-			10/14/15Added New SheetDateRevision
-	Date Sta				24, 2015 26, 2015		75		Water Level:	STATE OF HAWAI'I DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
CME-55D d: 4" Solid-Stem Auger & HQ Coring /: 140 lb. wt., 30 in. drop	Logged I Total De Work Or	By: pth:	J. 60	Furban feet 95-20(I					Drill Rig:DIEDRICH D-25Drilling Method:4" Solid-Stem Auger & HQ CoringDriving Energy:140 lb. wt., 30 in. drop	<u>BORING LOGS</u>
										<u>INTERSTATE ROUTE H-1</u> <u>AIEA STREAM EROSION CONTROL</u> <u>Project No. H1E-01-11MR</u> Scale: None Date: October 2012
										SHEET NO. BL-4A OF 4 SHEETS
										C.O. 49S-1