FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	78	524

TRUE NORTH
SCALE: 1" = 40'

MATCHLINE (See Sheet G-2)

B-1

B-2

Ramp KA-1

Kalaeloa Boulevard

Easement 6862 (Map 977)

Easement 8261 (Map 1212)

Easement 1218 (Map 330)

LEGEND:

Approximate Boring Location

0 20 40 80 120 Ft.
Graphic Scale

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

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GEOLABS, INC. APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)

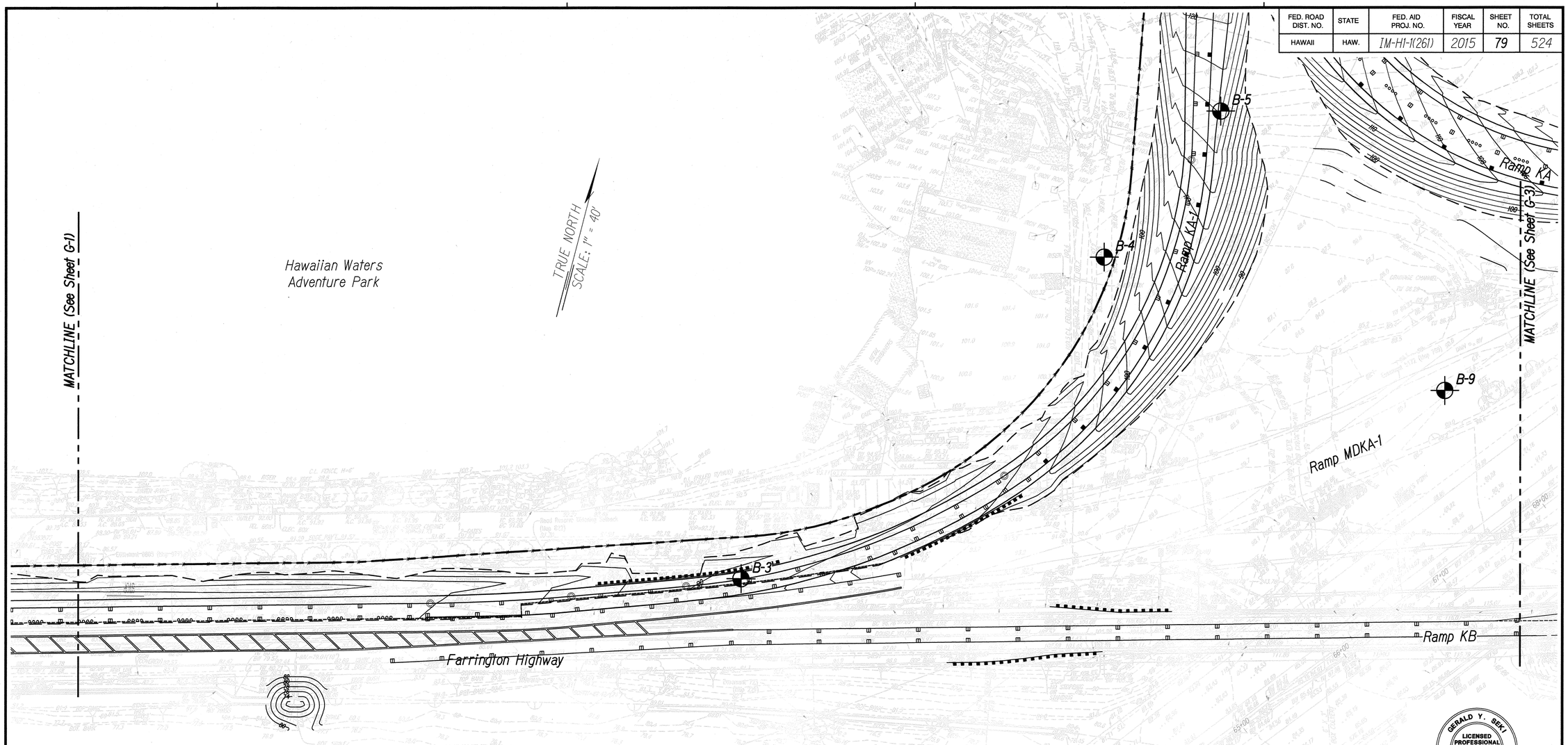
Scale: As Noted Date: January 20, 2015

SHEET No. G-1 OF 25 SHEETS

78

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	79	524



ORIGINAL PLANS PREPARED BY
NOTE BOOK
No.

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

LEGEND:

Approximate Boring Location

0 20 40 80 120 Ft.
Graphic Scale

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

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GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)

Scale: As Noted Date: January 20, 2015

SHEET No. G-2 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	80	524

TRUE NORTH
SCALE: 1" = 40'

B-4
B-5
B-301
B-9
B-6
B-102
B-7
B-103
B-8
B-201
B-203
B-202
B-204
B-302
B-303
B-12
B-10
B-101
B-11
B-13
B-14

Ramp KA-1
Ramp MDKA-1
Ramp KB
Ramp KD
Ramp KA
Ramp KX
Ramp KA
Access Road
Farrington Highway
Wakea Street Overpass
Interstate Route H-1
Wakea Street

MATCHLINE (See Sheet G-2)
MATCHLINE (See Sheet G-4)

LEGEND:
Approximate Boring Location

0 20 40 80 120 Ft.
Graphic Scale

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

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GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

