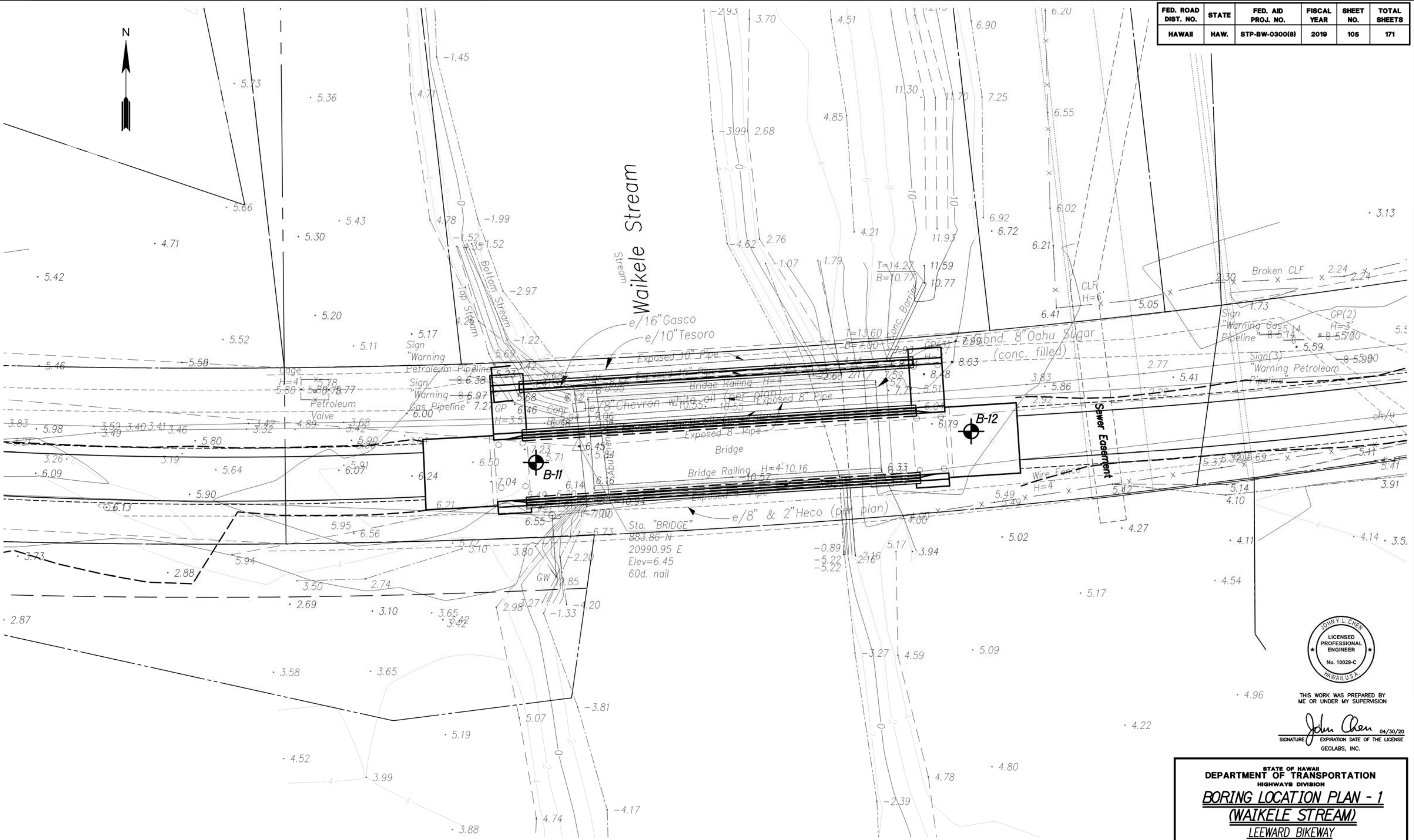
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	105	171



LEGEND:

⌖ Approximate Boring Location

0 5 10 20 30 Ft.

