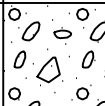
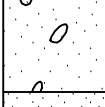
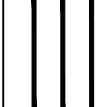


GEOLABS, INC.  
Geotechnical Engineering


Soil Log Legend


UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)


MAJOR DIVISIONS			USCS	TYPICAL DESCRIPTIONS	
COARSE-GRAINED SOILS	GRAVELS	CLEAN GRAVELS LESS THAN 5% FINES	 GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
		MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
			GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES	
		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES		
	SANDS	CLEAN SANDS LESS THAN 5% FINES	 SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
		50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES	
			SM	SILTY SANDS, SAND-SILT MIXTURES	
		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	
			MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
	SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE	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


 (3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE


 SHELBY TUBE SAMPLE

 GRAB SAMPLE

 CORE SAMPLE

 WATER LEVEL OBSERVED IN BORING AT TIME OF DRILLING

 WATER LEVEL OBSERVED IN BORING AFTER DRILLING

 WATER LEVEL OBSERVED IN BORING OVERNIGHT

LL

LIQUID LIMIT (NP=NON-PLASTIC)

PI

PLASTICITY INDEX (NP=NON-PLASTIC)

TV

TORVANE SHEAR (tsf)

UC

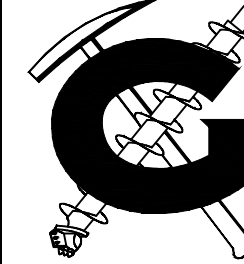
UNCONFINED COMPRESSION OR UNIAXIAL COMPRESSIVE STRENGTH

TXUU

UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf)

Plate

A-0.1



GEOLABS, INC.  
Geotechnical Engineering

Soil Classification Log Key  
(with deviations from ASTM D2488)

GEOLABS, INC. CLASSIFICATION\*

GRANULAR SOIL (- #200 <50%)		COHESIVE SOIL (- #200 ≥ 50%)	
<ul style="list-style-type: none"><li>PRIMARY constituents are composed of the largest percent of the soil mass. Primary constituents are capitalized and bold (i.e., GRAVEL, SAND)</li><li>SECONDARY constituents are composed of a percentage less than the primary constituent. If the soil mass consists of 12 percent or more fines content, a cohesive constituent is used (SILTY or CLAYEY); otherwise, a granular constituent is used (GRAVELLY or SANDY) provided that the secondary constituent consists of 20 percent or more of the soil mass. Secondary constituents are capitalized and bold (i.e., SANDY GRAVEL, CLAYEY SAND) and precede the primary constituent.</li><li>accessory descriptions compose of the following: with some: &gt;12% with a little: 5 - 12% with traces of: &lt;5% accessory descriptions are lower cased and follow the Primary and Secondary Constituents (i.e., SILTY GRAVEL with a little sand)</li></ul>	<ul style="list-style-type: none"><li>PRIMARY constituents are based on plasticity. Primary constituents are capitalized and bold (i.e., CLAY, SILT)</li><li>SECONDARY constituents are composed of a percentage less than the primary constituent, but more than 20 percent of the soil mass. Secondary constituents are capitalized and bold (i.e., SANDY CLAY, SILTY CLAY, CLAYEY SILT) and precede the primary constituent.</li><li>accessory descriptions compose of the following: with some: &gt;12% with a little: 5 - 12% with traces of: &lt;5% accessory descriptions are lower cased and follow the Primary and Secondary Constituents (i.e., SILTY CLAY with some sand)</li></ul>		
EXAMPLE: Soil Containing 60% Gravel, 25% Sand, 15% Fines. Described as: SILTY GRAVEL with some sand			

RELATIVE DENSITY / CONSISTENCY

Granular Soils			Cohesive Soils		
N-Value (Blows/Foot)		Relative Density	N-Value (Blows/Foot)		Consistency
SPT	MCS		SPT	MCS	
0 - 4	0 - 7	Very Loose	0 - 2	0 - 4	Very Soft
4 - 10	7 - 18	Loose	2 - 4	4 - 7	Soft
10 - 30	18 - 55	Medium Dense	4 - 8	7 - 15	Medium Stiff
30 - 50	55 - 91	Dense	8 - 15	15 - 27	Stiff
> 50	> 91	Very Dense	15 - 30	27 - 55	Very Stiff
			> 30	> 55	Hard

MOISTURE CONTENT DEFINITIONS

Dry: Absence of moisture, dry to the touch

Moist: Damp but no visible water

Wet: Visible free water

GRAIN SIZE DEFINITION

Description	Sieve Number and / or Size
Boulders	> 12 inches (305-mm)
Cobbles	3 to 12 inches (75-mm to 305-mm)
Gravel	3-inch to #4 (75-mm to 4.75-mm)
Coarse Gravel	3-inch to 3/4-inch (75-mm to 19-mm)
Fine Gravel	3/4-inch to #4 (19-mm to 4.75-mm)
Sand	#4 to #200 (4.75-mm to 0.075-mm)
Coarse Sand	#4 to #10 (4.75-mm to 2-mm)
Medium Sand	#10 to #40 (2-mm to 0.425-mm)
Fine Sand	#40 to #200 (0.425-mm to 0.075-mm)

Plate

A-0.2

ABBREVIATIONS

WOH: Weight of Hammer

WOR: Weight of Drill Rods

SPT: Standard Penetration Test Split-Spoon Sampler

MCS: Modified California Sampler

PP: Pocket Penetrometer

\*Soil descriptions are based on ASTM D2488-09a, Visual-Manual Procedure, with the above modifications by Geolabs, Inc. to the Unified Soil Classification System (USCS).

GERALD Y. SEKI  
LICENSED PROFESSIONAL ENGINEER  
No. 5635-C  
HAWAII, U.S.A.

