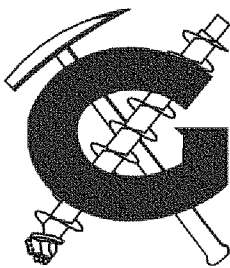
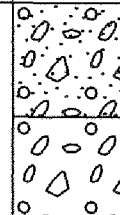
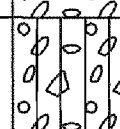
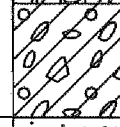
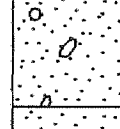
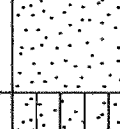

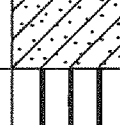
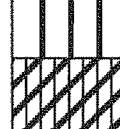
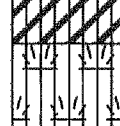
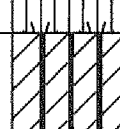
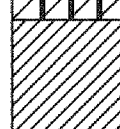

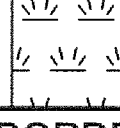










FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HIE-01-11MR	2013	47	49

		GEOLABS, INC. Geotechnical Engineering		Soil Log Legend	
UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)					
MAJOR DIVISIONS			USCS		TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE	GRAVELS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS LESS THAN 5% FINES		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES MORE THAN 12% FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS 50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	CLEAN SANDS LESS THAN 5% FINES		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		FINES MORE THAN 12% FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE-GRAINED SOILS 50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
	SILTS AND CLAYS LIQUID LIMIT 50 OR MORE		MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
			CH	INORGANIC CLAYS OF HIGH PLASTICITY	
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	

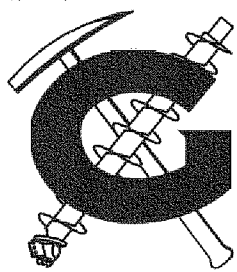



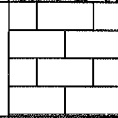
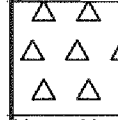
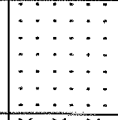
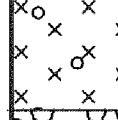
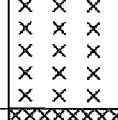

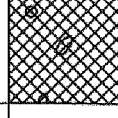
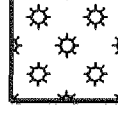

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

LEGEND

	(2-INCH) O.D. STANDARD PENETRATION TEST	LL	LIQUID LIMIT (NP=NON-PLASTIC)
	(3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE	PI	PLASTICITY INDEX (NP=NON-PLASTIC)
	SHELBY TUBE SAMPLE	TV	TORVANE SHEAR (tsf)
	GRAB SAMPLE	PEN	POCKET PENETROMETER (tsf)
	CORE SAMPLE	UC	UNCONFINED COMPRESSION (psi)
	WATER LEVEL OBSERVED IN BORING	UU	UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf)

Plate

A-0.1

		GEOLABS, INC. Geotechnical Engineering		Rock Log Legend	
ROCK DESCRIPTIONS					
	BASALT			FINGER CORAL	
	BOULDERS			LIMESTONE	
	BRECCIA			SANDSTONE	
	CLINKER			SILTSTONE	
	COBBLES			TUFF	
	CORAL			VOID/CAVITY	
ROCK DESCRIPTION SYSTEM					
ROCK FRACTURE CHARACTERISTICS					
<i>The following terms describe general fracture spacing of a rock:</i>					
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 WEATHERING					
<i>The following terms describe the chemical weathering of a rock:</i>					
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 hand.			
Highly Weathered:		Most minerals decomposed with some corestones present in residual soil mass. Can be broken by hand.			
Extremely Weathered:		Saprolite. Mineral residue completely decomposed to soil but fabric and structure preserved.			
HARDNESS					
<i>The following terms describe the resistance of a rock to indentation or scratching:</i>					
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 broke by one hammer blow. Cannot be scraped by knife. SPT may penetrate by ~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 penetrate by ~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 indented by finger pressure. Example: Saprolite			
				Plate A-0.2	

GEOTECHNICAL NOTES

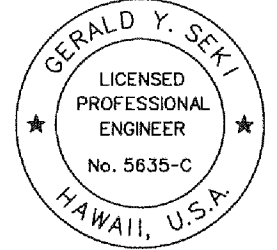
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2. For boring locations, see Sheet BL-1.