Graphic Scale

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

JOHN Y. L. CHEN
LICENSED PROFESSIONAL ENGINEER
No. 10029-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE John Chen 04/30/20 EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN - 1 (WAIKELE STREAM)

LEEWARD BIKEWAY

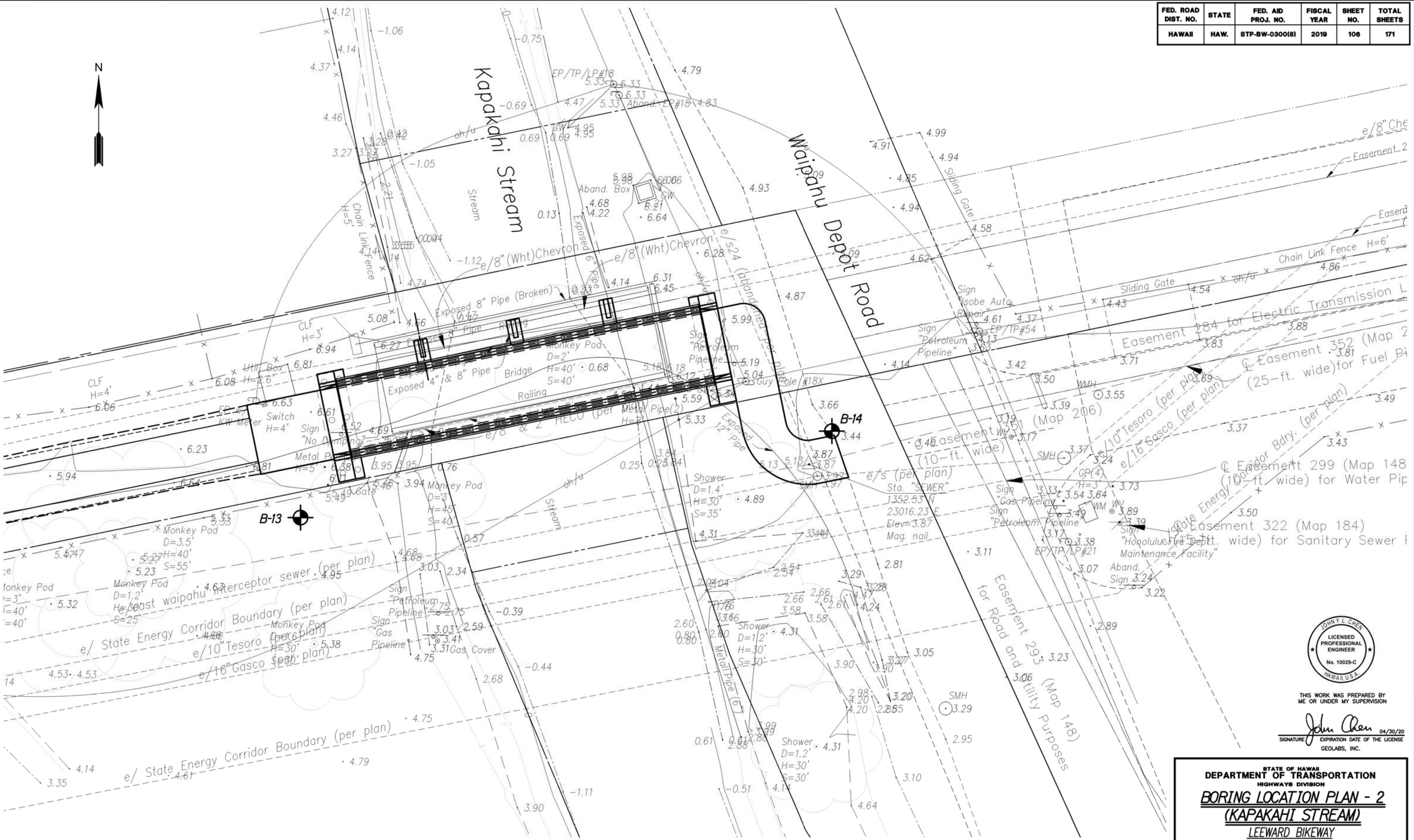
Philippine Sea Rd. to Waipahu Depot Street

Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G1.1 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	106	171



N
Kapakahi Stream
Waipahu Depot Road
B-13
B-14
Bridge
Railing
Chain Link Fence H=6'
Sliding Gate
Easement 284 for Electric Transmission L
Easement 352 (Map 2
℄ Easement (25-ft. wide)for Fuel Pi
℄ Easement 299 (Map 148 (10-ft. wide) for Water Pip
℄ Easement 322 (Map 184) (15-ft. wide) for Sanitary Sewer
Easement 293 (Map 148) for Road and Utility Purposes
e/ State Energy Corridor Boundary (per plan)
e/10"Tesoro (per plan)
e/16"Gasco (per plan)
East waipahu interceptor sewer (per plan)
e/8"(Wht)Chevron
Exposed 8" Pipe (Broken)
Exposed 4" & 8" Pipe
Monkey Pod
Shower
Sta. "SEWER" 1352.53 N 23016.23 E Elev=3.87 Mag. nail
"Honolulu Fire Dept. Maintenance Facility"

LEGEND:

⊕ *Approximate Boring Location*

0 5 10 20 30 Ft.

Graphic Scale

JOHN Y.L. CHEN
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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN - 2 (KAPAKAHI STREAM)

LEEWARD BIKEWAY

Philippine Sea Rd. to Waipahu Depot Street

Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted — Date: Sept. 1, 2019

SHEET No. G1.2 OF 13 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY
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	DATE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	107	171

GEOLABS, INC.
Geotechnical Engineering

Soil Log Legend

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS	GRAVELS	CLEAN GRAVELS	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	LESS THAN 5% FINES	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
		MORE THAN 12% FINES	GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS	CLEAN SANDS	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE		LESS THAN 5% FINES	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	SANDS WITH FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
		MORE THAN 12% FINES	SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE-GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50	ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE	MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

LEGEND

	(2-INCH) O.D. STANDARD PENETRATION TEST	LL	LIQUID LIMIT (NP=NON-PLASTIC)
	(3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE	PI	PLASTICITY INDEX (NP=NON-PLASTIC)
	SHELBY TUBE SAMPLE	TV	TORVANE SHEAR (tsf)
	CORE SAMPLE	PEN	POCKET PENETROMETER (tsf)
	WATER LEVEL OBSERVED IN BORING	UC	UNCONFINED COMPRESSION (psi)
CONSOL	CONSOLIDATION	UU	UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf)

Plate
A-0.1

LOG LEGEND FOR SOIL 6008-00.GPJ GEOLABS.GDT 12/2/08

GEOLABS, INC.
Geotechnical Engineering

Soil Classification Log Key
(with deviations from ASTM D2488)

GEOLABS, INC. CLASSIFICATION*

GRANULAR SOIL (- #200 <50%)	COHESIVE SOIL (- #200 ≥50%)
• PRIMARY constituents are composed of the largest percent of the soil mass. Primary constituents are capitalized and bold (i.e., GRAVEL, SAND)	• PRIMARY constituents are based on plasticity. Primary constituents are capitalized and bold (i.e., CLAY, SILT)
• 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.	• 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.
• accessory descriptions compose of the following: with some: >12% with a little: 5 - 12% with traces of: <5% accessory descriptions are lower cased and follow the Primary and Secondary Constituents (i.e., SILTY GRAVEL with a little sand)	• accessory descriptions compose of the following: with some: >12% with a little: 5 - 12% with traces of: <5% accessory descriptions are lower cased and follow the Primary and Secondary Constituents (i.e., SILTY CLAY with some sand)
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)		PP Readings (tsf)	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	< 0.5	Soft
10 - 30	18 - 55	Medium Dense	4 - 8	7 - 15	0.5 - 1.0	Medium Stiff
30 - 50	55 - 91	Dense	8 - 15	15 - 27	1.0 - 2.0	Stiff
> 50	> 91	Very Dense	15 - 30	27 - 55	2.0 - 4.0	Very Stiff
			> 30	> 55	> 4.0	Hard