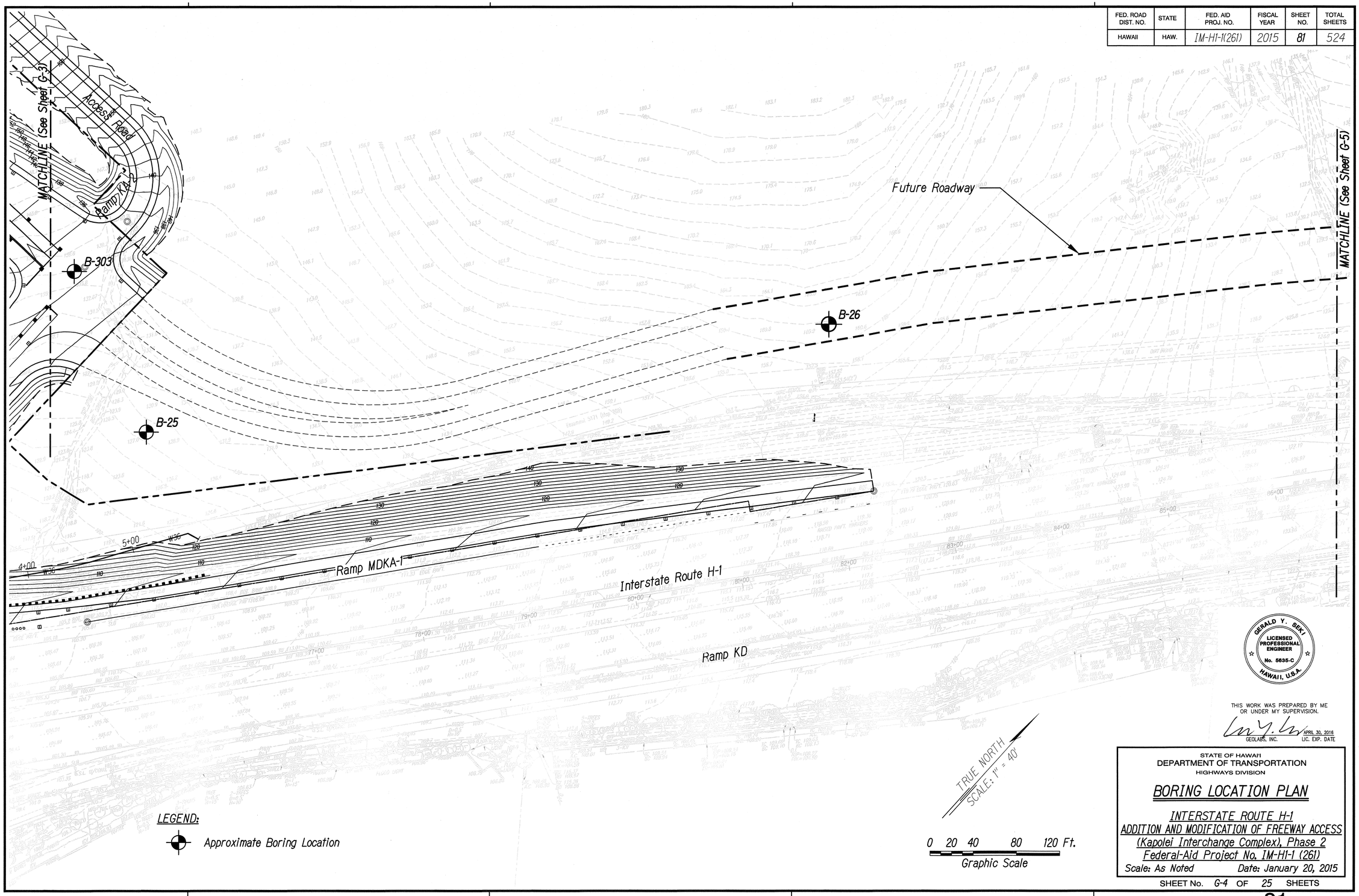
BORING LOCATION PLAN

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)

Scale: As Noted Date: January 20, 2015

SHEET No. G-3 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	81	524



LEGEND:

Approximate Boring Location