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.

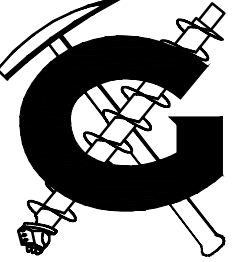
Gerald Y. Seki
SIGNATURE
04/30/14
EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG LEGEND & NOTES

INTERSTATE ROUTE H-1
AIEA STREAM EROSION CONTROL
Project No. HIE-01-11MR
Scale: NTS Date: September 2012





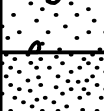

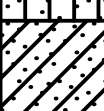

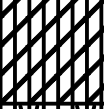

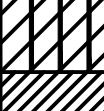
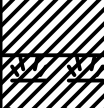

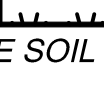

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H1E-01-11MR	2013	C.O. 47S-1	49



GEOLABS, INC.
Geotechnical Engineering

Soil Log Legend

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS	TYPICAL DESCRIPTIONS	
COARSE-GRAINED SOILS	GRAVELS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		LESS THAN 5% FINES		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	SANDS	MORE THAN 12% FINES		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
		CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		LESS THAN 5% FINES		SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
FINE-GRAINED SOILS	SILTS AND CLAYS	50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE		SM	SILTY SANDS, SAND-SILT MIXTURES
		MORE THAN 12% FINES		SC	CLAYEY SANDS, SAND-CLAY MIXTURES
	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
		LIQUID LIMIT 50 OR MORE		CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
HIGHLY ORGANIC SOILS	SILTS AND CLAYS		OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
			MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
			CH	INORGANIC CLAYS OF HIGH PLASTICITY	
	OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS			
	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS			

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

LEGEND










	(2-INCH) O.D. STANDARD PENETRATION TEST	LL	LIQUID LIMIT (NP=NON-PLASTIC)
	(3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE	PI	PLASTICITY INDEX (NP=NON-PLASTIC)
	SHELBY TUBE SAMPLE	TV	TORVANE SHEAR (tsf)
	GRAB SAMPLE	PEN	POCKET PENETROMETER (tsf)
	CORE SAMPLE	UC	UNCONFINED COMPRESSION (ksf)
	WATER LEVEL OBSERVED IN BORING AT TIME OF DRILLING	TXUU	UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf)
	WATER LEVEL OBSERVED IN BORING AFTER DRILLING		
	WATER LEVEL OBSERVED IN BORING OVERNIGHT		




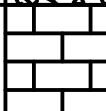
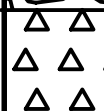
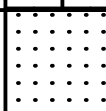
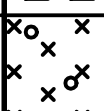
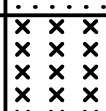

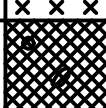
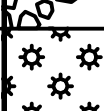

Plate
A-0.1



GEOLABS, INC.
Geotechnical Engineering

Rock Log Legend

ROCK DESCRIPTIONS

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

ROCK DESCRIPTION SYSTEM

ROCK FRACTURE CHARACTERISTICS

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 WEATHERING

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 hand.
Highly Weathered:	Most minerals decomposed with some corestones present in residual soil mass. Can be broken by hand.
Extremely Weathered:	Saprolite. Mineral residue completely decomposed to soil but fabric and structure preserved.

HARDNESS

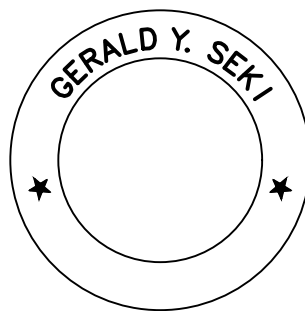
The following terms describe the resistance of a rock to indentation or scratching:

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 may penetrate by ~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 penetrate by ~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 indented by finger pressure. Example: Saprolite

Plate
A-0.2

GEOTECHNICAL NOTES:

- 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.
- 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.
- 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.
- 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.

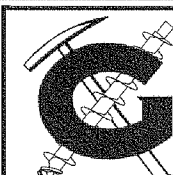






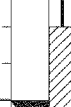
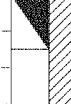



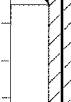



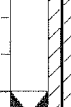
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY OBSERVATION.

