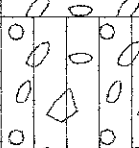
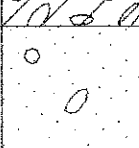
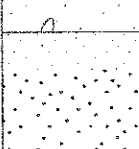
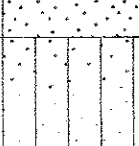
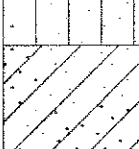
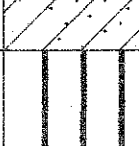
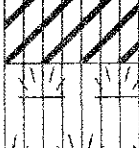
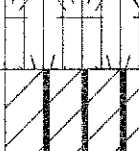
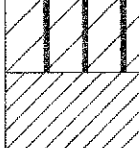
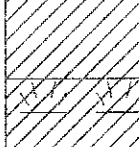
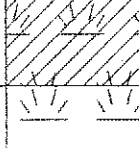


Boring Log Legend

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	
		MORE THAN 12% FINES		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	
	SANDS	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	
MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE	50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES	
		MORE THAN 12% FINES		SC	CLAYEY SANDS, SAND-CLAY MIXTURES	
FINE-GRAINED SOILS	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	
	50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE	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

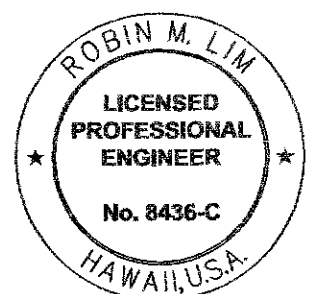
LEGEND

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

GEOTECHNICAL NOTES

- A geotechnical engineering report entitled "Kamehameha Highway (Route 83), Kokololio Stream Bridge Replacement, Koolauloa, Oahu, Hawaii" dated July 25, 2003 has been prepared by Geolabs, Inc. A copy of the report will be supplied to the Contractor by the State and is also on file at the office of the Engineer for review by the Contractor.
- For boring locations, see Sheet C-40.
- 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.

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	



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OR UNDER MY SUPERVISION.
Robin M. Lim
4/30/2014
EXP. DATE
GEOLABS, INC.

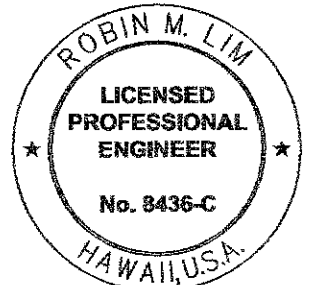
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
BORING LOG - 1
KAMEHAMEHA HIGHWAY
REPLACEMENT OF KOKOLOLIO STREAM BRIDGE
Federal Aid Project No. BR-083-1(50)
Scale: As Noted Date: August 2004

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	BR-083-1(50)	2005	46	81

GEOLABS, INC. Geotechnical Engineering								KAMEHAMEHA HIGHWAY (ROUTE 83) KOKOLOLIO STREAM BRIDGE REPLACEMENT KOOLAULOA, 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): 13 *		
										Description		
	5				32				GW	9-inch ASPHALTIC CONCRETE		
	4	89			37				SP	BASE COURSE		
	5				13		5		SP	Tan GRAVELLY SAND, medium dense, damp (fill)		
										Tannish white SAND, medium dense, damp (beach sand)		
	19				47 / 5' +25 / 1'		10		SP	grades with coral gravel Tannish white SAND with some coralline gravel, dense (beach sand)		
	22				57		15					
	22				18		20		GW-GM	Tannish white SANDY CORALLINE GRAVEL with silt medium dense (coralline detritus)		
										Boring terminated at 21.5 feet		
										* Elevations estimated from Topographic Survey Map transmitted by Mitsunaga & Associates, Inc. on April 5, 2002.		