TRUE NORTH
SCALE: 1" = 40'

0 20 40 80 120 Ft.
Graphic Scale

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GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

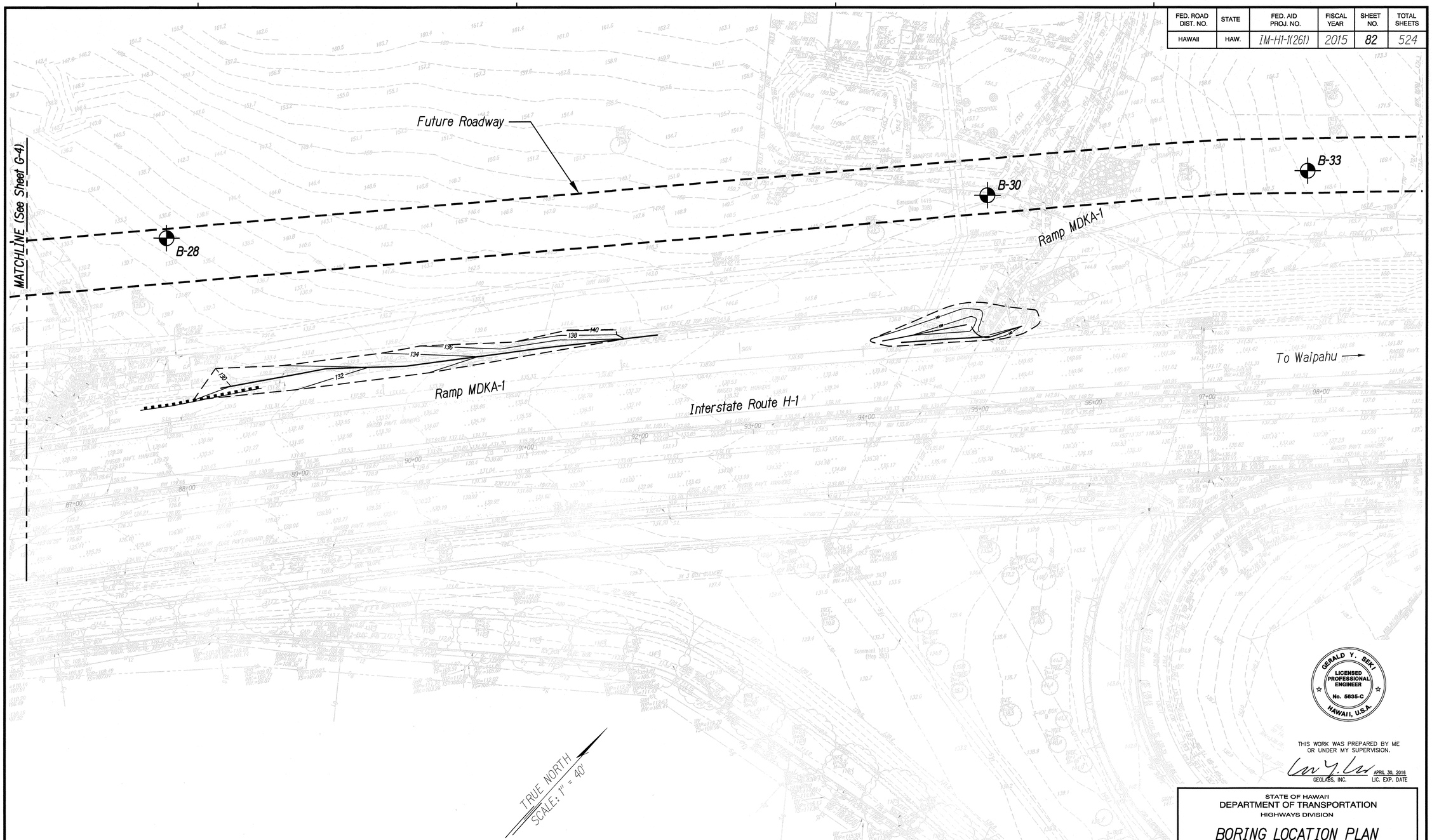
INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)

