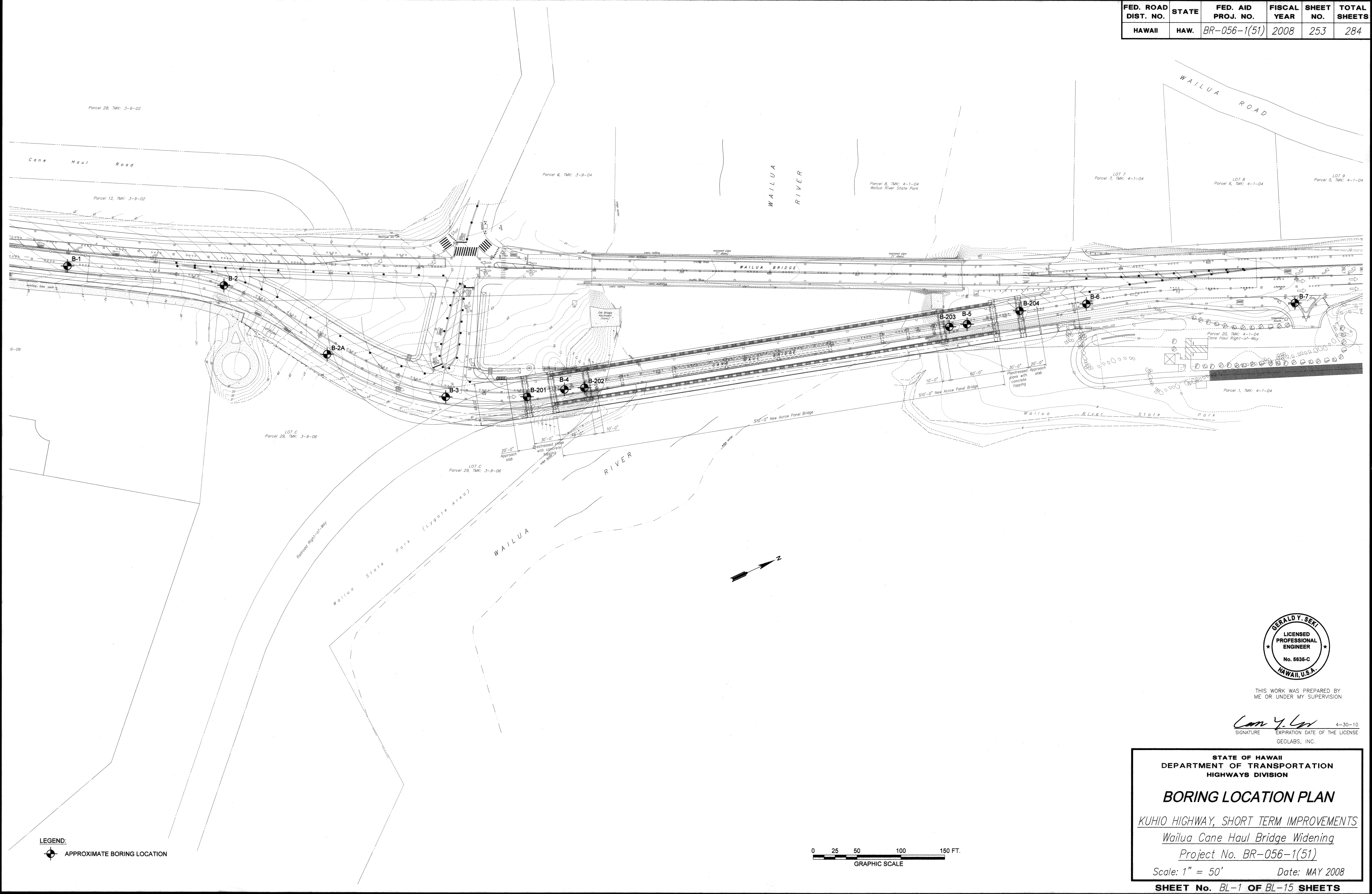


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	253	284



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

LEGEND:
● APPROXIMATE BORING LOCATION



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION

Gerald Y. Seki 4-30-10
SIGNATURE EXPIRATION DATE OF THE LICENSE
GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN


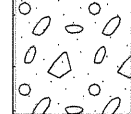


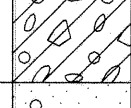
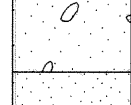
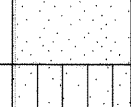
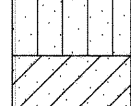
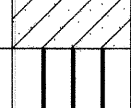
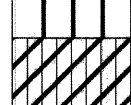




KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS

Wailua Cane Haul Bridge Widening

Project No. BR-056-1(51)

Scale: 1" = 50' Date: MAY 2008

SHEET No. BL-1 OF BL-15 SHEETS

		GEOLABS, INC.	Log Legend		
		Geotechnical Engineering			
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	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
		SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT 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
	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







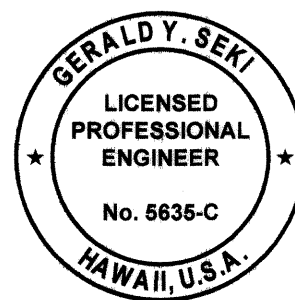
	(2-INCH) O.D. STANDARD PENETRATION TEST	LL	LIQUID LIMIT
	(3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE	PI	PLASTICITY INDEX
	SHELBY TUBE SAMPLE	TV	TORVANE SHEAR (tsf)
	GRAB SAMPLE	PEN	POCKET PENETROMETER (tsf)
	CORE SAMPLE	UC	UNCONFINED COMPRESSION (psi)
		▽	WATER LEVEL OBSERVED IN BORING

Plate A

GEOTECHNICAL NOTES

- A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Kuhio Highway Widening, Vicinity of Leho Drive to Kuamoo Road, Lydgate to Kapaa Bike/Pedestrian Path, Project No. CMAQ-0700(49), Kapaa, Kauai, Hawaii" dated May 12, 2008 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 253.
- 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

Gerald Y. Sen 4-30-10
SIGNATURE EXPIRATION DATE OF THE LICENSE
GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG LEGENDS & NOTES

KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS


Wailua Cane Haul Bridge Widening


Project No. BR-056-1(51)

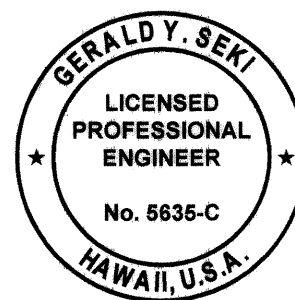
Scale: Date: MAY 2008

SHEET No. BL-2 OF BL-15 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	255	284

	GEOLABS, INC. Geotechnical Engineering	KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII	Log of Boring 1																																																																																																																													
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ME OR UNDER MY SUPERVISION

Gerald Y. Sen
SIGNATURE EXPIRATION DATE OF THE LICENSE
GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION


BORING LOGS - 1


KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS
Wailua Cane Haul Bridge Widening
Project No. BR-056-1(51)

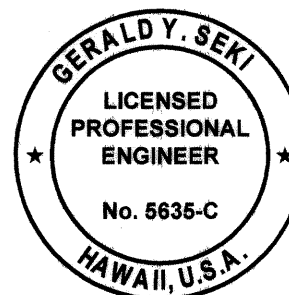
Scale: None Date: MAY 2008

SHEET No. BL-3 OF BL-15 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	256	284

		GEOLABS, INC. Geotechnical Engineering		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII				Log of Boring 2A		
Laboratory		Field				Approximate Ground Surface Elevation (feet MSL): 27 *				
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	USCS	Description
	6	105			42				GW	6-inch ASPHALTIC CONCRETE
	29				35	>4.5			CH	Orangish tan and white SILTY GRAVEL (CORALLINE) with sand, dense, damp (fill)
	11				18/2' Ref.		5		GP	Brown SILTY CLAY, very stiff to hard, moist (fill)
										Light gray and brown vesicular BOULDERS AND COBBLES (BASALTIC), very dense, damp (fill)
										Boring terminated at 5.2 feet
BORING LOG 5625-00(C) GPJ GEOLABS GDT 12/13/06										
Date Started: October 25, 2006		Water Level: <input checked="" type="checkbox"/> Not Encountered				Plate A - 3				
Date Completed: October 25, 2006										
Logged By: D. Sjolund		Drill Rig: CME-55								
Total Depth: 5.2 feet		Drilling Method: 4" Solid-Stem Auger								
Work Order: 5625-00		Driving Energy: 140 lb. wt., 30 in. drop								

