GEOLABS, INC.

Geotechnical Engineering

FREEWAY MANAGEMENT SYSTEM
INTERSTATE H-1, H-2 AND FARRINGTON HIGHWAY
PHASE 2A
DISTRICTS OF HONOLULU & EWA, ISLAND OF OAHU

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	Approximate Ground Surface Elevation (feet MSL): 112.8 * Description
							0			GP	3-Inch **ASPHALTIC CONCRETE**
					50/3"					CH	Brownish gray **SANDY GRAVEL**, dense, moist (fill)
LL=78 PI=58	13				9						Brown **SILTY CLAY** with a little gravel (basaltic), very stiff, moist (alluvium)
							5				Brownish gray **BOULDER** (alluvium)
TXUU S_u=2.0 ksf	22	75			19					ML	Reddish brown with multi-color mottling **SANDY SILT**, very stiff, moist (alluvium)
										CL	Reddish brown **SANDY CLAY**, very stiff, moist (alluvium)
	23				7		10				
											Brownish gray **BOULDERS** in brown sandy clay matrix, very dense, damp (alluvium)
	12	104			86		15				
	36				19		20				
	10		109 40		50/1"		25				
							30			ML	Brown with multi-color mottling **SANDY SILT** with some gravel (basaltic), very stiff, moist (saprolite)
	34				39						
							35				

Date Started:	October 27, 2017	Water Level: ▼	Not Encountered		Plate
Date Completed:	November 28, 2017				
Logged By:	B. Aiu / N. Vaiana	Drill Rig:	CME-75DR	*(Energy Transfer Ratio = 74.1%)*	A - 1.1
Total Depth:	32.5 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring		
Work Order:	6891-20(A)	Driving Energy:	140 lb. wt., 30 in. drop		

BORING_LOG 6891-20A.GPJ GEOLABS.GDT 3/8/18

GEOLABS, INC. Geotechnical Engineering	FREEWAY MANAGEMENT SYSTEM INTERSTATE H-1, H-2 AND FARRINGTON HIGHWAY PHASE 2A DISTRICTS OF HONOLULU & EWA, ISLAND OF OAHU	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

(Continued from previous plate)

Description

Boring terminated at 32.5 feet

* Elevations estimated from Site Plans provided by Austin, Tsutsumi & Associates, Inc. on December 18, 2017.

40
45
50
55
60
65
70

Date Started:	October 27, 2017	Water Level: ▼	Not Encountered		Plate
Date Completed:	November 28, 2017				
Logged By:	B. Aiu / N. Vaiana	Drill Rig:	CME-75DR	*(Energy Transfer Ratio = 74.1%)*	
Total Depth:	32.5 feet	Drilling Method:	4" Solid Stem Auger & PQ Coring		A - 1.2
Work Order:	6891-20(A)	Driving Energy:	140 lb. wt., 30 in. drop		

GEOLABS, INC.

Geotechnical Engineering

FREEWAY MANAGEMENT SYSTEM
INTERSTATE H-1, H-2 AND FARRINGTON HIGHWAY
PHASE 2A
DISTRICTS OF HONOLULU & EWA, ISLAND OF OAHU

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

Approximate Ground Surface Elevation : N/A

Description

Other Tests	Moisture Content (%)	Dry Density (pcf)	Penetration Resistance (blows/foot)	USCS	Description
Direct Shear LL=49 PI=29	19 16	80	27 24	CL	Brown **SILTY CLAY** with a little sand and gravel (basaltic), very stiff, dry (fill)
TXUU S_u=14.2 ksf	17	103	98	MH	Brown with some black mottling **CLAYEY SILT**, hard, dry (alluvium)
	17		120	ML	Tannish brown **SANDY SILT**, hard, dry (alluvium)
	23	95	55/3"	MH	Brown with some light tan mottling **CLAYEY SILT**, hard, dry (alluvium)
	22		96		Boring terminated at 21.5 feet

Depth (feet): 5, 10, 15, 20, 25, 30, 35

Date Started:	October 17, 2017	Water Level: ▼	Not Encountered
Date Completed:	October 17, 2017		
Logged By:	N. Vaiana	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*
Total Depth:	21.5 feet	Drilling Method:	4" Solid Stem Auger
Work Order:	6891-20(A)	Driving Energy:	140 lb. wt., 30 in. drop

Plate A - 2

BORING_LOG 6891-20A.GPJ GEOLABS.GDT 3/8/18

GEOLABS, INC.