MOISTURE CONTENT DEFINITIONS

Dry: Absence of moisture, dry to the touch

Moist: Damp but no visible water

Wet: Visible free water, usually soil is below water table

ABBREVIATIONS

WOH: Weight of Hammer

WOR: Weight of Drill Rods

SPT: Standard Penetration Test Split-Spoon Sampler

MCS: Modified California Sampler

PP: Pocket Penetrometer

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)

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).

Plate
A-0.2

SOIL_CLASS_LOG_KEY 6008-00.GPJ GEOLABS.GDT 9/19/18

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

JOHN Y. L. CHEN
LICENSED PROFESSIONAL ENGINEER
No. 10029-C
HAWAII, U.S.A.

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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG LEGENDS

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G2.1 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	108	171

GEOLABS, INC.

Geotechnical Engineering

Rock Log Legend

ROCK DESCRIPTIONS

	BASALT		FINGER CORAL
	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

LOG LEGEND FOR ROCK 6008-00.GPJ 12/2/08

GEOTECHNICAL NOTES

1. *A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Leeward Bikeway, Philippine Sea Road to Waipahu Depot Street, Waipahu, Oahu, Hawaii" dated September 20, 2018 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.*
2. *For boring locations, see Sheet G1.1 and G1.2.*
3. *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.*
4. *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.*
5. *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 No. | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE

JOHN Y. L. CHEN
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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG LEGEND & NOTES

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G2.2 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	109	171

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, OAHU, HAWAII

Log of Boring 11

Approximate Ground Surface Elevation (feet): 7 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	14	77	33		30					MH	Brown with white mottling CLAYEY SILT with sand, medium stiff, damp (fill)
	9		11		6					GP-GM	Whitish tan with white mottling SILTY GRAVEL (CORALLINE) with sand, loose, dry (fill)
	34		11		16		5				grades to saturated
										CL	Dark brownish gray with white mottling SANDY CLAY with silt and shells, very soft (lagoonal deposit)
	46		83		2		10				
CONSOL	114	42	50		3		15				
	88		83		1/18"		20				
										SC	Dark grayish brown CLAYEY SAND with some gravel, very loose (marsh deposit)
	60	65	78		2		25				
							30				
	57		83		2					CL	Brown with multi-color mottling SANDY CLAY with silt and some gravel, very stiff (alluvium)
							35				

Date Started:	December 5, 2008	Water Level: ▽	4.5 ft. 12/5/08 1000 HRS
Date Completed:	December 9, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	151 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG_DOT_6008-00.GPJ GEOLABS.GDT 1/8/09

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, OAHU, HAWAII

Log of Boring 11

(Continued from previous plate)

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
										CL	
LL=49 PI=22	40		83		18	3.5					
							40				
TXUU	44	77	78		23	2.5					
							45				
	45		83		7	2.0					
							50			GP	Brown with multi-color mottling COBBLES AND BOULDERS (BASALTIC) with sand, dense (alluvium)
			88	0	11/3"						
							55				
			75	0	8/0"						
							60				
			50	0							
							65				
			88	0	15/3"						
							70				

Date Started:	December 5, 2008	Water Level: ▽	4.5 ft. 12/5/08 1000 HRS
Date Completed:	December 9, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	151 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG_DOT_6008-00.GPJ GEOLABS.GDT 1/8/09