		GEOLABS, INC. Geotechnical Engineering		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII				Log of Boring 3		
Laboratory		Field				Approximate Ground Surface Elevation (feet MSL): 19.5 *				
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	USCS	Description
	7				55				SW	6-inch ASPHALTIC CONCRETE
	36	75			16	3.0			CH	Orangish tan and white SILTY SAND (CORALLINE) with gravel, very dense, damp (fill)
	34				29	>4.5	5			Reddish brown SILTY CLAY with traces of sand, stiff, moist (residual soil)
										grades to very stiff
										Boring terminated at 6.5 feet
BORING LOG 5625-00(C) GPJ GEOLABS GDT 12/13/06										
Date Started: October 25, 2006		Water Level: <input checked="" type="checkbox"/> Not Encountered				Plate A - 4				
Date Completed: October 26, 2006										
Logged By: D. Sjolund		Drill Rig: CME-55								
Total Depth: 6.5 feet		Drilling Method: 4" Solid-Stem Auger								
Work Order: 5625-00		Driving Energy: 140 lb. wt., 30 in. drop								



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS - 2

KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS
Wailua Cane Haul Bridge Widening
Project No. BR-056-1(51)



Scale: None Date: MAY 2008

SHEET No. BL-4 OF BL-15 SHEETS




Carol Y. Lee 4-30-10
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SHEET No. BL-5 OF BL-15 SHEETS

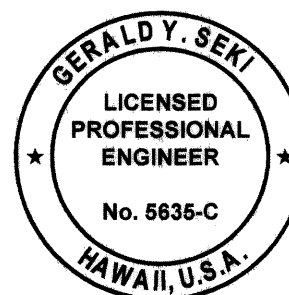
		GEOLABS, INC. Geotechnical Engineering		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII			Log of Boring <div>4</div>			
Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS
	12		20	0						
			59	29	18/2' Ref.		40			
			43	13			45			
							50			
							55			
							60			
							65			
							70			
(Continued from previous plate)										
										Description
										grades to severely fractured
										Brownish gray vesicular BASALT, closely to severely fractured, moderately weathered, hard (basalt formation)
										Boring terminated at 50 feet
Date Started: October 23, 2006		Water Level:  18.5 ft. 10/24/06 1538 HRS		Plate <div>A - 5.2</div>						
Date Completed: October 24, 2006										
Logged By: D. Sjolund		Drill Rig: CME-55								
Total Depth: 50 feet		Drilling Method: 4" Solid-Stem Auger & HQ Coring								
Work Order: 5625-00		Driving Energy: 140 lb. wt., 30 in. drop								

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	258	284

		GEOLABS, INC.		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII										Log of Boring 5	
Laboratory		Field										Approximate Ground Surface Elevation (feet MSL): 19 *			
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description				
UC=13000	16		38	10	26					GW	10-inch ASPHALTIC CONCRETE				
										GW	Brown and gray SILTY GRAVEL (BASALTIC) with sand, dense, damp (fill)				
							5				Orangish tan and white SILTY GRAVEL (CORALLINE) with sand, medium dense, damp (fill)				
							10				Light gray slightly vesicular BOULDERS AND COBBLES (BASALTIC), slightly to moderately weathered, hard (fill)				
							15			SP	Tan SAND with traces of shell fragments, medium dense (beach deposit)				
	23		0		19		20				grades with grayish mottling				
	20		0		13		25				grades with grayish mottling				
	28	91	0		32		30				grades with grayish mottling				
							35			SM	Gray SILTY FINE SAND with traces of organic material, loose (lagoonal deposit)				
Date Started: October 24, 2006		Date Completed: October 27, 2006		Water Level: 15.8 ft. 10/25/06 1550 HRS		Drill Rig: CME-55		Drilling Method: 4" Solid-Stem Auger & PQ Coring		Driving Energy: 140 lb. wt., 30 in. drop		Plate A - 6.1			

		GEOLABS, INC.		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII										Log of Boring 5	
Laboratory		Field										(Continued from previous plate)			
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description				
LL=39 PI=4	36		0		8					SM	Gray fine SANDY SILT, medium stiff (lagoonal deposit)				
	49	65	0		6	<0.3	40			ML	Gray fine SANDY SILT, medium stiff (lagoonal deposit)				
	56		0		7	0.5	45				grades with traces of gravel (coralline) and organic material				
							50				grades with traces of gravel (coralline) and organic material				
							55			SM	Light gray SILTY SAND with traces of gravel (coralline), medium dense (lagoonal deposit)				
UU=1.5 KSF	28	71	0		6		60				grades to very dense				
	50		0		27		65			ML	Light gray fine SANDY SILT with traces of gravel (coralline), soft (lagoonal deposit)				
	29	88	0		50/5' Ref.		70				grades to very dense				
	44		0		4	0.3					grades to very dense				
Date Started: October 24, 2006		Date Completed: October 27, 2006		Water Level: 15.8 ft. 10/25/06 1550 HRS		Drill Rig: CME-55		Drilling Method: 4" Solid-Stem Auger & PQ Coring		Driving Energy: 140 lb. wt., 30 in. drop		Plate A - 6.2			