GEOLABS, INC. Geotechnical Engineering		KAMEHAMEHA HIGHWAY (ROUTE 83) KOKOLOLIO STREAM BRIDGE REPLACEMENT KOOLAULOA, 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	(Continued from previous plate) Description
			100	90			55			grades to moderately weathered, medium hard to hard
			100	87			60			Brownish gray vesicular BASALT, moderately fractured, slightly to moderately weathered, medium hard to hard (basalt formation)
			100	95			65			Gray vugular BASALT, slightly fractured, slightly weathered, hard (basalt formation)
			98	95			70			
			100	80			75			Brownish gray BASALT, moderately fractured, slightly to moderately weathered, hard
			100	100			80			grades to massive, unweathered, very hard
							80			Boring terminated at 80 feet
							85			
							90			
							95			
							100			
Date Started: April 1, 2002							Water Level: 9 ft. 4/1/02 1120 HRS			
Date Completed: April 1, 2002							11.3 ft. 4/1/02 1411 HRS			
Logged By: S. Latronic							Drill Rig: DIEDRICH D-25			
Total Depth: 80 feet							Drilling Method: 4" Auger & 4" Casing			
Work Order: 4863-00							Driving Energy: 140 lb. wt., 30 in. drop			

GEOLABS, INC. Geotechnical Engineering				KAMEHAMEHA HIGHWAY (ROUTE 83) KOKOLOLIO STREAM BRIDGE REPLACEMENT KOOLAULOA, 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): 11 *
										Description
LL=59 PI=34	19	87			13		0		CH	Brown SILTY CLAY with sand and gravel, stiff, moist (fill)
	17	82			8		5			grades to medium stiff
	73	54			2		10			grades to very soft, wet
									MH	Dark gray CLAYEY SILT with sand, very soft (alluvium)
49					6		15		SP-SM	Grayish white GRAVELLY SAND with silt, loose to medium dense (coralline detritus)
					4		20		MH-OH	Dark gray CLAYEY SILT with organics and gravel, very soft (alluvium)
			83				25			Gray BOULDERS, COBBLES AND GRAVEL with sand and silt, dense (alluvium)
			45				30			Brownish gray BASALT, severely fractured, extremely weathered, soft (saprolite)
33			76	19	63		35			Brownish gray vesicular BASALT, moderately fractured, highly weathered, soft to medium hard (saprolite)
64			79	57	19		40			Brownish gray vesicular BASALT, moderately fractured, highly weathered, soft to medium hard (saprolite)
			60	20			45			
58					31		50			
			67	50						
							55			
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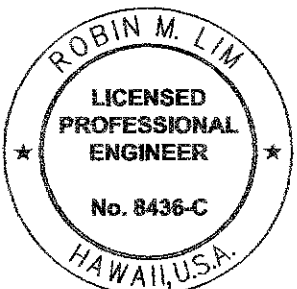
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4/30/2014
EXP. DATE

GEOLABS, INC. Geotechnical Engineering		KAMEHAMEHA HIGHWAY (ROUTE 83) KOKOLOLIO STREAM BRIDGE REPLACEMENT KOOLAULO, OAHU, HAWAII				Log of Boring 4				
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate) Description
	58				43					
		95	81							Gray vesicular BASALT, slightly fractured, slightly weathered, hard (basalt formation)
		100	45				55			
										Brownish gray vesicular BASALT, moderately fractured, moderately weathered, medium hard (basalt formation)
		88	77				60			CLINKER
										Gray vugular BASALT, slightly fractured, slightly weathered, very hard (basalt formation)
		100	90				65			
		100	73				70			
		100	67				75			Brownish gray vesicular BASALT, moderately fractured, slightly to moderately weathered, medium hard (basalt formation)
							80			Boring terminated at 80.5 feet
							85			
							90			
							95			
							100			
Date Started: March 21, 2002							Water Level: 10.5 ft. 3/21/02 0925 HRS			
Date Completed: March 21, 2002										
Logged By: S. Latronic							Drill Rig: CME-55			
Total Depth: 80.5 feet							Drilling Method: 4" Auger & 4" Casing			
Work Order: 4863-00							Driving Energy: 140 lb. wt., 30 in. drop			