SURVEY PLOTTED BY ____ DATE ____
DRAWN BY ____
TRACED BY ____
DESIGNED BY ____
QUANTITIES BY ____
CHECKED BY ____

ORIGINAL PLAN
NOTE BOOK
No. ____

JOHN Y. L. CHEN
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John Chen 04/30/20
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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G2.3 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	110	171

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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
			100	0							Grayish brown with multi-color mottling vesicular BASALT, closely to severely fractured, highly weathered, medium hard
			100	27			75				grades to closely fractured, highly to moderately weathered
			100	67			80				
			75	50			85				
			100	67			90				
			90	47			95				
			75	67			100				grades to scoriaceous
							105				

BORING LOG DOT 6008-00.GPJ GEOLABS.GDT 1/9/09

Date Started:	December 5, 2008	Water Level: ▽	4.5 ft. 12/5/08 1000 HRS
Date Completed:	December 9, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	151 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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
			100	83							
			100	92			110				grades to moderately weathered, very hard
			100	93			115				grades to moderately fractured
			100	90			120				grades to grayish red
			100	100			125				
			100	83			130				grades to moderately fractured
			100	97			135				grades to gray, slightly fractured, slightly weathered, very hard (6 foot artesian head encountered) grades with red mottling
							140				

BORING LOG DOT 6008-00.GPJ GEOLABS.GDT 1/9/09

Date Started:	December 5, 2008	Water Level: ▽	4.5 ft. 12/5/08 1000 HRS
Date Completed:	December 9, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	151 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

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

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John Chen 04/30/20
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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G2.4 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	111	171

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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
			100	97			145				grades to grayish red
			100	100			150				(8 foot artesian head encountered)
											Boring terminated at 151 feet
							155				* Elevations estimated from Topographic Survey Map transmitted by R. M. Towill Corporation on January 6, 2009.
							160				
							165				
							170				
							175				

Date Started:	December 5, 2008	Water Level: ▽	4.5 ft. 12/5/08 1000 HRS
Date Completed:	December 9, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	151 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008-00.GPJ GEOLABS.GDT 1/8/09

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, OAHU, HAWAII

Log of Boring 12

Approximate Ground Surface Elevation (feet): 7 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	12	104	39		21		0			CL	Brown with white mottling SANDY CLAY with some gravel, very stiff, damp (fill)
	24		33		8		5			SM	Whitish tan with light brown mottling SILTY SAND (CORALLINE) with gravel, medium dense, moist (fill)
										CL	Dark grayish brown with white mottling SILTY CLAY with shells, very soft (lagoonal deposit)
	48	74	39		4		10				
	42		67		2		15				
							20			MH	Dark grayish brown CLAYEY SILT with fine sand and some shells, very soft (lagoonal deposit)
CONSOL	91	46	78		2		25				
LL=96 PI=48	104		100		1/18"		30			CH	Brown with multi-color mottling SILTY CLAY with some fine sand, very stiff (alluvium)
TXUU	42	81	78		14	3.0	35				

Date Started:	December 1, 2008	Water Level: ▽	7.1 ft. 12/1/2008 1234 HRS
Date Completed:	December 4, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	126 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008-00.GPJ GEOLABS.GDT 1/8/09

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

JOHN Y. L. CHEE
LICENSED PROFESSIONAL ENGINEER
No. 10029-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

John Chee 04/30/20
SIGNATURE EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G2.5 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	112	171

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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
										CH	
LL=56 PI=33	42		83		4	2.5					grades with some gravel
							40				
TXUU	47	74	22		19	3.0					
										ML	Brown SANDY SILT with some gravel, medium dense (alluvium)
	45		83		7	3.0	45				
	46		83		7		50				
										GP	Brown with multi-color mottling GRAVELLY COBBLES AND BOULDERS (BASALTIC) with clayey silt, dense (alluvium)
			60	0	8/0"		55				
							60				
			100	0							
							65				
			50	0							
							70				