Geotechnical Engineering

FREEWAY MANAGEMENT SYSTEM
INTERSTATE H-1, H-2 AND FARRINGTON HIGHWAY
PHASE 2A
DISTRICTS OF HONOLULU & EWA, ISLAND OF OAHU

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	Approximate Ground Surface Elevation (feet MSL): 234 * **Description**
	11	82			55/3"					GM	Brown **SILTY GRAVEL (BASALTIC)** with some boulders (basaltic), very dense, dry (fill)
	5				26					MH	Brown **CLAYEY SILT** with some boulders (basaltic), stiff, damp (fill)
			33				5				
	13				12						
			43								
							10				
	22				19						
			71								
							15			CL	Reddish brown **SILTY CLAY** with some sand and a little gravel (basaltic), stiff, damp (residual soil)
LL=45 PI=21	26				39						
			100								
							20			ML	Gray with multi-color mottling **SANDY SILT** with some gravel (basaltic), hard, damp (saprolite)
	24				74						
											Boring terminated at 21.5 feet
							25				
							30				
							35				

Date Started:	October 17, 2017	Water Level: ▼	Not Encountered	Plate
Date Completed:	October 17, 2017			
Logged By:	N. Vaiana	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	A - 3
Total Depth:	21.5 feet	Drilling Method:	4" Solid Stem Auger & HQ Coring	
Work Order:	6891-20(A)	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 6891-20A.GPJ GEOLABS.GDT 3/8/18

GEOLABS, INC.

Geotechnical Engineering

FREEWAY MANAGEMENT SYSTEM
INTERSTATE H-1, H-2 AND FARRINGTON HIGHWAY
PHASE 2A
DISTRICTS OF HONOLULU & EWA, ISLAND OF OAHU

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): 344 * **Description**
	15	87								MH	Brown with multi-color mottling **CLAYEY SILT** with some sand (basaltic), hard, moist (saprolite)
	7				72/3"						Gray **BOULDERS (BASALTIC)** with some sand, very dense, dry (saprolite)
	19	90			16		5			ML	Brown with gray **SANDY SILT** with a little gravel (basaltic), very stiff, moist
										MH	Brown **CLAYEY SILT** with some sand and gravel (basaltic), very stiff, moist (saprolite)
											Brownish gray **BOULDERS (BASALTIC)** with some sand, very dense, dry (saprolite)
LL=71 PI=44	24				19		10			CH	Purplish red **SILTY CLAY** with some sand (basaltic), stiff, moist (saprolite)
	43	75			35		15			GM	Brownish gray **SILTY GRAVEL (BASALTIC)** with some sand (basaltic), medium dense, moist (saprolite)
	43				28		20				grades with more sand
	35	82			84		25			MH	Dark gray with dark brown mottling **CLAYEY SILT** with some sand and gravel (basaltic), hard, moist (saprolite)
										ML	Gray with dark red mottling **SANDY SILT (BASALTIC)** with traces of gravel (basaltic), hard, moist (saprolite)
	33				65/3"		30				Boring terminated at 30.75 feet
							35				

Date Started:	October 18, 2017	Water Level: ▼	Not Encountered	Plate
Date Completed:	October 18, 2017			
Logged By:	N. Vaiana	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	A - 4
Total Depth:	30.75 feet	Drilling Method:	4" Solid Stem Auger	
Work Order:	6891-20(A)	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 6891-20A.GPJ GEOLABS.GDT 3/8/18

GEOLABS, INC.