Scale: As Noted Date: January 20, 2015

SHEET No. G-4 OF 25 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	82	524



LEGEND:

Approximate Boring Location

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

GERALD Y. SEKI
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GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)

Scale: As Noted Date: January 20, 2015

SHEET No. G-5 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	83	524

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
MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE	SANDS	CLEAN SANDS	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	LESS THAN 5% FINES	SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		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)
S	SHELBY TUBE SAMPLE	TV	TORVANE SHEAR (tsf)
G	GRAB SAMPLE	PEN	POCKET PENETROMETER (tsf)
	CORE SAMPLE	UC	UNCONFINED COMPRESSION (psi)
▽	WATER LEVEL OBSERVED IN BORING	UU	UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf)

Plate A-0.1

LOG LEGEND FOR SOIL 5537-00TO30.GPJ GEOLABS.GDT 10/11/11

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

GERALD Y. SEKI LICENSED PROFESSIONAL ENGINEER No. 5535-C HAWAII, U.S.A.

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GEOLABS, INC. APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG LEGEND

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)
Date: January 20, 2015

SHEET No. G-6 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	84	524

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-0.2

LOG LEGEND FOR ROCK 5537-00TO30.GPJ GEOLABS.GDT 10/11/11

ORIGINAL PLAN

NOTE BOOK

No.

SURVEY PLOTTED BY DATE

DRAWN BY

TRACED BY

DESIGNED BY

QUANTITIES BY

CHECKED BY

GEOTECHNICAL NOTES

1. *A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Kapolei Interchange Complex, Phase 2, Ewa, Oahu, Hawaii" dated February 17, 2015 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 Nos. G-1 through G-5.*

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.*

GERALD Y. SEKI
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No. 5535-C
HAWAII, U.S.A.