G		GEOLABS, INC. Geotechnical Engineering				KAMEHAMEHA HIGHWAY (ROUTE 83) KOKOLOLIO STREAM BRIDGE REPLACEMENT KOOLAULO, OAHU, HAWAII				Log of Boring 5	
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): 13 *	
										Description	
										10-inch ASPHALTIC CONCRETE	
									GW	BASE COURSE	
	39	62			12	1.5			CH	Brown SILTY CLAY, stiff, moist (fill)	
	52	59			6	0.5	5			grades to medium stiff	
	37	79			3		10		MH	Dark gray CLAYEY SILT with sand, gravel and cobbles, very soft, wet (alluvium)	
										BOULDER	
	31				7		15		SP-SM	Tannish white GRAVELLY SAND with silt, loose (coralline detritus)	
	39				6		20		GM	Grayish white SILTY GRAVEL AND SAND, loose (coralline detritus)	
									SM-ML	Dark grayish brown SILTY SAND with gravel, loose, interbedded with gray organic silt, soft (alluvium)	
	59	62			6		25				
										Gray BOULDERS, COBBLES AND GRAVEL with sand and silt, dense	
	8		27		52		30			Gray BOULDERS, COBBLES AND GRAVEL with sand and silt, dense	
										Brownish gray BASALT, severely fractured, extremely weathered, soft (saprolite)	
	28		27		74		35				
	77		90		11		40				
	69		45	10	16		45				
							50				
Date Started: March 28, 2002								Water Level: 14.1 ft. 3/28/02 0940 HRS			
Date Completed: March 28, 2002											
Logged By: S. Latronic								Drill Rig: CME-55			
Total Depth: 80.5 feet								Drilling Method: 4" Auger & 4" Casing			
Work Order: 4863-00								Driving Energy: 140 lb. wt., 30 in. drop			



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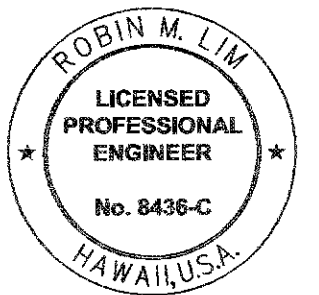
4/30/2014
EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
BORING LOG - 5
KAMEHAMEHA HIGHWAY
REPLACEMENT OF KOKOLOLIO STREAM BRIDGE
Federal Aid Project No. BR-083-1(50)
Scale: As Noted Date: August 2004

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	BR-083-1(50)	2005	50	81

GEOLABS, INC. Geotechnical Engineering		KAMEHAMEHA HIGHWAY (ROUTE 83) KOKOLOLIO STREAM BRIDGE REPLACEMENT KOOLAULO, OAHU, HAWAII						Log of Boring 5		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate) Description
	63				64					
			67	36						Gray vesicular BASALT, moderately fractured, moderately weathered, medium hard (basalt formation)
			100	100			55			
										Gray vugular BASALT, moderately to slightly fractured, slightly weathered, hard (basalt formation)
			85	40			60			CLINKER
			100	90			65			Gray vugular BASALT, slightly fractured, slightly weathered, hard (basalt formation)
			100	85			70			Brownish gray vesicular BASALT, moderately fractured, moderately weathered, medium hard (basalt formation)
										Gray vugular BASALT, moderately to slightly fractured, slightly to moderately weathered, hard (basalt formation)
			95	70			75			
							80			Brown gray vesicular BASALT, moderately fractured, moderately to highly weathered, medium hard (basalt formation)
										Boring terminated at 80.5 feet
							85			
							90			
							95			
							100			
Date Started: March 28, 2002							Water Level: 14.1 ft. 3/28/02 0940 HRS			
Date Completed: March 28, 2002							Drill Rig: CME-55			
Logged By: S. Lafronic							Drilling Method: 4" Auger & 4" Casing			
Total Depth: 80.5 feet							Driving Energy: 140 lb. wt., 30 in. drop			
Work Order: 4863-00										