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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION


BORING LOGS - 4

KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS
Wailua Cane Haul Bridge Widening
Project No. BR-056-1(51)

Scale: None Date: MAY 2008

SHEET No. BL-6 OF BL-15 SHEETS


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	259	284

	GEOLABS, INC. Geotechnical Engineering	KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII	Log of Boring 5

Laboratory				Field			Depth (feet)	Sample	Graphic	USCS	Description
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					
	69	63	0		8	0.5	75			ML	grades to medium stiff
	55		0		4	<0.3	80				grades to soft
	53	68	0		11	0.8	85			ML-MH	Brownish gray CLAYEY SILT, soft (lagoonal deposit)
	54		0		4	0.3	90				grades to stiff
	59	67	0		11	0.8	95				grades to medium stiff
	67		0		6	0.5	100				grades to stiff
	68	59	0		12	0.5	105			MH	

Date Started: October 24, 2006		Water Level: 15.8 ft. 10/25/06 1550 HRS	Plate
Date Completed: October 27, 2006			
Logged By: D. Sjolund	Drill Rig: CME-55		
Total Depth: 142.5 feet	Drilling Method: 4" Solid-Stem Auger & PQ Coring		
Work Order: 5625-00	Driving Energy: 140 lb. wt., 30 in. drop		

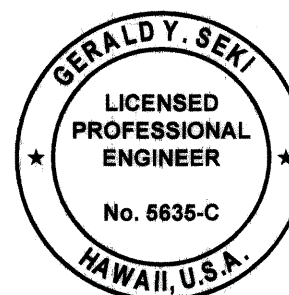
A - 6.3

	GEOLABS, INC. Geotechnical Engineering	KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII	Log of Boring 5

Laboratory				Field			Depth (feet)	Sample	Graphic	USCS	Description
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					
	60		0		5	0.5	110			MH	Brownish gray CLAYEY SILT, soft (lagoonal deposit)
UU= 1.8 KSF	48	70	0		14	0.5	115				grades to medium stiff
LL=61 PI=29	63		0		8	0.8	120				grades to soft
	54	66	0		10	0.5	125				grades to medium stiff
	79		0		21	0.8	130				
	77	52	0		28	1.0	135				
	66		0		25	0.8	140				

Date Started: October 24, 2006		Water Level: 15.8 ft. 10/25/06 1550 HRS	Plate
Date Completed: October 27, 2006			
Logged By: D. Sjolund	Drill Rig: CME-55		
Total Depth: 142.5 feet	Drilling Method: 4" Solid-Stem Auger & PQ Coring		
Work Order: 5625-00	Driving Energy: 140 lb. wt., 30 in. drop		

A - 6.4



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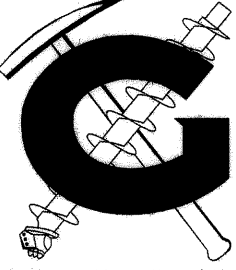
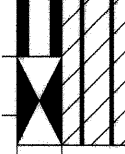

BORING LOGS - 5

KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS
Wailua Cane Haul Bridge Widening
Project No. BR-056-1(51)

Scale: None Date: MAY 2008

SHEET No. BL-7 OF BL-15 SHEETS

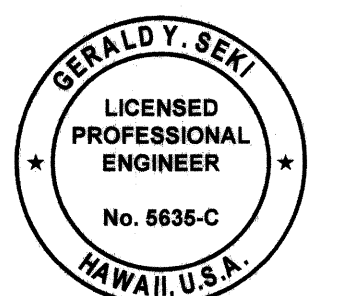
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	260	284

	GEOLABS, INC. Geotechnical Engineering		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII		Log of Boring <div>5</div>						
	Laboratory		Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) <div>Description</div>
	79	51			23	1.0	<div>142.5</div> <div>145</div> <div>150</div> <div>155</div> <div>160</div> <div>165</div> <div>170</div> <div>175</div>			MH	
Boring terminated at 142.5 feet											
Date Started: October 24, 2006		Date Completed: October 27, 2006		Water Level:  15.8 ft. 10/25/06 1550 HRS				Plate <div>A - 6.5</div>			
Logged By: D. Sjolund				Drill Rig: CME-55							
Total Depth: 142.5 feet				Drilling Method: 4" Solid-Stem Auger & PQ Coring							
Work Order: 5625-00				Driving Energy: 140 lb. wt., 30 in. drop							