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GEOLABS, INC. APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG LEGEND & NOTES

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)

Scale: Date: January 20, 2015

SHEET No. G-7 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	85	524

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 1

Approximate Ground Surface Elevation (feet MSL): 80 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
							0			GW-GM	5-inch ASPHALTIC CONCRETE
	5				18						
	26	92			46	2.3				CH	Dark brown and gray SILTY GRAVEL (BASALTIC) with sand and traces of clay, medium dense, damp (fill)
	18				34	>4.5	5			CH	Light brown with black mottling and gray SILTY CLAY with boulders and traces of gravel (basaltic), sand, and organics, very stiff, moist (fill)
	36	60			20/2" Ref.		10			SM	Dark brown, orangish brown, and gray CLAY with gravel (basaltic) and traces of sand, hard, moist (fill)
	36				25/5" Ref.	1.3	15			ML	Brown SILTY SAND, very dense, damp (alluvium)
											Dark brown CLAYEY SILT with fine sand, very hard, moist (alluvium)
	13				37/4" Ref.	2.5	20			CH	grades with cobbles
											Dark brown and gray SILTY CLAY with cobbles, boulders, and gravel, very stiff, moist (alluvium)
	11				31/6" +25/4"		25			GW	Reddish brown and purplish gray vesicular GRAVEL (BASALTIC) in a silt matrix, moderately to extremely weathered, very dense, damp (weathered basalt)
							30				Boring terminated at 26.3 feet
							35				* Elevations estimated from Topographic Survey Maps received from Engineering Concepts, Inc. on 11/10/05.
							40				
							45				
							50				
							55				
							60				
							65				
							70				
							75				

Date Started:	May 1, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 1, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	26.3 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 8X5X.GDT.GPJ GEOLABS.GDT 10/1/11

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 2

Approximate Ground Surface Elevation (feet MSL): 83 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
							0			GM-GW	4-inch ASPHALTIC CONCRETE
	18	102			16						
	20				11	2.3				CL	Dark brown, gray, and dull white GRAVEL (BASALTIC AND CORALLINE) with sand and traces of clay, medium dense to dense, damp (fill)
LL=46 PI=28	20	107			44	3.3	5				Dark reddish brown and gray CLAY with traces of gravel (basaltic), stiff, moist (fill)
											grades to hard
	17				38/6" Ref.	>4.5	10				grades to very hard
										SW-SM	Dark orangish brown SAND (CORALLINE) with gravel and traces of silt, dense, damp (fill)
	25				76		15				Dark brown SILTY SAND, very dense, damp (alluvium)
										ML	Grayish brown CLAYEY SILT with sand and traces of completely weathered gravel (basaltic), hard, moist (alluvium)
	38				35	1.5	20				
										SM	Orangish brown and tan SILTY SAND (BASALTIC) with traces of highly weathered gravel, very dense, damp (alluvium)
	56				58		25				Boring terminated at 26.5 feet
							30				
							35				
							40				
							45				
							50				
							55				
							60				
							65				
							70				
							75				

Date Started:	May 1, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 1, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	26.5 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 8X5X.GDT.GPJ GEOLABS.GDT 10/1/11

STREET PLOTTED BY ____ DATE
DATA TAKEN BY ____
TRACED BY ____
DESIGNED BY ____
QUANTITIES BY ____
CHECKED BY ____
ORIGINAL PLAN
NOTE BOOK
No. ____

GERALD Y. SEKI
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HAWAII, U.S.A.