Signature

4/30/24

EXPIRATION DATE OF THE LICENSE

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

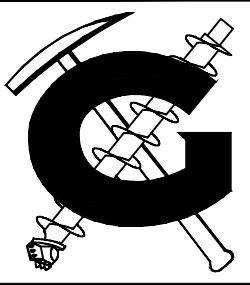
BORING LOG LEGENDS

INTERSTATE ROUTE HI (EB) IMPROVEMENTS  
Ola Lane Overpass to Likelike Hwy Off-Ramp  
Project No. NH-HI-1(280)

Scale: Date: December 2022

SHEET No. B-3 OF 15 SHEETS

ORIGINAL PLAN	DATE
NOTE BOOK	
DESIGNED BY	
CHECKED BY	
QUANTITIES BY	
FILE: A:\Drafting\Drafting\Working\8049-00&10-Interstate_Route_HI-1_Congestion_Improvements\8049-00&10SheetBoringLog.dwg saved December 23, 2022	




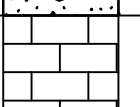
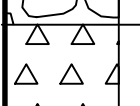
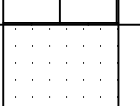
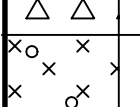
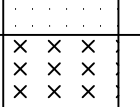

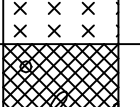



GEOLABS, INC.

Geotechnical Engineering

Rock Log Legend

ROCK DESCRIPTIONS

	BASALT		CONGLOMERATE
	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-0.3

GEOTECHNICAL NOTES:

- A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Interstate Route H-1, Congestion Improvements, Vicinity of Ola Lane to Vicinity of Kalihi Street, Honolulu, Oahu, Hawaii" dated November 21, 2022 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 Sheets B-1 and B-2.
- 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.

ORIGINAL PLAN

NOTE BOOK

SURVEY PLOTTED BY

DRAWN BY

DESIGNED BY

QUANTITIES BY

CHECKED BY

DATE

• • • • •

FILE: A:\Drafting\Drafting\Working\8049-00&10-Interstate\_Route\_H-1\_Congestion\_Improvements\8049-00&10SheetBoringLog.dwg saved December 23, 2022

LOG LEGEND FOR ROCK 8049-00.GPJ GEOLABS.GDT 4/21/21

*Gerald Y. Seki* 4/30/24  
SIGNATURE EXPIRATION DATE  
OF THE LICENSE  
THIS WORK WAS PREPARED BY ME  
OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

ROCK LOG LEGEND AND NOTES

INTERSTATE ROUTE H1 (EB) IMPROVEMENTS  
Ola Lane Overpass to Likelike Hwy Off-Ramp  
Project No. NH-H1-1(280)


Scale: Date: December 2022


SHEET No. B-4 OF 15 SHEETS


17



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-HI-1(280)	2023	18	466

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, 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 ): 43 *										
										Description										
Sieve #200 = 11.7%	6	126			84					GP-	4-inch ASPHALTIC CONCRETE									
	12				50/3"					GM	Brownish gray SANDY GRAVEL with a little silt, very dense, moist (fill)									
	14		100	31	15/0" Ref.					GM	Brown and gray SILTY GRAVEL (BASALTIC) with a little cobbles (basaltic), very dense, moist (saprolite)									
					10/0" Ref.						Gray BASALT, severely to moderately fractured, slightly weathered, hard (basalt formation) Boring terminated at 10 feet									
										* Elevations estimated from Topographic Survey Map transmitted by Jacobs on January 5, 2021.										
Date Started: October 19, 2020										Water Level: Not Encountered										
Date Completed: October 19, 2020																				
Logged By: B. Aiu										Drill Rig: CME-75DG2 (Energy Transfer Ratio = 89.5%)										
Total Depth: 10 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring										
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop										

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, 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 ): 48 *										
										Description										
LL=82 PI=51	23	106			38					GP	4-inch ASPHALTIC CONCRETE									
	37				6					CL	Brownish gray SANDY GRAVEL, moist (fill)									
	35	92			26					CH	Brown and gray GRAVELLY CLAY with some sand, very stiff (fill)									
	41				76						Brownish gray with multi-color mottling SILTY CLAY with traces of gravel (basaltic), medium stiff, moist (saprolite) grades to stiff at 5 feet grades to hard Boring terminated at 11.5 feet									
Date Started: October 19, 2020										Water Level: Not Encountered										
Date Completed: October 19, 2020																				
Logged By: B. Aiu										Drill Rig: CME-75DG2 (Energy Transfer Ratio = 89.5%)										
Total Depth: 11.5 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring										
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop										

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, 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 ): 51 *										
										Description										
LL=48 PI=28 Direct Shear TXUU Su=2.6 ksf UC= 25720 psi UC= 8720 psi  UC= 17010 psi UC= 8550 psi	13	111			53					GP	4-inch ASPHALTIC CONCRETE									
	28				59					CL	Brownish gray SANDY GRAVEL, dense, moist (fill)									
	27	94			119						Brown with multi-color mottling SANDY CLAY with traces of gravel (basaltic), very stiff, moist (saprolite)									
			94	63							Gray BASALT, closely to moderately fractured, slightly weathered, hard (basalt formation)									
										grades to severely to slightly fractured										
										grades to closely to slightly fractured										
										grades to massive										
										Boring terminated at 41 feet										
Date Started: October 19, 2020										Water Level: Not Encountered										
Date Completed: October 20, 2020																				
Logged By: B. Aiu										Drill Rig: CME-75DG2										
Total Depth: 41 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring										
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop										

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

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BORING LOG DOT HAW-DOE 8049-00&10 GEOLABS DOT 4/2/21



BORING LOG DOT HAW-DOE 8049-00&10 GEOLABS DOT 4/2/21





SIGNATURE: *Gerald Y. Seki* 4/30/24  
EXPIRATION DATE OF THE LICENSE  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>BORING LOGS - 1</b>	
<b>INTERSTATE ROUTE HI (EB) IMPROVEMENTS Ola Lane Overpass to Likelike Hwy Off-Ramp Project No. NH-HI-1(280)</b>	
Scale:	Date: December 2022
SHEET No. B-5 OF 15 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	<i>NH-H1-1(280)</i>	<i>2023</i>	<i>19</i>	<i>466</i>