GEOLABS, INC. Geotechnical Engineering				KAMEHAMEHA HIGHWAY (ROUTE 83) KOKOLOLIO STREAM BRIDGE REPLACEMENT KOOLAULO, OAHU, HAWAII				Log of Boring 6		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	USCS	Approximate Ground Surface Elevation: Description
	30				27				GW	10-inch ASPHALTIC CONCRETE
	5	95			32				SP	BASE COURSE
	6				12		5		SP	Tan SAND with traces of gravel, medium dense, damp (fill)
										Tannish white SAND, medium dense, damp (beach sand)
	19				48		10		SP	Tannish white SAND with traces of silt and coralline gravel, dense (beach sand)
	21				39		15		GM-GW	Tannish white SILTY CORALLINE SAND with gravel, medium dense (coralline detritus)
	39				4		20		GM	Tan SILTY CORALLINE GRAVEL, loose (coralline detritus)
										Boring terminated at 21.5 feet
							25			
							30			
							35			
							40			
							45			
							50			
Date Started: March 27, 2002							Water Level: 10.7 ft. 3/27/02 1150 HRS			
Date Completed: March 27, 2002							10.7 ft. 3/27/02 HRS			
Logged By: S. Lafronic							Drill Rig: CME-55			
Total Depth: 21.5 feet							Drilling Method: 4" Auger			
Work Order: 4863-00							Driving Energy: 140 lb. wt., 30 in. drop			



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GEOLABS, INC. 4/30/2014
EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG - 6

KAMEHAMEHA HIGHWAY
REPLACEMENT OF KOKOLOLIO STREAM BRIDGE
Federal Aid Project No. BR-083-1(50)
Scale: As Noted Date: August 2004

SHEET No. C-48 OF 51 SHEETS

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	BR-083-1(50)	2005	5/	81

 GEOLABS, INC. Geotechnical Engineering KAMEHAMEHA HIGHWAY (ROUTE 83) KOKOLOLIO STREAM BRIDGE REPLACEMENT KOOLAULO, OAHU, HAWAII Log of Boring 7										
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): 12 *
	8	90			44					Description 11-inch ASPHALTIC CONCRETE BASE COURSE Tan SAND with gravel, medium dense, damp (fill) Tannish white SAND, medium dense, damp (beach sand)
	4				22			SP		
	4				12		5			
	9				30/.3'		10			Tannish white CORAL, moderately fractured, slightly weathered, medium hard to hard (coral formation)
	20				50/.4'		15			
	25				15		20	SW-SM		Tannish white SILTY CORALLINE SAND AND GRAVEL, medium dense (coralline)
										Boring terminated at 21.5 feet
							25			
							30			
							35			
							40			
							45			
							50			

Date Started: March 27, 2002

Date Completed: March 27, 2002

Logged By: S. Latronic

Total Depth: 21.5 feet

Work Order: 4863-00

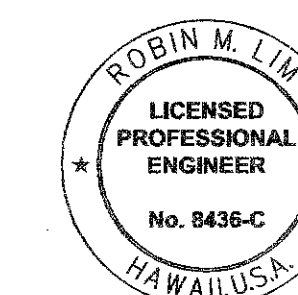
Water Level: 10.3 ft. 3/27/02 1345 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger

Driving Energy: 140 lb. wt., 30 in. drop

ORIGINAL PLAN	SURVEY PLOTTED BY _____ DATE _____
NOTE BOOK	DRAWN BY _____
	TRACED BY _____
	DESIGNED BY _____
	QUANTITIES BY _____
No. _____	CHECKED BY _____



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

Michael S. S.

4/30/2000

GEOLABS, INC. EXP. D

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG - 7

KAMEHAMEHA HIGHWAY
REPLACEMENT OF KOKOLOLIO STREAM BRIDGE
Federal Aid Project No. BR-083-1(50)

Scale: As Noted Date: August 2004

SHEET No. **C-49** OF **51** SHEETS