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GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)
Date: January 20, 2015

SHEET No. G-8 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	86	524

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 3

Approximate Ground Surface Elevation (feet MSL): 88.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	7	110			50/6"			GM	Light gray and brown SILTY GRAVEL AND COBBLES (BASALTIC) with traces of sand and organics, very dense, damp (fill)
	16				Ref.				
					9	1.3		CH	
	20	72			14	1.8	5		Reddish brown and gray CLAY with traces of coarse sand (basaltic) and organics, stiff, moist (fill)
									grades with traces of gravel and sand (coralline)
	23				11	2.5	10	CH	Brown with black mottling CLAY with traces of sand and organics, stiff, moist (alluvium)
	20	80			50/5"		15	SM	Dark reddish brown and gray SILTY SAND with traces of highly weathered gravel (basaltic), very dense, damp (alluvium)
					Ref.				
	42				30	1.0	20	MH	Orangish and grayish brown CLAYEY SILT, very stiff, moist (alluvium)
	71				35	1.3	25		grades to hard
									Boring terminated at 26.5 feet
							30		

Date Started:	May 2, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 2, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	26.5 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 5

Approximate Ground Surface Elevation (feet MSL): 105 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
			6					GP	Light and dark gray GRAVEL (BASALTIC) AND CONCRETE GRAVEL (fill)
								MH	Reddish brown and gray CLAYEY SILT with moderately weathered vesicular gravel (basaltic), very stiff (alluvium)
	27						5		
	27				20	1.5			
			19				10		Gray vesicular BOULDERS AND COBBLES (BASALTIC) in a clayey silt matrix, hard (alluvium)
UC= 4300			100	90	20/1"				
					Ref.		15		Light brownish gray vesicular and vugular BASALT, closely to slightly fractured, slightly weathered, very hard
UC= 13000			100	100					grades to moderately to slightly fractured
							20		
UC= 4100			100	95					Brownish gray vesicular BASALT, closely to slightly fractured, slightly to moderately weathered, hard to very hard
							25		
									Boring terminated at 26.5 feet
							30		

Date Started:	May 2, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 2, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	26.5 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 4

Approximate Ground Surface Elevation (feet MSL): 92 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	16	109			52	>4.5		GC	Gray-brown CLAYEY GRAVEL (BASALTIC) (fill)
	17				18	3.0		CH	Brown, orangish brown, and light gray CLAY with gravel (basaltic), traces of sand (basaltic), and organics, hard, moist (fill)
	19	110			38	>4.5	5		grades to very stiff
	27				31	3.0	10	CH	Brown CLAY, hard, moist (alluvium)
								SM	Dark brown SILTY SAND with gravel (basaltic), very dense, damp (alluvium)
	9				50/5"		15		
					Ref.				
	26				71		20	SM	Light brown SILTY SAND with traces of highly weathered gravel (basaltic), very dense, damp (alluvium)
								ML	Brown CLAYEY SILT with traces of fine sand, very hard, moist (alluvium)
	43				50/4"	1.0	25		
					Ref.				Boring terminated at 25.8 feet
							30		

Date Started:	May 11, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 11, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	25.8 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 6

Approximate Ground Surface Elevation (feet MSL): 104 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	22	71			15/4"	2.5		CH	Brown with black mottling CLAY with concrete gravel, boulders, and traces of organics, very stiff, moist (fill)
	21	97			Ref.	>4.5		CH	
	22				29/6"	2.8	5		Brown and dull black CLAY with highly weathered gravel (clinker) and organics, very hard, moist (fill)
					+26/4"			ML	
					47				grades to hard
	14		41	0	16/2"		10		Light tan and gray SANDY SILT, very hard, damp
					Ref.				Brownish gray vesicular BASALT, severely fractured, moderately to highly weathered, medium hard to hard
			66	8			15		
									Orangish brown and gray vesicular BASALT, severely to closely fractured, highly to moderately weathered, medium hard to hard
UC= 16600			77	77			20		Light gray vesicular BASALT, closely to moderately fractured, slightly weathered, hard
							25		Boring terminated at 25 feet
							30		

Date Started:	May 18, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 18, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	25 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	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.