 <b>GEOLABS, INC.</b> Geotechnical Engineering										INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII										Log of Boring <b>4</b>	
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 ): 56 *									
												Description									
Sieve #200 = 32.8%		26	87			55/6"					GP	4-inch ASPHALTIC CONCRETE									
		29				+25/1"					SM	Brownish gray SANDY GRAVEL, very dense, moist (fill)									
		17				52/6"						Brown and gray SILTY SAND (BASALTIC) with some gravel and a little cobbles (basaltic), very dense, moist (saprolite)									
		39				+50/3"						Boring terminated at 11.5 feet									
						50/3"															
						67															
								5													
								10													
								15													
								20													
								25													
								30													
								35													
Date Started: October 20, 2020 Date Completed: October 20, 2020 Logged By: B. Aiu Total Depth: 11.5 feet Work Order: 8049-00&10								Water Level:  Not Encountered Drill Rig: CME-75DG2 (Energy Transfer Ratio = 89.5%) Drilling Method: 4" Solid-Stem Auger & PQ Coring Driving Energy: 140 lb. wt., 30 in. drop													

		<b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII		Log of Boring <b>5</b>					
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) : 56 *	
										Description	
Direct Shear LL=59 PI=38	21	93			23				GP	4-inch ASPHALTIC CONCRETE	
	21				29				CH	Brownish gray SANDY GRAVEL, moist (fill)	
	28		0		35/2"		5			Brown SILTY CLAY with some gravel, stiff to very stiff, moist (fill) grades with cobbles	
Sieve #200 = 45.4%	36		100	0	40		10		GM	Brown and gray SILTY GRAVEL (BASALTIC) with some sand (basaltic) and a little cobbles (basaltic), dense, moist (saprolite)	
UC= 6690 psi			97	78			15			Gray BASALT, severely to closely fractured, moderately weathered, hard (basalt formation) grades to moderately fractured	
UC= 10120 psi			97	97			20			grades to slightly fractured	
UC= 16060 psi			98	98			25			grades to massive	
			100	57			30				
			100	100			35				
							40				
							45			Boring terminated at 41 feet	
							50				
							55				
							60				
							65				
							70				
							75				
Date Started: October 20, 2020 Date Completed: October 21, 2020 Logged By: B. Aiu									Water Level:  Not Encountered		
Total Depth: 41 feet Work Order: 8049-00&10									Drill Rig: CME-75DG2 Drilling Method: 4" Solid-Stem Auger & PQ Coring 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 _____	" _____

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 4/30/24  
 SIGNATURE EXPIRATION DATE  
 OF THE LICENSE  
 THIS WORK WAS PREPARED BY ME  
 OR UNDER MY SUPERVISION



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION












*BORING LOGS - 2*

*INTERSTATE ROUTE HI (EB) IMPROVEMENTS*  
*Ola Lane Overpass to Likelike Hwy Off-Ramp*  
*Project No. NH-HI-1(280)*

*Scale:* *Date: December 2022*

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-H1-1(280)	2023	20	466

 <b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, 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 Graphic	USCS	Approximate Ground Surface Elevation (feet) : 55.5 *	
										Description	
Direct Shear LL=67 PI=42 TXUU Su=1.4 ksf	18	80			128				GP	4-inch ASPHALTIC CONCRETE	
	18				22				CH	Brownish gray SANDY GRAVEL, moist (fill)	
	27	87			14		5			Brown and gray SILTY CLAY with some gravel (basaltic) and a little cobbles (basaltic), medium stiff to hard, moist (fill)	
		39			12		10		CH	Brown with multi-color mottling SILTY CLAY with a little sand and gravel (basaltic), stiff, moist (alluvium)	
UC=25440 psi UC=8400 psi			100	0			15			Gray BASALT, severely fractured, unweathered, hard (basalt formation) grades to massive	
			98	98			20			grades to slightly fractured	
			93	93			25			grades to closely fractured	
			100	62			30			grades to massive	
UC=13450 psi			100	100			35				
			100	100			40				
			100	100			45				
			100	100			50				
UC=11940 psi			100	100			55				
			100	100			60				
			100	100			65				
			50	13			70		CH	Brown SILTY CLAY with some sand and a little gravel (basaltic), hard, moist (older alluvium)	
TXUU Su=3.8 ksf			62		30/6" +50/3"	3.8	75				
Date Started: October 21, 2020										Water Level:  Not Observed	
Date Completed: October 26, 2020											
Logged By: B. Aiu										Drill Rig: CME-75DG2	
Total Depth: 122.5 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring	
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop	

 <b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, 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 Graphic	USCS	(Continued from previous plate)
										Description
LL=69 PI=36	51		0		24				CH	grades to very stiff
										CH
TXUU Su=4.0 ksf	52	70	0		26	3.3	80			
	55		0		18		85			
LL=107 PI=73 TXUU Su=3.8 ksf	59	65	0		29	3.5	90			
Direct Shear	56	69	0		21	3.3	100			
	59		0		18		105			
TXUU Su=2.5 ksf	59	65	0		27	2.3	110			
	58		45		19		115			
	52	74			31		120			Boring terminated at 122.5 feet
							125			
							130			
							135			
							140			
							145			
							150			
Date Started: October 21, 2020								Water Level:  Not Observed		
Date Completed: October 26, 2020										
Logged By: B. Aiu								Drill Rig: CME-75DG2		
Total Depth: 122.5 feet								Drilling Method: 4" Solid-Stem Auger & PQ Coring		
Work Order: 8049-00&10								Driving Energy: 140 lb. wt., 30 in. drop		

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

FILE: A:\Paving\Drilling\Working\8049-00&10-Interstate\_Route\_H-1\_Congestion\_Improvements\8049-00&10SheetBoringLog.dwg saved December 23, 2022

BORING LOG DOT.DWG 8049-00&10-GEOLABS.GDT 4/21/21

BORING LOG DOT.DWG 8049-00&10-GEOLABS.GDT 4/21/21



SIGNATURE: *Gerald Y. Seki* 4/30/24  
EXPIRATION DATE OF THE LICENSE  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION


STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION











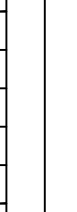
**BORING LOGS - 3**

INTERSTATE ROUTE HI (EB) IMPROVEMENTS  
Ola Lane Overpass to Likelike Hwy Off-Ramp  
Project No. NH-HI-1(280)

Scale:                      Date: December 2022

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-H1-1(280)	2023	21	466

		GEOLABS, INC.		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII							Log of Boring 7		
Geotechnical Engineering													
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 ): 41.5 *			
										Description			
UC=16670 psi UC=13600 psi UC=10380 psi  UC=10000 psi  UC=9330 psi   UC=15400 psi	1	54			65		0			3-inch ASPHALTIC CONCRETE			
					9		1		CH	COBBLES (BASALTIC), dense, moist (fill)			
			100	70	12/0" Ref.		5			Yellowish brown SILTY CLAY with some sand, stiff, moist (fill)			
							10			Gray BASALT, severely to moderately fractured, slightly weathered, very hard (basalt formation)			
			100	100			15			grades to closely to moderately fractured			
			100	100			20			grades to massive			
			100	100			25						
			100	100			30						
			100	100			35						
			100	100			40						
LL=72 PI=42 TXUU Su=9.4 ksf			42	100			45						
			100	100			50						
							55		CH	Reddish brown BASALT, moderately fractured, highly weathered, medium hard (basalt formation)			
			31		49	>4.5	60			Brown SILTY CLAY with some sand (basaltic) and a little gravel (basaltic), very stiff, moist (older alluvium)			
			10		33		65			grades to hard			
			13		61/6" +25/1"	>4.5	70			grades to very stiff			
			10		16		75						
Date Started: November 16, 2020										Water Level: ▼ Not Observed			
Date Completed: November 19, 2020													
Logged By: M. Hassani / B. Aiu										Drill Rig: CME-75DG2			
Total Depth: 122 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring			
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop			

		GEOLABS, INC.		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII							Log of Boring 7		
Geotechnical Engineering													
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			
TXUU Su=4.6 ksf	48	72	0		47		75		CH	grades with some gravel			
	49		98		17		80						
Direct Shear	53	73	71		26	2.0	85			grades to stiff			
	56		21		24		90		SP-SC	Brown with dark brown GRAVELLY SAND with a little clay, medium dense to dense, moist (older alluvium)			
TXUU Su=1.4 ksf	52	71	12		23	1.8	95		MH	Brown CLAYEY SILT with traces of sand (coralline), stiff, moist (older alluvium)			
	56		86		15		100			grades to stiff to very stiff			
Direct Shear	57	71	71		14	1.5	105			grades to medium stiff			
	52		0		10		110			grades to stiff			
TXUU Su=1.8 ksf	36	84	100		27	1.8	115						
	53				12		120			Boring terminated at 122 feet			
								125					
								130					
								135					
								140					
								145					
								150					
Date Started: November 16, 2020										Water Level: ▼ Not Observed			
Date Completed: November 19, 2020													
Logged By: M. Hassani / B. Aiu										Drill Rig: CME-75DG2			
Total Depth: 122 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring			
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop			

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

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BORING LOG DOT.DWG 8049-00&10 GEOLABS.GIT 4/2/21

BORING LOG DOT.DWG 8049-00&10 GEOLABS.GIT 4/2/21

GERALD Y. SEKI  
LICENSED PROFESSIONAL ENGINEER  
No. 5635-C  
HAWAII, U.S.A.  
4/30/24  
SIGNATURE EXPIRATION DATE OF THE LICENSE  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

BORING LOGS - 4


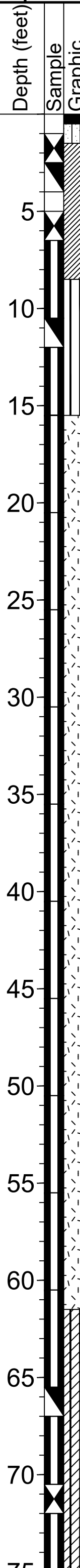
INTERSTATE ROUTE HI (EB) IMPROVEMENTS  
Ola Lane Overpass to Likelike Hwy Off-Ramp  
Project No. NH-HI-1(280)


Scale: Date: December 2022

SHEET No. B-8 OF 15 SHEETS



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-H1-1(280)	2023	22	466

		GEOLABS, INC.					INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII					Log of Boring 8	
Geotechnical Engineering													
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) : 55 *			
										Description			
Direct Shear LL=74 PI=52	9	104			36				SM	6-inch ASPHALTIC CONCRETE			
	19				18				CH	Brownish gray SILTY SAND with some gravel, moist (fill)			
	15	80			24		5			Brown SILTY CLAY with some sand and gravel, very stiff, moist (fill) grades with more gravel, stiff			
LL=30 PI=5	28		33		34		10		ML	Brown SANDY SILT with some gravel and cobbles, hard, moist (alluvium) grades with some sand (coralline)			
			45				15						
UC=16520 psi			100	77	20/0" Ref.		20			Gray BASALT, moderately fractured, slightly weathered, very hard (basalt formation)			
UC=14360 psi			100	100			25			grades to massive, unweathered			
UC=18870 psi			100	100			30						
UC=15330 psi			100	100			35						
			100	100			40						
			100	100			45						
UC=13420 psi			100	100			50						
			100	100			55			grades to slightly fractured			
			100	90			60						
UC=20380 psi			72	100			65		MH	Brown with dark gray mottling CLAYEY SILT with some sand and traces of gravel, very stiff, moist (older alluvium)			
							70						
LL=58 PI=25	46		62		19								
TXUU Su=3.3 ksf	52	71	86		40	2.0							
													
Date Started: October 28, 2020										Water Level: ▼ Not Observed			
Date Completed: November 2, 2020													
Logged By: B. Aiu / M. Hassani										Drill Rig: CME-75DG2			
Total Depth: 122 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring			
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop			