BORING LOG 5625-00(C) GPJ GEOLABS GDT 12/13/06

	GEOLABS, INC.							KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII								Log of Boring 6			
	Geotechnical Engineering																		
	Laboratory			Field														Approximate Ground Surface Elevation (feet MSL): 16 *	
	Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description							
		31				25					GW	4-inch ASPHALTIC CONCRETE							
		35	72			13	2.5				CH	Tan and white SILTY GRAVEL (CORALLINE) with sand, dense, damp (fill)							
	34				7	1.5	5				Reddish brown SILTY CLAY with traces of sand, stiff, moist (fill)								
												grades to medium stiff							
												Boring terminated at 6.5 feet							
							10												
							15												
							20												
Date Started: October 26, 2006							Water Level: Not Encountered					Plate A - 7							
Date Completed: October 26, 2006																			
Logged By: D. Sjolund							Drill Rig: CME-55												
Total Depth: 6.5 feet							Drilling Method: 4" Solid-Stem Auger												
Work Order: 5625-00							Driving Energy: 140 lb. wt., 30 in. drop												

BORING LOG 5625-00(C).GPJ GEOLABS.GDT 12/13/06



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION


BORING LOGS - 6


KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS
Wailua Cane Haul Bridge Widening
Project No. BR-056-1(51)

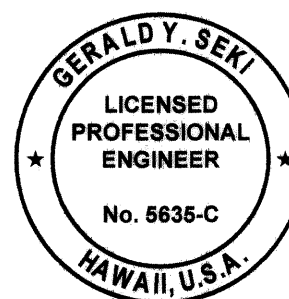
Scale: None Date: MAY 2008

SHEET No. BL-8 OF BL-15 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	261	284

		GEOLABS, INC.		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII		Log of Boring 7					
Laboratory		Field		Approximate Ground Surface Elevation (feet MSL): 13 *							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	4				37					GW	6-inch ASPHALTIC CONCRETE
	5	92			32					SP	Dark gray SILTY GRAVEL (BASALTIC) with sand, dense, damp (fill)
	7				10						Tan SAND, medium dense, damp (beach deposit)
Boring terminated at 6.5 feet											
Date Started: October 26, 2006		Date Completed: October 26, 2006		Water Level: <input checked="" type="checkbox"/> Not Encountered		Plate					
Logged By: D. Sjolund		Drill Rig: CME-55				A - 8					
Total Depth: 6.5 feet		Drilling Method: 4" Solid-Stem Auger									
Work Order: 5625-00		Driving Energy: 140 lb. wt., 30 in. drop									

		GEOLABS, INC.		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII		Log of Boring 201					
Laboratory		Field		Approximate Ground Surface Elevation (feet MSL): 18.5 *							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
UC=14800	21		57		50/.4' Ref.					SW	7-inch ASPHALTIC CONCRETE
			40							MH	Tan GRAVELLY SAND, dense, damp (fill)
			40								Brown CLAYEY SILT, very stiff, damp (fill)
			40								Gray BOULDER AND COBBLES (BASALTIC), slightly weathered, very hard (fill)
			78	0							grades with brown clayey silt
			35	0						MH	Brown CLAYEY SILT with highly weathered gravel, very stiff, moist (residual soil)
			69	23	16/.5' +20/.0' Ref.						Brownish gray BASALT, severely fractured, moderately weathered, medium hard to hard (basalt formation)
			85	23						SC/GC	Grayish brown CLAYEY SAND AND GRAVEL, medium dense (weathered clinker)
											Gray vugular BASALT, closely fractured, moderately weathered, hard (basalt formation)
Date Started: December 3, 2007		Date Completed: December 4, 2007		Water Level: <input checked="" type="checkbox"/> 16.6 ft. 12/4/07 0205 HRS		Plate					
Logged By: S. Latronic		Drill Rig: CME-55				A - 9.1					
Total Depth: 50.5 feet		Drilling Method: 4" Auger & HQ Coring									
Work Order: 5625-10		Driving Energy: 140 lb. wt., 30 in. drop									



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HIGHWAYS DIVISION


BORING LOGS - 7

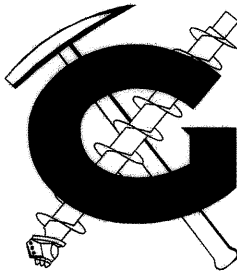

KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS
Wailua Cane Haul Bridge Widening
Project No. BR-056-1(51)