Date Started:	December 1, 2008	Water Level: ▽	7.1 ft. 12/1/2008 1234 HRS
Date Completed:	December 4, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	126 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008.00.GPJ GEOLABS.GDT 1/9/09

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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
										GP	
			100	50							Brownish orange with multi-color mottling scoriaceous BASALT, closely fractured, highly weathered, medium hard
							75				
			83	70							(3 foot artesian head encountered)
							80				
			100	67							grades to vesicular, moderately fractured, moderately weathered, very hard
							85				
			100	67							grades to orangish brown with multi-color mottling scoriaceous, closely fractured, moderately to highly weathered, hard
							90				
			100	50							grades to light gray vesicular, closely to severely fractured, moderately weathered
							95				
			100	60							
							100				
			100	75							
							105				

Date Started:	December 1, 2008	Water Level: ▽	7.1 ft. 12/1/2008 1234 HRS
Date Completed:	December 4, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	126 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008.00.GPJ GEOLABS.GDT 1/9/09

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

JOHN Y. L. CHEW
LICENSED PROFESSIONAL ENGINEER
No. 10029-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE John Chew 04/30/20 EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G2.6 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	113	171

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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	Description
											(Continued from previous plate)
			100	70							grades to scoriaceous to dense, moderately to highly weathered
							110				
			100	82							grades to closely fractured
							115				
			100	67							
							120				
			87	80							grades to very hard
							125				grades to grayish red
											Boring terminated at 126 feet
							130				
							135				
							140				

Date Started:	December 1, 2008	Water Level: ▽	7.1 ft. 12/1/2008 1234 HRS
Date Completed:	December 4, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	126 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008-00.GPJ GEOLABS.GDT 5/8/09

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, OAHU, HAWAII

Log of Boring 13

Approximate Ground Surface Elevation (feet): 5.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
LL=57 PI=25	37	83			9	1.5				MH	Dark reddish brown CLAYEY SILT, medium stiff, damp
	62				Wt. of Rods	<0.5	5			MH	Dark grayish brown CLAYEY SILT with fine sand and some shells, very soft, wet (marsh deposit)
							10			CH	Dark grayish brown CLAY with shells, very soft (alluvium)
LL=62 PI=32	51				Wt. of Rods						
							15				
	35	80			10					SW	Dark grayish brown GRAVELLY SAND with some cobbles and organic matter, medium dense (alluvium)
										MH	Dark grayish brown CLAYEY SILT with some organic matter and shells, very soft (marsh deposit)
							20				
LL=90 PI=45 TV=0.05	81				Wt. of Rods						
							25				
LL=82 PI=42 CONSOL	75	59			Wt. of Rods						
							30				
	78				Wt. of Rods						
							35				

Date Started:	January 26, 2009	Water Level: ▽	5.7 ft. 01/26/2009 1122 HRS
Date Completed:	January 27, 2009		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	116.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008-00.GPJ GEOLABS.GDT 7/8/10

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

JOHN Y. L. CHEN
LICENSED PROFESSIONAL ENGINEER
No. 10029-C
HAWAII, U.S.A.

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SIGNATURE John Chen 04/30/20 EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G2.7 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	114	171

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, OAHU, HAWAII

Log of Boring 13

(Continued from previous plate)

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
								MH	grades with some gravel
TXUU	78	55			3				
							40		
	84				1				
							45		
LL=82 PI=45 CONSOL	71	60			Wt. of Rods				
							50		
	68				Wt. of Rods				
							55	CH	Brown with gray mottling CLAY, very stiff (alluvium)
LL=60 PI=30 TXUU	52	71			14	2.5			
							60		grades to hard
	30				29	4.0			
							65		
	37	88			23	3.5		CL	Grayish brown with brown mottling SANDY CLAY with some silt, medium stiff (alluvium)
							70		

Date Started:	January 26, 2009	Water Level: ▽	5.7 ft. 01/26/2009 1122 HRS
Date Completed:	January 27, 2009		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	116.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008-00.GPJ GEOLABS.GDT 7/8/10