 <b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII							Log of Boring 8		
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	
TXUU Su=4.9 ksf	54		0		20				MH	grades with no gravel and less sand	
	51	73	13		71/6" +25/1"	>4.5	80		CL	Brown with multi-color mottling SANDY CLAY with some gravel (basaltic), hard, moist (older alluvium)	
	55		19		10		85			grades to stiff locally	
	41	78	26		58	4.5	90				
	56		26		23		95			grades to very stiff	
Direct Shear	57	69	14		28	4.5	100				
TXUU Su=2.8 ksf	45	75	19		40	4.5	105				
	50		19		16		110		CH	Brown with multi-color mottling SILTY CLAY with a little sand, very stiff, moist (older alluvium)	
Direct Shear	52	73	24		26	3.5	115			grades to stiff	
	50				15		120			grades to stiff to very stiff	
										Boring terminated at 122 feet	

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

FILE: A:\Paving\Drilling\Working\8049-00&10-Interstate\_Route\_H-1\_Congestion\_Improvements\8049-00&10SheetBoringLog.dwg saved December 23, 2022

BORING LOG DOT.DWG 8049-00&10-GEOLABS.GDT 4/2/21

BORING LOG DOT.DWG 8049-00&10-GEOLABS.GDT 4/2/21



SIGNATURE: *Gerald Y. Seki* 4/30/24  
EXPIRATION DATE OF THE LICENSE  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION




**BORING LOGS - 5**




**INTERSTATE ROUTE HI (EB) IMPROVEMENTS**  
**Ola Lane Overpass to Likelike Hwy Off-Ramp**  
**Project No. NH-HI-1(280)**

Scale: \_\_\_\_\_ Date: **December 2022**

SHEET No. **B-9** OF **15** SHEETS

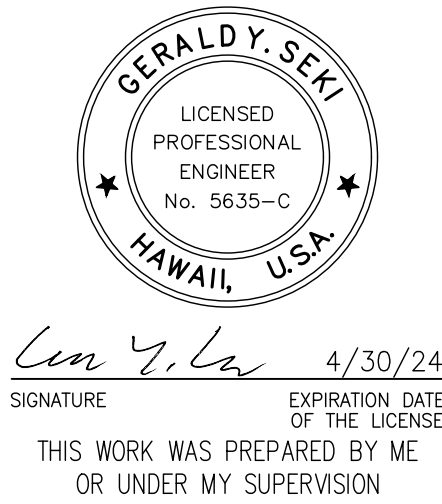
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-H1-1(280)	2023	23	466

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII										Log of Boring 9	
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 ): 53 *					
										Description					
LL=62 PI=25	23				57				SM	7-inch ASPHALTIC CONCRETE					
	36	88			43	4.0	5		MH	Dark gray with light gray mottling SILTY SAND with some gravel, dense to very dense, moist (fill)					
										Orangish gray CLAYEY SILT with some sand and gravel, very stiff, moist (saprolite) grades with more gravel					
										Gray BASALT, moderately weathered, medium hard to hard (basalt formation)					
										Boring terminated at 10 feet					
Date Started: October 26, 2020										Water Level: ∇ Not Encountered					
Date Completed: October 26, 2020															
Logged By: M. Hassani										Drill Rig: CME-75DG2 (Energy Transfer Ratio = 89.5%)					
Total Depth: 10 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring					
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII										Log of Boring 10	
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 ): 52 *					
										Description					
UC=5860 psi	20	96			40/2" 25/1"				SM	4-inch ASPHALTIC CONCRETE					
			100	25			5		ML	Gray SILTY SAND (BASALTIC) with some gravel (basaltic), moist (fill)					
			100	97						Brown and gray SANDY SILT with some gravel (basaltic), hard, moist (fill) grades with some cobbles					
			95	95						Gray BASALT, moderately fractured, slightly weathered, hard (basalt formation)					
			100	100						grades to massive					
UC=4790 psi			100	100			10								
							15								
			100	100			20								
							25								
			100	100			30								
UC=19010 psi			100	100			35								
							40								
			100	100			45								
							50								
			100	100			55								
UC=17140 psi							60								
							65								
							70								
							75								
										Boring terminated at 41.5 feet					
Date Started: November 9, 2020										Water Level: ∇ Not Encountered					
Date Completed: November 9, 2020															
Logged By: B. Aiu										Drill Rig: CME-75DG2					
Total Depth: 41.5 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring					
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop					

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

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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**BORING LOGS - 6**


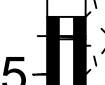
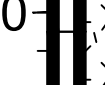
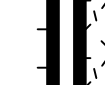
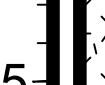
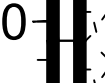
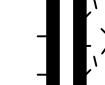
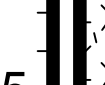

**INTERSTATE ROUTE HI (EB) IMPROVEMENTS**  
**Ola Lane Overpass to Likelike Hwy Off-Ramp**  
**Project No. NH-HI-1(280)**











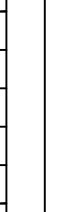
Scale: Date: December 2022

SHEET No. B-10 OF 15 SHEETS



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-H1-1(280)	2023	24	466

 <b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII							Log of Boring 11					
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 ): 70 *				
										Description				
UC=6330 psi			100	100	25/1"		5		GM	Grayish brown SILTY GRAVEL (BASALTIC) with some sand (basaltic), moist (fill)				
			97	88			10			Gray vesicular BASALT, slightly fractured, moderately weathered, hard (basalt formation)				
UC=14340 psi			97	58			15			grades to severely to slightly fractured				
			98	40			20			grades to severely fractured, medium hard				
UC=19350 psi			100	0			25			grades to slightly fractured, slightly weathered, hard				
			97	97			30							
UC=18880 psi			93	83			35							
			98	98			40							
UC=16870 psi			100	100			45							
			97	80			50							
LL=55 PI=28 TXUU Su=6.1 ksf	29	92	100	90			55			grades to severely fractured, highly weathered, soft to medium hard				
			47	100			60		CH	Reddish brown SILTY CLAY with some sand, hard, moist (older alluvium)				
TXUU Su=3.8 ksf	48	67	0		84	>4.5	65		CH	Brown with multi-color mottling SILTY CLAY with some sand, hard, moist (older alluvium)				
			0		33		70			grades to medium stiff				
0				31	3.0	75								
Date Started: June 25, 2020										Water Level:  Not Observed				
Date Completed: June 26, 2020														
Logged By: B. Aiu										Drill Rig: CME-75DG2				
Total Depth: 122 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring				
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop				