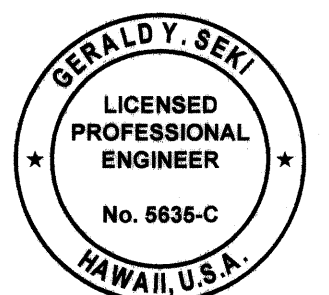
Scale: None Date: MAY 2008

SHEET No. BL-9 OF BL-15 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	262	284

	GEOLABS, INC. Geotechnical Engineering		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII		Log of Boring <div style="font-size: 2em; font-weight: bold;">201</div>						
Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate) <div style="font-size: 1.5em; font-weight: bold;">Description</div>
UC=1600			58	7							
			87	17			40				grades to hard locally
			45	15			45				
							50				Boring terminated at 50.5 feet * Elevations estimated from Site Plan transmitted by ParEn, Inc. DBA Park Engineering on 11/9/06.
							55				
							60				
							65				
							70				

		GEOLABS, INC. Geotechnical Engineering		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII				Log of Boring <div>202</div>			
Laboratory			Field				Approximate Ground Surface Elevation (feet MSL): 19.5 *				
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	USCS	Description	
UC=11000	24						0			13-inch ASPHALTIC CONCRETE	
									SW	Tan GRAVELLY SAND, dense, damp (fill)	
				42				5			Gray BOULDERS AND COBBLES (BASALTIC) with traces of clayey silt, slightly weathered, very hard (fill)
				55							
				42				10			grades with some voids
				48				15			grades with tan sand
				32	0			20			
				0	0			25			Grayish brown BASALT, severely fractured, highly weathered, soft (highly weathered basalt)
				75	0			30			Brownish gray vesicular BASALT, severely fractured, moderately weathered, medium hard (basalt formation)
								35			
Date Started: December 4, 2007 Date Completed: December 6, 2007		Water Level:  16.7 ft. 12/6/07 0105 HRS							Plate <div>A - 10.1</div>		
Logged By: S. Latronic		Drill Rig: CME-55									
Total Depth: 50.8 feet		Drilling Method: 4" Auger & HQ Coring									
Work Order: 5625-10		Driving Energy: 140 lb. wt., 30 in. drop									



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Cam Y. Lee 4-30-10
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION



BORING LOGS - 8

KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS
Wailua Cane Haul Bridge Widening
 Project No. BR-056-1(51)

Scale: None Date: MAY 2008

SHEET No. BL-10 OF BL-15 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	263	284

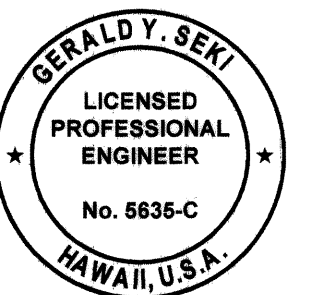
		GEOLABS, INC. Geotechnical Engineering		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII				Log of Boring <div>202</div>		
Laboratory			Field				Depth (feet)	Sample Graphic	USCS	Description
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)				
			63	0						
			15	0			40			
	66				14		45			Brown BASALT, severely fractured, highly weathered, soft (basalt formation)
	23		25	11			50			Brownish gray BASALT, closely fractured, moderately weathered, hard (basalt formation)
					50/3' Ref.					Boring terminated at 50.8 feet
							55			
							60			
							65			
							70			
Date Started: December 4, 2007 Date Completed: December 6, 2007 Logged By: S. Latronic Total Depth: 50.8 feet Work Order: 5625-10			Water Level:  16.7 ft. 12/6/07 0105 HRS Drill Rig: CME-55 Drilling Method: 4" Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop							Plate <div>A - 10.2</div>

	GEOLABS, INC.	KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII	Log of Boring 203
	Geotechnical Engineering		

Laboratory				Field								Approximate Ground Surface Elevation (feet MSL): 19 *	
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description		
UC=8500	18		58				0			SM	11-inch ASPHALTIC CONCRETE		
			67				5				Tan SILTY SAND with gravel, dense, damp (fill)		
			47				10				Gray BOULDERS AND COBBLES (BASALTIC), slightly weathered, very hard (fill)		
			0				15			SP	Tan SAND, medium dense, moist to wet (beach deposit)		
							20						
							25						
	29			14		30			SP/ SM	Grayish white SILTY SAND, medium dense (lagoonal deposit)			
						35							