GEOLABS, INC.
LICENSE EXPIRES 4-30-16

10/14/15	Added New Sheet
Date	Revision
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOG LEGENDS & NOTES	
INTERSTATE ROUTE H-1 AIEA STREAM EROSION CONTROL Project No. H1E-01-11MR	
Scale: None	Date: October 2012
SHEET No. BL-2A OF 4 SHEETS	


C.O. 47S-1

 GEOLABS, INC. Geotechnical Engineering		AIEA STREAM BANK EROSION AIEA, OAHU, HAWAII							Log of Boring 1		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 58 *	
										Description	
LL=60 PI=26 Direct Shear	41	72			34	>4.5			GP	3-inch ASPHALTIC CONCRETE	
	45				15	2.0			SW	Gray GRAVEL (fill)	
	30	90			43	>4.5	5		MH	Grayish tan GRAVELLY SAND (CORALLINE), medium dense, damp (fill)	
										Brown CLAYEY SILT with some fine sand, very stiff, moist (alluvium)	
	29				50	>4.5	10		CH	grades to stiff at 2.5 feet grades with some gravel, hard at 5 feet	
										Brown with gray CLAY with some sand and cobbles, very hard, moist (alluvium)	
	21	104			94	>4.2	15		CH	Brown and gray SILTY CLAY with gravel, cobbles, and boulders, very hard, moist (alluvium)	
	33				54	>4.5	20				
					10/0" Ref.		25				
	31				52		30				
UC= 9322 psi UC= 5889 psi UC= 6021 psi			100	48	10/0" Ref.		35			Gray vesicular BASALT, severely to moderately fractured, moderately weathered, very hard	
							40				
			77	27			45			Tannish gray CLINKER, severely fractured, highly weathered, medium hard	
							50			Reddish gray vesicular BASALT, closely fractured, moderately to highly weathered, medium hard to hard	
							55			Boring terminated at 46 feet	
										* Elevations estimated from Topographic Survey Map transmitted by PB Americas on 2/18/10.	

		GEOLABS, INC. Geotechnical Engineering					AIEA STREAM BANK EROSION AIEA, OAHU, HAWAII					Log of Boring 2	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 62 *			
											Description		
Direct Shear	28	91			76	>4.5			MH	2-inch ASPHALTIC CONCRETE			
	50				49				CH	Brown GRAVELLY SILT with clay and sand, very stiff, damp (fill)			
LL=50 PI=24	32	76			42	>4.5	5		ML	Brown SILTY CLAY with some weathered gravel, very hard, damp (alluvium)			
							10		CH-CL	Light brown SANDY SILT with clay, hard, dry (alluvium)			
Direct Shear	29				43	3.0				Brown SILTY CLAY with some gravel, cobbles, and boulders, hard, damp (alluvium)			
	31	88			64	>4.5	15			grades to very hard			
LL=53 PI=22	20				53	>4.5	20		MH	Orangish brown GRAVELLY SILT with clay and some sand and cobbles, very hard, moist (alluvium)			
	18	92			26/3"	>4.5	25			COBBLES AND BOULDERS (BASALTIC) (alluvium)			
LL=55 PI=21	32				71	>4.5	30		MH	Brown with gray mottling SILTY CLAY with sand and some weathered gravel, very hard, damp (alluvium)			
	32	88			44/6" +28/3"	>4.5	35			grades to very stiff, wet			
Direct Shear	32				26	3.5	40			grades to hard			
	50	72			53	4.0	45			grades to very hard			
	46				37/4"		50			Boring terminated at 50.8 feet			
							55						
							60						
							65						
							70						
							75						
Date Started: February 17, 2010								Water Level: ∇ 43.0 ft. 02/18/2010 1218 HRS					
Date Completed: February 18, 2010													
Logged By: D. Gremminger								Drill Rig: CME-45					
Total Depth: 50.8 feet								Drilling Method: 4" Auger					
Work Order: 5395-00(D)								Driving Energy: 140 lb. wt., 30 in. drop					

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H1E-01-11MR	2013	48	49

SURVEY PLOTTED BY _____	DATE _____
DRAWN BY _____	DESIGNED BY _____
NOTE BOOK _____	QUANTITIES BY _____
CHECKED BY _____	_____