Geotechnical Engineering

FREEWAY MANAGEMENT SYSTEM
INTERSTATE H-1, H-2 AND FARRINGTON HIGHWAY
PHASE 2A
DISTRICTS OF HONOLULU & EWA, ISLAND OF OAHU

Log of Boring

5

Approximate Ground Surface Elevation (feet MSL): 481 *

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
	27	76			49					MH	Reddish brown **CLAYEY SILT**, hard, damp (residual soil)
LL=58 PI=27	30				23						
TXUU S_u=6.1 ksf	32	79			47	4.3	5				
	33				21		10				grades with a little silty clay
	34	83			38	4.3	15				
	37				36/1"		20			CH	Reddish brown **SILTY CLAY**, very stiff to hard, moist (residual soil)
										GM	Gray **SILTY GRAVEL (BASALTIC)**, very dense, dry (saprolite)
											Boring terminated at 20.58 feet
							25				
							30				
							35				

Date Started:	May 2, 2017	Water Level: ▽	Not Encountered	Plate
Date Completed:	May 2, 2017			
Logged By:	N. Vaiana	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	
Total Depth:	20.58 feet	Drilling Method:	4" Solid Stem Auger	A - 5
Work Order:	6891-20(A)	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 6891-20A.GPJ GEOLABS.GDT 3/8/18

GEOLABS, INC.

Geotechnical Engineering

FREEWAY MANAGEMENT SYSTEM
INTERSTATE H-1, H-2 AND FARRINGTON HIGHWAY
PHASE 2A
DISTRICTS OF HONOLULU & EWA, ISLAND OF OAHU

Log of Boring

6

Approximate Ground Surface Elevation (feet MSL): 395 *

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	USCS	Description
Direct Shear	22	71			50		0	CH	Reddish brown **SILTY CLAY**, very stiff, moist (residual soil)
LL=64 PI=37	24				43				grades to hard
TXUU S_u=1.3 ksf	24	72			94		5	CH	Brown with multi-color mottling **SILTY CLAY**, hard, moist (residual soil)
LL=60 PI=30	26				18		10		
Direct Shear	28	80			66		15	MH	Brown with multi-color mottling **CLAYEY SILT**, hard, moist (saprolite)
	14				38/3"		20		Gray **BASALT**, moderately weathered, soft to medium hard
									Boring terminated at 20.25 feet
							25		
							30		
							35		

Date Started:	October 18, 2017	Water Level: ▼	Not Encountered	Plate
Date Completed:	October 18, 2017			
Logged By:	N. Vaiana	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	A - 6
Total Depth:	20.25 feet	Drilling Method:	4" Solid Stem Auger	
Work Order:	6891-20(A)	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 6891-20A.GPJ GEOLABS.GDT 3/8/18

GEOLABS, INC.

Geotechnical Engineering

FREEWAY MANAGEMENT SYSTEM
INTERSTATE H-1, H-2 AND FARRINGTON HIGHWAY
PHASE 2A
DISTRICTS OF HONOLULU & EWA, ISLAND OF OAHU

Log of Boring 7

Approximate Ground Surface Elevation (feet MSL): 221 *

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
Direct Shear	17	82			84	4.5				MH	Brown with tan **SILTY GRAVEL (CORALLINE)** with some sand, dry (fill)
	17				46/3"						Reddish brown **CLAYEY SILT** with some boulders, hard, dry (alluvium)
TXUU S_u=5.5 ksf	19	88			75		5				
										CH	Dark reddish brown **SILTY CLAY**, very stiff, moist (saprolite)
LL=53 PI=27	21				48		10				
										SM	Brownish gray **SILTY SAND (BASALTIC)** with a little gravel (basaltic), very dense, dry (weathered basalt)
	15	82			37/3"		15				
											Gray **BASALT**, moderately to closely fractured, slightly weathered, medium hard (pahoehoe basalt)
	7				80/5"		20				
UC= 5630 psi			100	44			25				
UC= 1980 psi			100	38							grades to moderately weathered
							30				Boring terminated at 30.5 feet
							35				