BORING LOG 5625-10.GPJ GEOLABS.GDT 44/08

Date Started:	December 10, 2007	Water Level: ▽ 18.7 ft. 12/11/07 2300 HRS	Plate A - 11.1
Date Completed:	December 11, 2007		
Logged By:	S. Latronic		
Total Depth:	132 feet		
Work Order:	5625-10	Drill Rig:	CME-55
		Drilling Method:	4" Auger, 4" Casing & PQ Coring
		Driving Energy:	140 lb. wt., 30 in. drop



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Conn Y. Lee 4-30-10
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS - 9

KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS
Wailua Cane Haul Bridge Widening
Project No. BR-056-1(51)

Scale: None Date: MAY 2008


SHEET No. *BL-11* OF *BL-15* SHEETS

	GEOLABS, INC. Geotechnical Engineering	KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII	Log of Boring 203

Laboratory				Field				Depth (feet)	Sample	Graphic	USCS	Description
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)						
	53				4			40			SP/SM	grades finer
								45			ML	grades with organics
												Dark gray SANDY SILT, soft (lagoonal deposit)
	48	68			12	0.5		50			SM	Dark gray SILTY FINE SAND with traces of coralline gravel, loose to medium dense (lagoonal deposit)
								55			ML	Gray fine SANDY SILT, soft to medium stiff (lagoonal deposit)
	34				49			60			SM	Light gray SILTY FINE SAND, dense (lagoonal deposit)
								65				
								70				

Date Started: December 10, 2007		Water Level: ∇ 18.7 ft. 12/11/07 2300 HRS	Plate A - 11.2
Date Completed: December 11, 2007			
Logged By: S. Latronic	Drill Rig: CME-55		
Total Depth: 132 feet	Drilling Method: 4" Auger, 4" Casing & PQ Coring		
Work Order: 5625-10	Driving Energy: 140 lb. wt., 30 in. drop		

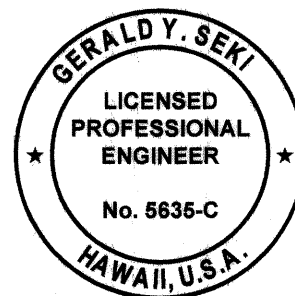
BORING LOG 5625-10.GPJ, GEOLABS.GDT 4/4/08

	GEOLABS, INC. Geotechnical Engineering	KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII	Log of Boring 203

Laboratory				Field				Depth (feet)	Sample	Graphic	USCS	Description
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)						
	56	68			12			75			SM	Gray SANDY SILT, medium stiff (lagoonal deposit)
								80				grades to stiff locally
UU=3.9 KSF	46	75			50-250 Psi			85			ML/MH	Dark gray SANDY TO CLAYEY SILT, medium stiff (lagoonal deposit)
	54				5			90				
								95				
	52	72			13	0.8		100			MH	Dark gray CLAYEY SILT, medium stiff to stiff (lagoonal deposit)
								105				

Date Started: December 10, 2007		Water Level: ∇ 18.7 ft. 12/11/07 2300 HRS	Plate A - 11.3
Date Completed: December 11, 2007			
Logged By: S. Latronic	Drill Rig: CME-55		
Total Depth: 132 feet	Drilling Method: 4" Auger, 4" Casing & PQ Coring		
Work Order: 5625-10	Driving Energy: 140 lb. wt., 30 in. drop		

BORING LOG 5625-10.GPJ, GEOLABS.GDT 4/4/08

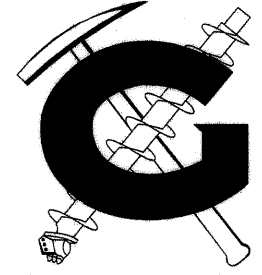







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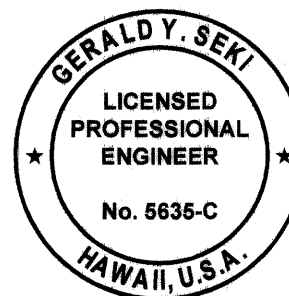
Gerald Y. Sen
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STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
BORING LOGS - 10
<i>KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS</i>
<i>Wailua Cane Haul Bridge Widening</i>
<i>Project No. BR-056-1(51)</i>
Scale: None Date: MAY 2008
SHEET No. BL-12 OF BL-15 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	265	284

	GEOLABS, INC.		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII		Log of Boring 203					
	Geotechnical Engineering									
Laboratory		Field		(Continued from previous plate)						
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)				RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	
UU=2.4 KSF	58	67			13	0.8	110		MH	
	61	62			18	1.0	120		MH	
Boring terminated at 132 feet										
Date Started: December 10, 2007		Date Completed: December 11, 2007		Water Level: ∇ 18.7 ft. 12/11/07 2300 HRS		Plate				
Logged By: S. Latronic		Drill Rig: CME-55				A - 11.4				
Total Depth: 132 feet		Drilling Method: 4" Auger, 4" Casing & PQ Coring								
Work Order: 5625-10		Driving Energy: 140 lb. wt., 30 in. drop								