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, OAHU, HAWAII

Log of Boring 13

(Continued from previous plate)

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	47				4	2.5		CL	
							75	CH	Grayish brown with tan mottling CLAY with some sand, hard (alluvium)
	36	85			39	3.5			
							80	CL	Orangish brown with multi-color mottling SANDY CLAY with some silt, medium stiff (alluvium)
	46				9	2.5			
							85	ML	Yellowish brown with multi-color mottling SANDY SILT with traces of gravel, loose (alluvium)
TXUU	60	63			11				
							90		
SIEVE	56				11				
							95		
			9		20/3"			GP	Brownish gray with multi-color mottling SANDY GRAVEL (BASALTIC) with some cobbles, medium dense (alluvium)
							100		
UC			71	65	10/1"				Gray vesicular BASALT, slightly fractured, moderately weathered, very hard
							105		

Date Started:	January 26, 2009	Water Level: ▽	5.7 ft. 01/26/2009 1122 HRS
Date Completed:	January 27, 2009		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	116.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008-00.GPJ GEOLABS.GDT 7/8/10

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

JOHN Y. L. CHEN
LICENSED PROFESSIONAL ENGINEER
No. 10029-C
HAWAII, U.S.A.

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John Chen 04/30/20
SIGNATURE EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G2.8 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	115	171

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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	Description
											(Continued from previous plate)
			50	17						SC	Reddish brown with multi-color mottling SILTY SAND (BASALTIC) with gravel, medium dense (clinker)
			83	10			110				Tannish gray with multi-color mottling vesicular BASALT, closely to severely fractured, highly to moderately weathered, hard
							115				
											Boring terminated at 116.5 feet
							120				
							125				
							130				
							135				
							140				

Date Started:	January 26, 2009	Water Level: ▽	5.7 ft. 01/26/2009 1122 HRS
Date Completed:	January 27, 2009		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	116.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008-00.GPJ GEOLABS.GDT 7/8/19

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, OAHU, HAWAII

Log of Boring 14

Approximate Ground Surface Elevation (feet): 3.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	9	103	78		37	2.5				GM	Light brown with gray mottling SILTY GRAVEL (BASALTIC) with sand, dense, dry (fill)
	26		33		9	2.0				CL	Reddish brown with multi-color mottling SANDY CLAY with gravel and sand, medium stiff, damp (fill)
											grades with some cobbles, wet at 3 feet
LL=46 PI=21	32	86	78		17	1.5	5				
											grades with silt, very soft
	31		28		7	<0.5	10				
										GP	Dark gray GRAVEL (BASALTIC) with sand and clay, loose (fill)
	11		67		10		15				
										MH	Dark brownish gray SANDY CLAY with silt and some shells, very soft (marsh deposit)
	64		6		2		20				
	71	57	78		5		25				
LL=74 PI=37	72		100		2		30				
							35				

Date Started:	November 24, 2008	Water Level: ▽	10.5 ft. 11/24/08 1335 HRS
Date Completed:	December 1, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	150.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008-00.GPJ GEOLABS.GDT 7/8/19

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

JOHN Y. L. CHEN
LICENSED PROFESSIONAL ENGINEER
No. 10029-C
HAWAII, U.S.A.

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SIGNATURE — EXPIRATION DATE OF THE LICENSE 04/30/20

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted — Date: Sept. 1, 2019

SHEET No. G2.9 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	116	171

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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	(Continued from previous plate) Description
CONSOL	77	55	67		1/18"					MH	
	73		100		1/18"		40				
	76	53			3		45				
LL=76 PI=41	69		100		1		50				
CONSOL	72	55	83		2		55				
	72		100		1/18"		60				
										CL	Dark brownish gray SANDY CLAY with some gravel, soft (alluvium)
TXUU	58	61	78		7	1.0	65				
							70				

