GEOLABS, INC.

Geotechnical Engineering

INTERSTATE ROUTE H-1 GUARDRAIL
AND SHOULDER IMPROVEMENTS
KAPIOLANI INTERCHANGE TO AINAKOA AVENUE
HONOLULU, OAHU, HAWAII

Log of Boring

1

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS
							0			
	11	109			35/3"					GW
										GC
Sieve - #200 = 20.9%	8				28					
Direct Shear	9	121			29/6" +30/3"		5			
					20/3"		10			
							15			
							20			

Approximate Ground Surface Elevation (feet MSL): 58 *

Description

9-inch **CONCRETE**

Light gray **SANDY GRAVEL (BASALTIC)** with silt, dense, damp (base course)

Brownish gray **GRAVEL (BASALTIC)** with sand and clay and some cobbles (basaltic), medium dense, damp (fill)

Gray with brown mottling **COBBLES AND BOULDERS (BASALTIC)** with clayey sand, very dense, damp (fill)

Boring terminated at 10.25 feet

* Elevations estimated from Google Earth © 2013.

Date Started:	February 8, 2010	Water Level: ▽	Not Encountered
Date Completed:	February 8, 2010		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	10.25 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	6099-00	Driving Energy:	140 lb. wt.,30 in. drop

Plate

A - 1

BORING_LOG 6099-00.GPJ GEOLABS.GDT 7/19/16

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Log of Boring

2

Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet MSL): 87 *
											9-inch **CONCRETE**
	17	111			80					GW / SM	Gray **SANDY GRAVEL (BASALTIC)** with little silt, dense, damp (base course)
											Reddish brown with dark gray mottling medium to coarse **SILTY SAND** with some gravel (basaltic) and traces of clay, dense, damp (fill)
	33	90			36	3.0				CL-ML	Reddish brown with gray mottling **CLAYEY SILT** with fine sand, very stiff, damp (residual soil)
	8				18/3"		5			GP	Dark gray with orange mottling **GRAVEL (BASALTIC)** with silt, dense, dry to damp (weathered rock)
											Gray with orange mottling vesicular **BASALT**, closely fractured, highly weathered, very hard
					15/1"		10				Boring terminated at 10.1 feet
							15				
							20				

Date Started:	February 9, 2010	Water Level: ▽	Not Encountered	Plate
Date Completed:	February 9, 2010			
Logged By:	Y. Chiba	Drill Rig:	Mobile B-80 *(Energy Transfer Ratio = 44.9%)*	A - 2
Total Depth:	10.1 feet	Drilling Method:	4" Auger & HQ Coring	
Work Order:	6099-00	Driving Energy:	140 lb. wt.,30 in. drop	

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Log of Boring

3

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS
	20	95			23					GW
										SC
LL=NP PI=NP Sieve - #200 = 41.4%	22				9					
	22	76			13		5			
					15/1"		10			
							15			
							20			

Approximate Ground Surface Elevation (feet MSL): 108 *

Description

11-inch **CONCRETE**

Grayish brown **SANDY GRAVEL (BASALTIC)** with silt, dense, damp (base course)

Reddish brown with black mottling medium **CLAYEY SAND** with gravel (basaltic), medium dense, damp (fill)

Dark gray with red mottling **COBBLES (BASALTIC)** with sand and some silt, medium dense, damp (fill)

Boring terminated at 10.1 feet

Date Started:	February 8, 2010	Water Level: ▽	Not Encountered
Date Completed:	February 8, 2010		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	10.1 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	6099-00	Driving Energy:	140 lb. wt.,30 in. drop

Plate

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Log of Boring

4

Laboratory			Field						
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 144 * **Description**
											9-inch **CONCRETE**
	12	127			63	3.5				GW	Gray **SANDY GRAVEL (BASALTIC)** with some silt, dense, dry to damp (base course)
										CH	Reddish brown **CLAY** with gravel (basaltic), very stiff, damp (fill)
LL=70 PI=44	38				60/3"	3.5					
											Gray vesicular **BASALT**, moderately fractured, slightly weathered, very hard
UC= 11050 psi			90	90			5				
UC= 13620 psi											
							10				Boring terminated at 10 feet
							15				
							20				

Date Started:	February 9, 2010	Water Level: ▽	Not Encountered		Plate
Date Completed:	February 9, 2010				
Logged By:	Y. Chiba	Drill Rig:	Mobile B-80	*(Energy Transfer Ratio = 44.9%)*	A - 4
Total Depth:	10 feet	Drilling Method:	4" Auger & HQ Coring		
Work Order:	6099-00	Driving Energy:	140 lb. wt.,30 in. drop		