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

Gerald Y. Seyi
SIGNATURE

04/30/14
EXPIRATION DATE
OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

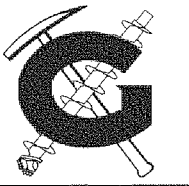
BORING LOGS - 1

**INTERSTATE ROUTE H-1
AIEA STREAM EROSION CONTROL**

Project No. H1E-01-11MR

Scale: NTS Date: September 2012

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	H1E-01-11MR	2013	49	49

	GEOLABS, INC. Geotechnical Engineering		AIEA STREAM BANK EROSION AIEA, OAHU, HAWAII		Log of Boring 3		
	Other Tests	Moisture Content (%) Dry Unit Weight (pcf) Core Recovery (%) RQD (%) Penetration Resistance (blows/foot) Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 62 *	
LL=55 PI=24 Direct Shear	30	76			MH	2-inch ASPHALTIC CONCRETE	
	12		32	3.0		MH	Orangish brown CLAYEY SILT with some sand and gravel, medium stiff to stiff, damp (fill)
	37	69	47	2.5			Brown CLAYEY SILT, very stiff, damp (alluvium) grades to hard at 2.5 feet
			43	>4.5	5		grades with fine sand and some gravel at 5 feet
	29		37	4.0	10	MH	Grayish brown CLAYEY SILT with sand, gravel, cobbles, and some boulders, very stiff, moist (alluvium)
	21	80	36/5"		15		
			41/6"	3.5	20	CH	Gray-brown CLAY with sand, gravel, and cobbles, very hard, moist (alluvium)
	21		+10/1"				BOULDERS (BASALTIC)
	23	92	90	>4.5	25	CH	Brown with gray mottling CLAY, very hard, moist (alluvium)
	34		27	2.5	30		grades to very stiff
Direct Shear	31	88	87	>4.5	35	CH	Brown with gray mottling SILTY CLAY, very hard, moist (alluvium)
	36		21	1.5	40	MH	Brown CLAYEY SILT with sand, very stiff, moist (alluvium)
	38	83	41	3.0	45		grades with weathered gravel, hard
	36		43	4.0	50		Boring terminated at 51.5 feet
				55			
				60			
				65			
				70			
				75			

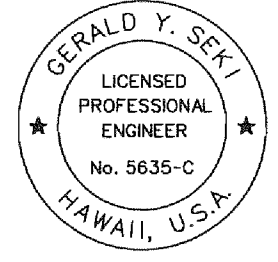
Date Started:	February 17, 2010	Water Level:	49.0 ft. 02/17/2010 1329 HRS
Date Completed:	February 17, 2010	Drill Rig:	CME-45
Logged By:	D. Gremminger	Drilling Method:	4" Auger
Total Depth:	51.5 feet	Driving Energy:	140 lb. wt., 30 in. drop
Work Order:	5395-00(D)		

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

ORIGINAL PLAN

NOTE BOOK

DATE



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Gerald Y. Seki

04/30/14

EXPIRATION DATE OF THE LICENSE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS - 2


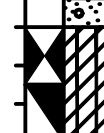


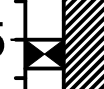







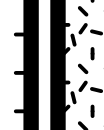

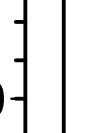

INTERSTATE ROUTE H-1
AIEA STREAM EROSION CONTROL
Project No. H1E-01-11MR

Scale: NTS Date: September 2012



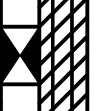

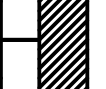



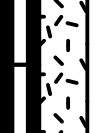


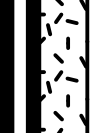
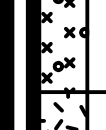



SHEET No. BL-4 OF 4 SHEETS

SURVEY PLOTTED BY	DATE
ORIGINAL PLAN	
DRAWN BY	
TRACED BY	
NOTE BOOK	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	
N.	