 <b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII							Log of Boring 11	
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
LL=73 PI=41 Direct Shear	59		67		20				CH	grades with fine gravel, very stiff
	54	71	55		28	3.8	80			
	45		71		23		85			
TXUU Su=4.3 ksf	50	73	0		34	2.5	90			
	49		60		25		95			
TXUU Su=7.1 ksf - #200 = 98.1%	43	78	62		37		100		ML	Brown with multi-color mottling SILT (BASALTIC) with traces of sand, very stiff, moist (older alluvium)
	60		71		8		105			grades to stiff locally
Direct Shear	52	70	71		31		110			grades to hard locally
	47		52		39		115			
	60	66			27		120			
										Boring terminated at 122 feet

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

FILE: A:\Paving\Drilling\Working\8049-00&10-Interstate\_Route\_H-1\_Congestion\_Improvements\8049-00&10SheetBoringLog.dwg saved December 23, 2022

BORING LOG DOT.DWG 8049-00&10-GEOLABS.GIT 4/21/21

BORING LOG DOT.DWG 8049-00&10-GEOLABS.GIT 4/21/21



SIGNATURE: *Gerald Y. Seki* 4/30/24  
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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION


**BORING LOGS - 7**

**INTERSTATE ROUTE HI (EB) IMPROVEMENTS**  
**Ola Lane Overpass to Likelike Hwy Off-Ramp**  
**Project No. NH-HI-1(280)**

Scale:                      Date: December 2022

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-H1-1(280)	2023	25	466

		GEOLABS, INC.		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII										Log of Boring	
Geotechnical Engineering														12	
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 ): 51 *					
										Description					
UC=17550 psi	18				7/6" +50/5" 25/1"				GW	8-inch ASPHALTIC CONCRETE					
	7		83	0			5		SW	Gray SANDY GRAVEL (BASALTIC), moist (base course)					
			100	38					CH	Grayish brown GRAVELLY SAND (BASALTIC), medium dense, moist (fill)					
			100	82			10			Brown with some gray SILTY CLAY with some cobbles (basaltic), hard, moist (fill)					
UC=18480 psi			100	100			15			Gray COBBLES AND BOULDERS (BASALTIC) with a little clay, very dense, moist (weathered basalt)					
			100	100			20			Gray vugular BASALT, severely to moderately fractured, unweathered, very hard (a'a basalt) grades to dense and slightly fractured grades to massive					
			100	100			25								
			100	100			30								
UC=17690 psi			100	100			35								
			95	58			40			grades to moderately fractured					
			5	0			45		MH	Reddish brown CLAYEY SILT, hard, moist (older alluvium)					
		49		52		62	50		ML	Dark brown CLAYEY SILT, very stiff, moist (older alluvium)					
LL=62 PI=29 TXUU Su=2.9 ksf	55	69	29		29	>4.5	55			grades with sandy silt					
	54		69		19		60								
	51	70	71		28	>4.5	65		CH	Brown with traces of gray SILTY CLAY with traces of fine sand, very stiff, moist (older alluvium)					
	53		55		17		70			grades with silty clay pockets locally, hard					
LL=62 PI=33 TXUU	38	83	83		57	>4.5	75								
Date Started: October 27, 2020										Water Level: 29.6 ft. 10/29/2020 2140 HRS					
Date Completed: October 30, 2020										19.5 ft. 10/30/2020 0015 HRS					
Logged By: S. Latronic										Drill Rig: CME-75DG2					
Total Depth: 122.5 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring					
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop					

 <b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII								Log of Boring 12	
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	
Su=9.0 ksf	57		71		10		80		CH	grades to stiff	
	56	70	64		29	2.5	85			grades to very stiff	
	50		64		16		90			grades with sandy silt locally	
LL=62 PI=27 TXUU Su=2.5 ksf	53	71	38		20	2.0	95		MH	Brown with some gray CLAYEY SILT with some sand and rounded basalt gravel, stiff, moist (older alluvium)	
	55		67		19		100		MH	Brown with some gray CLAYEY SILT with traces of fine sand, very stiff, moist (older alluvium)	
TXUU Su=4.4 ksf Sieve #200 = 88.9%	47	75	67		44		105		ML	Brown with some gray SILT (BASALTIC) with a little sand and traces of gravel, very stiff, wet (river delta deposit) grades more gravelly locally	
	57		83		19		110			grades slightly cemented locally	
Direct Shear	50	75	43		38		115				
	65		88		13		120		ML	Orangish brown with traces of gray CLAYEY SILT with a little sand (basaltic), stiff, moist (older alluvium)	
UC=2.8 ksf	62	65			30	>4.5	120		ML	Gray CLAYEY SILT with a little fine sand, very stiff, moist (estuarine deposit)	
							125			Boring terminated at 122.5 feet	
							130				
							135				
							140				
							145				
							150				
Date Started: October 27, 2020								Water Level: 29.6 ft. 10/29/2020 2140 HRS			
Date Completed: October 30, 2020								19.5 ft. 10/30/2020 0015 HRS			
Logged By: S. Latronic								Drill Rig: CME-75DG2			
Total Depth: 122.5 feet								Drilling Method: 4" Solid-Stem Auger & PQ Coring			
Work Order: 8049-00&10								Driving Energy: 140 lb. wt., 30 in. drop			

ORIGINAL PLAN	DATE
NOTE BOOK	
DESIGNED BY	
QUANTITIES BY	
CHECKED BY	

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BORING LOG DOT.DWG 8049-00&10-GEOLABS.GIT 4/21/21