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Log of Boring

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Laboratory			Field						
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 181 * Description
											11-inch **CONCRETE**
	25	99			35/6" +15/1"	3.0				GW	Brownish gray **SANDY GRAVEL (BASALTIC)** with some silt, dense, damp (base course)
										CL	Reddish brown **SANDY CLAY** with silt, very stiff, damp (fill)
	9				40						grades with gravel and some cobbles (basaltic)
	9				41		5				
										CH	Dark reddish brown with gray mottling **SILTY CLAY** with sand and some gravel (coralline), very stiff, damp (fill)
	26	94			20/6" +15/3"	2.5	10				
											Boring terminated at 10.75 feet
							15				
							20				

Date Started:	February 9, 2010	Water Level: ▽	Not Encountered	Plate
Date Completed:	February 9, 2010			
Logged By:	Y. Chiba	Drill Rig:	Mobile B-80 *(Energy Transfer Ratio = 44.9%)*	A - 5
Total Depth:	10.75 feet	Drilling Method:	4" Auger & HQ Coring	
Work Order:	6099-00	Driving Energy:	140 lb. wt.,30 in. drop	

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Log of Boring

6

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS

Approximate Ground Surface Elevation (feet MSL): 203 *

Description

Moisture Content (%)	Dry Density (pcf)	Penetration Resistance (blows/foot)	USCS	Description
				12-inch **CONCRETE**
23	83	25/1"	GW	Grayish brown **SANDY GRAVEL (BASALTIC)** with some silt, dense, damp (base course)
			CL	Reddish brown **SANDY CLAY** with gravel (basaltic), medium stiff, damp (fill)
6		15/6" +10/0" Ref.	GP	Dark brownish gray **GRAVEL (BASALTIC)** with some sand, dense, damp to dry (weathered rock)
8		20/3"		Dark gray with orange mottling scoriaceous **BASALT**, closely fractured, highly weathered, medium hard to hard
3		15/1"		Boring terminated at 10.1 feet

5
10
15
20

Date Started:	February 11, 2010	Water Level: ▽	Not Encountered	Plate
Date Completed:	February 11, 2010			
Logged By:	Y. Chiba	Drill Rig:	Mobile B-80 *(Energy Transfer Ratio = 44.9%)*	A - 6
Total Depth:	10.1 feet	Drilling Method:	4" Auger & HQ Coring	
Work Order:	6099-00	Driving Energy:	140 lb. wt.,30 in. drop	

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Log of Boring

7

Laboratory			Field						
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet MSL): 181 *
											9-inch **CONCRETE**
										GW	Light grayish brown **SANDY GRAVEL (BASALTIC)** with some silt, dense, damp (base course)
UC= 3180 psi			89	83							Reddish gray vesicular **BASALT**, closely to severely fractured, slightly weathered, very hard
											grades to moderately fractured at 3 feet
			95	50			5				grades to closely fractured
							10				Boring terminated at 10 feet
							15				
							20				

Date Started:	February 10, 2010	Water Level: ▽	Not Encountered	Plate
Date Completed:	February 10, 2010			
Logged By:	Y. Chiba	Drill Rig:	Mobile B-80 *(Energy Transfer Ratio = 44.9%)*	A - 7
Total Depth:	10 feet	Drilling Method:	4" Auger & HQ Coring	
Work Order:	6099-00	Driving Energy:	140 lb. wt.,30 in. drop	

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Log of Boring

8

Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet MSL): 115 *
											8-inch **CONCRETE**
											4-inch **CONCRETE**
										GW	Grayish brown **SANDY GRAVEL (BASALTIC)** with silt, dense, damp (base course)
	21	101			26					SC	Orangish brown **CLAYEY SAND** with gravel (basaltic), medium dense, damp (fill)
										SP	Dark gray **SAND** with some gravel (basaltic), medium dense, damp (weathered rock)
	8				24						
					10/1"		5				Reddish gray scoriaceous **BASALT**, closely to severely fractured, highly weathered, medium hard
											grades to very hard
					12/1"		10				Boring terminated at 10.1 feet
							15				
							20				