BORING LOG DOT 6008.00 GPJ GEOLABS.GDT 1/8/09

Date Started:	November 24, 2008	Water Level: ▽	10.5 ft. 11/24/08 1335 HRS
Date Completed:	December 1, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	150.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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	(Continued from previous plate) Description
	53		50		2					CL	
										MH	Brown with multi-color mottling SANDY CLAY with some gravel and organic matter, medium stiff (alluvium)
TXUU	48	73	83		9	1.5	75				
	47		50		4	1.5	80				
LL=63 PI=30	53		100		8	2.0	85				grades to very stiff
TXUU	54	73	78		12	3.0	90				
	48		83		7	3.0	95				(3 foot artesian head encountered)
			100	14						GP	Gray with multi-color mottling COBBLES AND BOULDERS (BASALTIC) with gravel, dense (alluvium)
			50	0	8/0"		100				
							105				

BORING LOG DOT 6008.00 GPJ GEOLABS.GDT 1/8/09

Date Started:	November 24, 2008	Water Level: ▽	10.5 ft. 11/24/08 1335 HRS
Date Completed:	December 1, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	150.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

SURVEY PLOTTED BY ____ DATE ____
DRAWN BY ____
TRACED BY ____
DESIGNED BY ____
QUANTITIES BY ____
CHECKED BY ____

ORIGINAL PLAN
NOTE BOOK
No. ____

JOHN Y. L. CHEN
LICENSED PROFESSIONAL ENGINEER
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HAWAII, U.S.A.

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John Chen 04/30/20
SIGNATURE EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G2.10 OF 13 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-BW-0300(8)	2019	117	171

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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	(Continued from previous plate) Description
UC=9397			100	87							Gray vesicular BASALT, slightly fractured, slightly weathered, very hard
							110				grades to dense, slightly fractured, slightly weathered, very hard
UC=17912			100	100							
			100	100			115				
			100	75			120				grades to gray with red mottling vesicular, closely to moderately fractured, moderately weathered, hard
			10	0			125			GP	Gray with multi-color mottling SANDY GRAVEL (BASALTIC) with cobbles, medium dense (clinker)
			100	50			130				Reddish brown with black mottling scoriaceous BASALT, closely fractured, moderately to highly weathered, medium hard to hard
			100	100			135				grades to light gray dense, slightly fractured, moderately to slightly weathered, very hard grades to slightly fractured, moderately weathered, hard at 136.5 feet
							140				

Date Started:	November 24, 2008	Water Level: ▽	10.5 ft. 11/24/08 1335 HRS
Date Completed:	December 1, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	150.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008.00.GPJ GEOLABS.GDT 5/8/09

GEOLABS, INC.
Geotechnical Engineering

LEEWARD BIKEWAY
PHILIPPINE SEA ROAD TO WAIPAHU DEPOT STREET
WAIPAHU, 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	(Continued from previous plate) Description
			100	87							(3 foot artesian head encountered)
			100	83			145				grades to closely fractured
							150				Boring terminated at 150.5 feet
							155				
							160				
							165				
							170				
							175				

Date Started:	November 24, 2008	Water Level: ▽	10.5 ft. 11/24/08 1335 HRS
Date Completed:	December 1, 2008		
Logged By:	Y. Chiba	Drill Rig:	CME-55
Total Depth:	150.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	6008-00	Driving Energy:	140 lb. wt.,30 in. drop

BORING LOG DOT 6008.00.GPJ GEOLABS.GDT 5/8/09

ORIGINAL PLAN
NOTE BOOK
No.
SURVEY PLOTTED BY
DRAWN BY
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HIGHWAYS DIVISION

BORING LOGS

LEEWARD BIKEWAY
Philippine Sea Rd. to Waipahu Depot Street
Fed. Aid Proj. No. STP-BW-0300(8)

Scale: As Noted Date: Sept. 1, 2019

SHEET No. G2.11 OF 13 SHEETS