BORING LOG DOT.DWG 8049-00&10-GEOLABS.GIT 4/21/21



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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**BORING LOGS - 8**

















**INTERSTATE ROUTE HI (EB) IMPROVEMENTS**  
**Ola Lane Overpass to Likelike Hwy Off-Ramp**  
**Project No. NH-HI-1(280)**












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SHEET No. B-12 OF 15 SHEETS



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-HI-1(280)	2023	26	466

 <b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII								Log of Boring 13	
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) : 69 *	
										Description	
LL=57 PI=32 Direct Shear UC=1630 psi  UC=7520 psi  UC=25940 psi  UC=6750 psi  TXUU Su=2.7 ksf Sieve #200 = 57.1% UC=21600 psi UC=18390 psi	11	92			15/6" +50/1" 20		5		CH	Brown SILTY CLAY with a little sand (basaltic) and gravel (basaltic), very stiff to hard, moist (fill)	
			88	0	50/4"		10		MH	Brown and gray BRECCIA, closely fractured, moderately weathered, medium hard to hard (welded clinker) grades to moderately fractured	
			90	70			15		ML	Gray BASALT, slightly fractured, slightly weathered, very hard (basalt formation) grades to massive grades to unweathered	
			100	100			20		ML	grades with pockets of brown silty clay locally	
			100	72			25		ML	grades to slightly fractured	
			17				30		ML	Brown GRAVELLY SILT with some sand (basaltic), stiff, moist (alluvium)	
			60		16		35		SM	grades with some cobbles	
			100	100	10/0" Ref.		40		ML	Gray BASALT, massive, unweathered, very hard (basalt formation)	
			100	100			45		ML		
			87	69			50		CH	Reddish brown SILTY CLAY with some sand and gravel (basaltic), stiff, moist (older alluvium)	
LL=67 PI=33 TXUU Su=2.3 ksf	34	88			26		55		MH	Brown with multi-color mottling CLAYEY SILT with some sand and traces of gravel (basaltic), stiff, moist (older alluvium) grades to very stiff	
	47				12		60		ML	grades to stiff	
			71				65		ML		
	42	82			34	1.3	70		ML		
	65			36	14		75		ML		
Date Started: November 10, 2020										Water Level: ▼ Not Observed	
Date Completed: November 11, 2020											
Logged By: B. Aiu										Drill Rig: CME-75DG2	
Total Depth: 122.5 feet										Drilling Method: 4" Solid-Stem Auger & PQ Coring	
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop	

 <b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII								Log of Boring 13	
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	
Direct Shear	58	61	36		14	3.0	75		MH	grades to medium stiff	
	47		21		17		80		MH	grades to very stiff	
TXUU Su=3.6 ksf	61	64	31		20	2.0	85		MH	grades to stiff	
	53		10		12		90		MH		
TXUU Su=3.6 ksf	57	68	0		20	2.0	95		MH		
	52		26		9		100		MH		
	60	63	10		25	2.0	105		MH		
	49		12		19		110		SM	Brown with gray mottling SILTY SAND (BASALTIC) with traces of gravel (basaltic), medium dense, moist (older alluvium)	
TXUU Su=5.1 ksf Sieve #200 = 42.1%	45	77	24		40		115		ML	Brown with multi-color mottling SANDY SILT, stiff, moist (older alluvium)	
	61				9		120		ML	Boring terminated at 122.5 feet	
							125				
							130				
							135				
							140				
							145				
							150				
Date Started: November 10, 2020								Water Level: ▼ Not Observed			
Date Completed: November 11, 2020											
Logged By: B. Aiu								Drill Rig: CME-75DG2			
Total Depth: 122.5 feet								Drilling Method: 4" Solid-Stem Auger & PQ Coring			
Work Order: 8049-00&10								Driving Energy: 140 lb. wt., 30 in. drop			

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

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BORING LOG DOT.DWG 8049-00&10-GEOLABS.GDT 4/21/21



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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION


**BORING LOGS - 9**

**INTERSTATE ROUTE HI (EB) IMPROVEMENTS**  
**Ola Lane Overpass to Likelike Hwy Off-Ramp**  
**Project No. NH-HI-1(280)**

Scale:                      Date: December 2022


FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-H1-K(280)	2023	27	466

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII										Log of Boring 14	
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 ): 51 *					
										Description					
	18				50/3"					8-inch ASPHALTIC CONCRETE					
					60/0" Ref.		5		SP MH	Brownish gray GRAVELLY SAND, moist (fill)					
					50/0" Ref.		10			Brown CLAYEY SILT with some sand and gravel, hard, moist (fill)					
							15			BASALT, medium hard to hard (basalt formation)					
							20			Boring terminated at 10 feet					
							25								
							30								
							35								
Date Started: October 26, 2020										Water Level: ∇ Not Encountered					
Date Completed: October 26, 2020															
Logged By: M. Hassani										Drill Rig: CME-75DG2 (Energy Transfer Ratio = 89.5%)					
Total Depth: 10 feet										Drilling Method: 4" Solid-Stem Auger & HQ Coring					
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII										Log of Boring 15	
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 ): 52 *					
										Description					
	LL=48 PI=25		98	0	50/5"					8-inch ASPHALTIC CONCRETE					
							5		SW CL	Grayish brown medium to coarse angular GRAVELLY SAND (BASALTIC), moist (fill)					
							10			Brown and gray SANDY CLAY with some gravel (basaltic), very stiff, moist (fill)					
							15			21-inch CONCRETE					
							20			Gray dense BASALT, moderately to closely fractured, unweathered to slightly weathered, very hard (a'a basalt)					
							25			grades to slightly fractured locally					
							30								
							35		ML	Reddish brown CLAYEY SILT with some sand and a little gravel, hard, moist (older alluvium)					
							40			grades to very stiff					
							45		MH	Brown with some gray CLAYEY SILT with some gravel and a little cobbles (basaltic), hard, moist (older alluvium)					
							50			Boring terminated at 43 feet					
							55								
							60								
							65								
							70								
							75								
Date Started: October 26, 2020										Water Level: ∇ Not Encountered					
Date Completed: October 27, 2020															
Logged By: S. Latronic										Drill Rig: CME-45C TRUCK					
Total Depth: 43 feet										Drilling Method: 4" Solid-Stem Auger & HQ Coring					
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop					