Date Started:	October 16, 2017	Water Level: ▼	Not Encountered	Plate
Date Completed:	October 17, 2017			
Logged By:	N. Vaiana	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	A - 7
Total Depth:	30.5 feet	Drilling Method:	4" Solid Stem Auger & HQ Coring	
Work Order:	6891-20(A)	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 6891-20A.GPJ GEOLABS.GDT 3/8/18

GEOLABS, INC.

Geotechnical Engineering

FREEWAY MANAGEMENT SYSTEM
INTERSTATE H-1, H-2 AND FARRINGTON HIGHWAY
PHASE 2A
DISTRICTS OF HONOLULU & EWA, ISLAND OF OAHU

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	Approximate Ground Surface Elevation : N/A **Description**
										CL	Reddish brown **SILTY CLAY**, hard, dry (alluvium)
Direct Shear	17	88			70	4.5					
LL=46 PI=21	18				42						
TXUU S_u=2.7 ksf	19	94			76		5				
										MH	Dark reddish brown **CLAYEY SILT**, very stiff, moist (residual soil)
	22				36		10				
										GM	Gray **SILTY GRAVEL (BASALTIC)** with some sand (basaltic), dense, dry (weathered basalt)
											Brownish gray **BASALT**, closely fractured, moderately weathered, soft to medium hard (pahoehoe basalt)
					10/0" Ref.		15				
	13				74/3"		20				grades to dark purplish red
											Boring terminated at 20.25 feet
							25				
							30				
							35				

Date Started:	October 16, 2017	Water Level: ▼	Not Encountered	Plate
Date Completed:	October 16, 2017			
Logged By:	N. Vaiana	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	A - 8
Total Depth:	20.25 feet	Drilling Method:	4" Solid Stem Auger	
Work Order:	6891-20(A)	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 6891-20A.GPJ GEOLABS.GDT 3/8/18

GEOLABS, INC.

Geotechnical Engineering

FREEWAY MANAGEMENT SYSTEM
INTERSTATE H-1, H-2 AND FARRINGTON HIGHWAY
PHASE 2A
DISTRICTS OF HONOLULU & EWA, ISLAND OF OAHU

Log of Boring

9

Approximate Ground Surface Elevation (feet MSL): 87 *

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)					
	17	94			31					GM	Tan **SILTY GRAVEL (CORALLINE)** with some sand, medium dense, dry (fill)
	10				36					ML	Brown with gray **SANDY SILT** with some gravel (basaltic), stiff, moist (older alluvium)
TXUU S_u=2.8 ksf	14	99			16		5				
										CH	Brown with multi-color mottling **SILTY CLAY** with a little sand (basaltic), stiff, moist (alluvium)
LL=58 PI=33	21				24		10				grades to light tan locally
	19	95			52	4.3	15			MH	Brown with light multi-color mottling **CLAYEY SILT** with some sand (basaltic), very stiff, moist (alluvium)
	22				38		20			MH	Brown with light tan mottling **CLAYEY SILT** with some sand, very stiff, moist (alluvium)
											Boring terminated at 21.5 feet
							25				
							30				
							35				

Date Started:	November 28, 2017	Water Level: ▼	Not Encountered	Plate
Date Completed:	November 28, 2017			
Logged By:	N. Vaiana	Drill Rig:	CME-45C TRUCK *(Energy Transfer Ratio = 78%)*	A - 9
Total Depth:	21.5 feet	Drilling Method:	4" Solid Stem Auger	
Work Order:	6891-20(A)	Driving Energy:	140 lb. wt., 30 in. drop	

BORING_LOG 6891-20A.GPJ GEOLABS.GDT 3/8/18