Date Started:	February 10, 2010	Water Level: ▽	Not Encountered	Plate
Date Completed:	February 10, 2010			
Logged By:	Y. Chiba	Drill Rig:	Mobile B-80 *(Energy Transfer Ratio = 44.9%)*	A - 8
Total Depth:	10.1 feet	Drilling Method:	4" Auger & HQ Coring	
Work Order:	6099-00	Driving Energy:	140 lb. wt.,30 in. drop	

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Log of Boring

9

Laboratory			Field								
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet MSL): 84 *
											9-inch **CONCRETE**
											3-inch **CONCRETE**
										GW	Grayish brown **SANDY GRAVEL (BASALTIC)** with silt, dense, damp (base course)
	21	105			40/3"	3.0				CL	
											Dark reddish brown **SANDY CLAY** with gravel (basaltic) and little gravel (coralline), very stiff, damp (fill)
	17				29	3.0					
					15/1"		5				Brownish gray **SILTY COBBLES (BASALTIC)** with gravel and some boulders, dense, damp (weathered rock)
											Reddish gray vesicular **BASALT**, closely fractured, highly weathered, very hard
					8/1"		10				Boring terminated at 10.1 feet
							15				
							20				

Date Started:	February 10, 2010	Water Level: ▽	Not Encountered	Plate
Date Completed:	February 10, 2010			
Logged By:	Y. Chiba	Drill Rig:	Mobile B-80 *(Energy Transfer Ratio = 44.9%)*	A - 9
Total Depth:	10.1 feet	Drilling Method:	4" Auger & HQ Coring	
Work Order:	6099-00	Driving Energy:	140 lb. wt.,30 in. drop	

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Log of Boring

10

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS
	6	118			56/6" +40/3"					SW
										GW
	19				77	3.0				
										CH
	31				20	2.5	5			
										CH
LL=54 PI=26	33	79			9	1.0	10			
					12/1"		15			
							20			

Approximate Ground Surface Elevation (feet MSL): 35 *

Description

4-inch **ASPHALTIC CONCRETE**

Tan with white mottling **GRAVELLY SAND (CORALLINE)** with silt and little clay, very dense, damp (fill)

Light gray **SANDY GRAVEL (BASALTIC)** with some silt, very dense, damp (fill)

Brown **SANDY CLAY** with some sand (coralline) and gravel (basaltic), very stiff, damp (fill)

Dark brown **SANDY CLAY** with some silt and gravel (basaltic), soft, moist (alluvium)

Brownish gray vesicular **BASALT**, closely fractured, highly weathered, hard

Boring terminated at 15.1 feet

Date Started:	February 11, 2010	Water Level: ▽	Not Encountered	Plate
Date Completed:	February 11, 2010			
Logged By:	Y. Chiba	Drill Rig:	Mobile B-80 *(Energy Transfer Ratio = 44.9%)*	A - 10
Total Depth:	15.1 feet	Drilling Method:	4" Auger & HQ Coring	
Work Order:	6099-00	Driving Energy:	140 lb. wt.,30 in. drop	

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Log of Boring

11

Laboratory			Field							
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS

Approximate Ground Surface Elevation (feet MSL): 30 *

Description

Other Tests	Moisture Content (%)	Dry Density (pcf)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	USCS	Description
						11-inch **ASPHALTIC CONCRETE**
	9	136	95		GW	Light tan **SANDY GRAVEL (CORALLINE)** with some clay, dense, damp (fill)
	20				SC	grades to light gray sandy gravel (basaltic) at 1.5 feet
						Reddish brown with multi-color mottling **CLAYEY SAND** with gravel and some sand (coralline), dense, damp (fill)
	13	92	53			Brown **SANDY COBBLES (BASALTIC)** with clay, dense, moist (alluvium)
LL=51 PI=27	36		5	1.0	CH	Blackish brown **SANDY CLAY**, soft, moist (alluvium)
					GC	Brown with dark gray mottling **CLAYEY GRAVEL (BASALTIC)** with some sand, medium dense, wet (alluvium)
Sieve - #200 = 12.7%	17		44			
						Boring terminated at 16.5 feet

5
10
15
20

▽ Water Level: 13.0 ft. 02/11/2010 1140 HRS

Date Started:	February 11, 2010
Date Completed:	February 11, 2010
Logged By:	Y. Chiba
Total Depth:	16.5 feet
Work Order:	6099-00
Drill Rig:	Mobile B-80 *(Energy Transfer Ratio = 44.9%)*
Drilling Method:	4" Auger & HQ Coring
Driving Energy:	140 lb. wt.,30 in. drop

Plate

A - 11

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