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

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STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

**BORING LOGS - 10**



**INTERSTATE ROUTE HI (EB) IMPROVEMENTS**  
**Ola Lane Overpass to Likelike Hwy Off-Ramp**  
**Project No. NH-HI-K(280)**


Scale:                      Date: December 2022






SHEET No. B-14 OF 15 SHEETS








FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-HI-1(280)	2023	28	466

		GEOLABS, INC.		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII										Log of Boring 16	
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) : 56 *			
												Description			
LL=46 PI=15	20 31	104			42 4/6" +25/0" Ref. 10/0" Ref. 10/0" Ref.	>4.5		5			SM ML	6-inch ASPHALTIC CONCRETE			
												Dark gray SILTY SAND with some gravel, moist (fill)			
												Brown SANDY SILT with some gravel (angular), medium stiff to stiff, moist (fill)			
												CONCRETE			
												Light gray BASALT, slightly fractured to massive, unweathered to slightly weathered, hard (basalt formation)			
								10				Boring terminated at 10 feet			
								15							
								20							
								25							
								30							
								35							
Date Started: October 29, 2020												Water Level: ∇		Not Encountered	
Date Completed: October 29, 2020															
Logged By: M. Hassani												Drill Rig: CME-75DG2		(Energy Transfer Ratio = 89.5%)	
Total Depth: 10 feet												Drilling Method: 4" Solid-Stem Auger & HQ Coring			
Work Order: 8049-00&10												Driving Energy: 140 lb. wt., 30 in. drop			

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII					Log of Boring 101		
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	
							40			Gray BASALT, moderately fractured, slightly weathered to unweathered, very hard (basalt formation)	
							45			Boring terminated at 31 feet	
							50				
							55				
							60				
							65				
							70				
Date Started: January 19, 2021								Water Level: ▼ Not Encountered			
Date Completed: January 19, 2021											
Logged By: Steven Leong								Drill Rig: CME-45C TRUCK (Energy Transfer Ratio = 78%)			
Total Depth: 31 feet								Drilling Method: 4" Solid-Stem Auger & HQ Coring			
Work Order: 8049-00&10								Driving Energy: 140 lb. wt., 30 in. drop			

 <b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII								Log of Boring  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) : 72 *	
										Description	
Sieve #200 = 40.5%	16	74	67	58	27 25		5		SM	Brown SILTY SAND with some gravel, medium dense, moist (fill)	
	22									Gray COBBLES AND BOULDERS (fill)	
			Gray CONCRETE, very hard (fill)								
UC= 9430 psi	13	0	70	70	50/3"		10		SW	Brown GRAVELLY SAND with a little silt, very dense, moist (fill)	
	12									Gray CONCRETE, very hard (fill)	
			VOID								
UC= 28420 psi	14	82	18	50/3"			15		SW	Brown with tan GRAVELLY SAND, very dense, moist (fill)	
										Grayish brown BASALT, severely to closely fractured, moderately weathered, medium hard (basalt formation)	
			72	15							20
		97	73				25			Grayish brown BASALT, closely fractured, moderately weathered, medium hard (basalt formation)	
							30				
							35				
Date Started: January 19, 2021										Water Level:  Not Encountered	
Date Completed: January 19, 2021											
Logged By: Steven Leong										Drill Rig: CME-45C TRUCK (Energy Transfer Ratio = 78%)	
Total Depth: 31 feet										Drilling Method: 4" Solid-Stem Auger & HQ Coring	
Work Order: 8049-00&10										Driving Energy: 140 lb. wt., 30 in. drop	

 <b>GEOLABS, INC.</b> Geotechnical Engineering		INTERSTATE ROUTE H-1 CONGESTION IMPROVEMENTS VICINITY OF OLA LANE TO VICINITY OF KALIHI STREET HONOLULU, OAHU, HAWAII							Log of Boring 101A	
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) : 72 *
Sieve #200 = 34.2%	27	79			24		5		SM	Brown SILTY SAND with some gravel (basaltic), medium dense (fill)
										grades with clay
	32				54		10			grades to dense
	35	72			84		15			Grayish brown non-vesicular BASALT, moderately weathered, medium hard (basalt formation)
							20			Boring terminated at 17.5 feet
							25			
							30			
							35			
Date Started: January 19, 2021							Water Level:  Not Encountered			
Date Completed: January 19, 2021										
Logged By: Steven Leong							Drill Rig: CME-45C TRUCK (Energy Transfer Ratio = 78%)			
Total Depth: 17.5 feet							Drilling Method: 4" Solid-Stem Auger & HQ Coring			
Work Order: 8049-00&10							Driving Energy: 140 lb. wt., 30 in. drop			

ORIGINAL PLAN	DATE
NOTED BY	
DESIGNED BY	
CHECKED BY	
NO.	

FILE: A:\Working\Drilling\Working\8049-00&10-Interstate\_Route\_H-1\_Congestion\_Improvements\8049-00&10SheetBoringLogs.dwg, saved December 23, 2022

BORING LOG DOT HALF-ONE 8049-00&10 GEOLABS DOT 4/2/21

BORING LOG DOT HALF-ONE 8049-00&10 GEOLABS DOT 4/2/21

GERALD Y. SEKI  
LICENSED PROFESSIONAL ENGINEER  
No. 5635-C  
HAWAII, U.S.A.  
4/30/24  
SIGNATURE  
EXPIRATION DATE OF THE LICENSE  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
HIGHWAYS DIVISION

BORING LOGS - 11

INTERSTATE ROUTE HI (EB) IMPROVEMENTS  
Ola Lane Overpass to Likelike Hwy Off-Ramp  
Project No. NH-HI-1(280)

Scale: Date: December 2022