	GEOLABS, INC.		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII		Log of Boring 204						
	Geotechnical Engineering										
Laboratory		Field		Approximate Ground Surface Elevation (feet MSL): 18 *							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					
UC=7500	19	8	100		48	24	5		SM	SM	
	20			61		15	25		ML		
Boring terminated at 132 feet											
Date Started: December 12, 2007		Date Completed: December 13, 2007		Water Level: ∇ 22.2 ft. 12/13/07 2400 HRS		Plate					
Logged By: S. Latronic		Drill Rig: CME-55				A - 12.1					
Total Depth: 127 feet		Drilling Method: 4" Auger, 4" Casing & PQ Coring									
Work Order: 5625-10		Driving Energy: 140 lb. wt., 30 in. drop									



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Gerald Y. Seki
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STATE OF HAWAII
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HIGHWAYS DIVISION

BORING LOGS - 11

KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS
Wailua Cane Haul Bridge Widening
Project No. BR-056-1(51)

Scale: None Date: MAY 2008


SHEET No. BL-13 OF BL-15 SHEETS











A circular professional engineer seal for Gerald Y. Seki. The outer ring contains the name "GERALD Y. SEKI" at the top and "HAWAII, U.S.A." at the bottom. The inner circle contains the text "LICENSED PROFESSIONAL ENGINEER" and "No. 5635-C". Two small stars are positioned on the left and right sides of the inner circle.

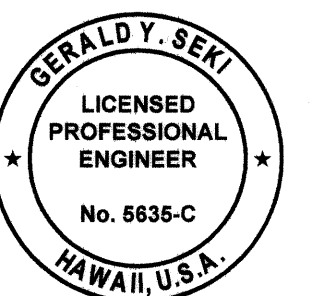
Carol Y. Lee 4-30-10
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SHEET No. BL-14 OF BL-15 SHEETS

	GEOLABS, INC. Geotechnical Engineering		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII		Log of Boring <div>204</div>						
Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
											Description
	46	105			50-400 Psi	0.8	75			ML	
	63	65			6	0.8	85			ML/MH	Dark gray CLAYEY SILT, soft to medium stiff (lagoonal deposit)
	82				5	0.8	95				
							100			MH	Dark gray CLAYEY SILT, stiff (lagoonal deposit)
							105				
Date Started: December 12, 2007 Date Completed: December 13, 2007 Logged By: S. Latronic Total Depth: 127 feet Work Order: 5625-10			Water Level: ∇ 22.2 ft. 12/13/07 2400 HRS Drill Rig: CME-55 Drilling Method: 4" Auger, 4" Casing & PQ Coring Driving Energy: 140 lb. wt., 30 in. drop			Plate <div>A - 12.3</div>					

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	BR-056-1(51)	2008	267	284

	GEOLABS, INC. Geotechnical Engineering		KUHIO HIGHWAY WIDENING VICINITY OF LEHO DRIVE TO KUAMOO ROAD LYDGATE TO KAPAA BIKE/PEDESTRIAN PATH PROJECT NO. CMAQ-0700(49) KAPAA, KAUAI, HAWAII		Log of Boring	204						
	Laboratory		Field									
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)	Description
UU=2.4 KSF	60	66			11	1.0	110			MH	grades with wood fibers	
	58	68			14	1.5	115				grades to very stiff	
	94	50			22	2.0	125			MH	Gray CLAYEY SILT, stiff to very stiff (lagoonal deposit)	
							127				Boring terminated at 127 feet	
							130					
							135					
							140					
Date Started: December 12, 2007			Water Level:  22.2 ft. 12/13/07 2400 HRS						Plate A - 12.4			
Date Completed: December 13, 2007												
Logged By: S. Latronic			Drill Rig: CME-55									
Total Depth: 127 feet			Drilling Method: 4" Auger, 4" Casing & PQ Coring									
Work Order: 5625-10			Driving Energy: 140 lb. wt., 30 in. drop									



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Carroll Y. Lee 4-30-10
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS - 13

KUHIO HIGHWAY, SHORT TERM IMPROVEMENTS
Wailua Cane Haul Bridge Widening
Project No. BR-056-1(51)

Scale: None Date: MAY 2008

SHEET No. BL-15 OF BL-15 SHEETS