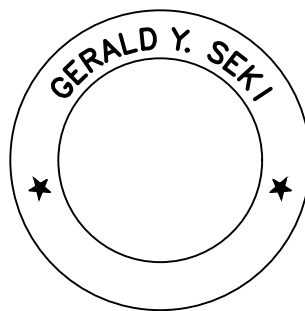
BORING LOG EDIT: 5395-20(D) GEP, GEOLABS, EDIT: 7/25/15

		GEOLABS, INC.		AIEA STREAM BANK EROSION CONTROL REMEDIAL MEASURES AT AIEA SHOPPING CENTER AIEA, OAHU, HAWAII						Log of Boring	
		Geotechnical Engineering								101	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 58.5 *	
										Description	
UC=4.2 ksf	37 47	86			38 14				SW MH	3-inch ASPHALTIC CONCRETE	
										Tannish gray GRAVELLY SAND, medium dense, dry (fill)	
	56 64				26	>4.5	5			Brown CLAYEY SILT with some fine sand, very stiff, moist (alluvium)	
	30				29		10		CH	Brown and gray CLAY with some cobbles, boulders, and gravel, very stiff, moist (alluvium)	
TXUU Su=3.9 ksf	16				33/9" Ref.	>4.5	15			grades to very hard	
	22				41/1" Ref.		20				
	27 86				11/2" Ref.	>4.5	25				
	30				42		30			grades to very hard	
UC= 11490 psi UC= 15980 psi			96 80	50 15			35			Gray vesicular BASALT, moderately fractured, moderately weathered, very hard	
			55	7			40				
			62	8			45			Reddish gray CLINKER, highly weathered, medium hard	
			67	17			50			Reddish gray vesicular BASALT, severely fractured, moderately weathered, hard	
UC= 8580 psi							55			Gray vesicular BASALT, severely fractured, moderately weathered, very hard	
							60			6-inch cavity	
			100	27			65			Boring terminated at 60 feet	
							70			* Elevations estimated from Topographic Survey Map transmitted by PB Americas on February 18, 2010.	
Date Started: February 19, 2015											Water Level:
Date Completed: February 23, 2015											
Logged By: J. Turban											Drill Rig: CME-55D
Total Depth: 60 feet											Drilling Method: 4" Solid-Stem Auger & HQ Coring
Work Order: 5395-20(D)											Driving Energy: 140 lb. wt., 30 in. drop

BORING LOG EDIT: 5395-20(D) GEP, GEOLABS, EDIT: 7/25/15

		GEOLABS, INC.		AIEA STREAM BANK EROSION CONTROL REMEDIAL MEASURES AT AIEA SHOPPING CENTER AIEA, OAHU, HAWAII						Log of Boring	
		Geotechnical Engineering								102	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 59.6 *	
										Description	
UC=6.8 ksf	33 40	86			64 45	>4.5			SW MH	3-inch ASPHALTIC CONCRETE	
										Tannish gray GRAVELLY SAND, medium dense, dry (fill)	
	47 59				64	>4.5	5			Brown CLAYEY SILT with some fine sand, hard, damp (alluvium)	
	31				48		10		CH	Brown and gray CLAY with some gravel (basaltic) and boulders, hard, moist (alluvium)	
TXUU Su=3.7 ksf	24				50/0" Ref.		15			grades to very hard	
							20			Gray vesicular BASALT, moderately fractured, slightly weathered, very hard	
			57 20				25				
			38 27				30			grades to unweathered	
UC= 15910 psi			83 33				35			grades to closely fractured	
			85 13				40				
			47 0				45			Reddish gray CLINKER, highly weathered, medium hard	
			87 22				50			Gray massive BASALT, severely fractured, slightly weathered, hard	
UC= 15910 psi			73 30				55			grades to closely fractured, very hard	
			37 23				60			Reddish gray CLINKER, highly weathered, hard	
							65			Gray massive BASALT, closely fractured, slightly weathered, very hard	
							70			Boring terminated at 60 feet	
Date Started: February 24, 2015											Water Level:
Date Completed: February 26, 2015											
Logged By: J. Turban											Drill Rig: DIEDRICH D-25
Total Depth: 60 feet											Drilling Method: 4" Solid-Stem Auger & HQ Coring
Work Order: 5395-20(D)											Driving Energy: 140 lb. wt., 30 in. drop

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HIE-01-11MR	2013	C.O. 49S-1	49



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

GEOLABS, INC.
LICENSE EXPIRES 4-30-16

10/14/15	Added New Sheet
Date	Revision
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS	
INTERSTATE ROUTE H-1 AIEA STREAM EROSION CONTROL Project No. HIE-01-11MR	
Scale: None	Date: October 2012

SHEET No. BL-4A OF 4 SHEETS

C.O. 49S-1