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)
Date: January 20, 2015

SHEET No. G-9 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	87	524

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 7

Approximate Ground Surface Elevation (feet MSL): 100 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	20	99			35	>4.5		CH	Brown with black mottling CLAY with traces of organics, very hard, moist (alluvium)
	21				22	>4.5			
UC=43.8	19	104			37	3.0	5		
			13				10		grades with boulders
	32		0		76	1.5	15	MH	Brown with black mottling CLAYEY SILT with sand and traces of completely weathered gravel (basaltic), very hard (alluvium)
	22		0		50/4" Ref.	1.0	20	MH	Brown CLAYEY SILT with moderately weathered gravel (basaltic) and traces of sand, very hard (alluvium)
	1		17		15/2" Ref.		25	MH	Brown CLAYEY SILT with cobbles (basaltic) and traces of sand, very stiff, moist (alluvium)
			72	63	12/0" Ref.		30		Light brownish gray vesicular BASALT, closely to severely fractured, moderately weathered, hard
			77	23			35		grades to closely to severely fractured
UC= 6400			100	100			40		Light gray vesicular BASALT, slightly to moderately fractured, slightly to moderately weathered, hard
			88	72			45		grades to severely fractured
			63	40			50		Light gray vesicular BASALT, closely to severely fractured, moderately weathered, hard
			37	20			55		
			88	43			60		Brownish gray BASALT, moderately to closely fractured, slightly to moderately weathered, medium hard to hard
UC= 11900			100	83			65		Light gray slightly vesicular BASALT, closely to severely fractured, slightly to moderately weathered, hard to very hard
			43	31			70		grades to moderately to severely fractured, hard
			100	67			75		

Date Started:	May 19, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 22, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	75 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 6537-00TO30.GPJ GEOLABS.GDT 10/1/11

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 7

(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
							80		Light brownish gray BASALT, closely to severely fractured, slightly to moderately weathered, hard
									Boring terminated at 75 feet
							85		
							90		
							95		
							100		
							105		
							110		
							115		
							120		
							125		
							130		
							135		
							140		
							145		
							150		

Date Started:	May 19, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 22, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	75 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 6537-00TO30.GPJ GEOLABS.GDT 10/1/11

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

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)

Scale: Date: January 20, 2015

SHEET No. G-10 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	88	524

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 8

Approximate Ground Surface Elevation (feet MSL): 100 *

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=46 PI=27	22	94			34	>4.5				CL	Brown with black mottling CLAY with traces of organics, very stiff, moist (alluvium)
	23				18	>4.5					
Direct Shear	21	103			35	>4.5	5				
	17				50/5" Ref.	1.0	10			MH	Dark orangish brown CLAYEY SILT, very hard, moist (alluvium)
	20				30/4" Ref.	1.0	15				
	17				44		20			SM	Light grayish brown and dull white SILTY SAND (CORALLINE) with gravel, dense, damp (alluvium)
	19				50/4" Ref.		25			ML	Dark orangish brown with black mottling CLAYEY SILT with traces of moderately to completely weathered gravel (basaltic), very hard, moist (residual soil)
	22				30/5" Ref.		30				
			63	27	11/0" Ref.		35				Light gray vesicular BASALT, closely fractured, slightly weathered, hard
			57	57			40				grades to slightly to moderately fractured
											Reddish brown to grayish brown GRAVEL, medium dense (clinker)
			100	80			45				Light brownish gray vugular BASALT, closely to severely fractured, moderately weathered, medium hard
			53	48			50				Light gray slightly vesicular BASALT, massive, slightly weathered, very hard grades to slightly to severely fractured
			80				55				Reddish brown to grayish brown GRAVEL AND COBBLES, medium dense (clinker)
			60	25			60				
			70	52			65				Light gray slightly vesicular BASALT, moderately to severely fractured, slightly to moderately weathered, hard
							70				Boring terminated at 70 feet
							75				

Date Started:	May 22, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 23, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	70 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 5537-00TO30.GPJ GEOLABS.GDT 09/1/11

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 9

Approximate Ground Surface Elevation (feet MSL): 90 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	19	73			39	>4.5				CH	Brown CLAY with traces of sand (coralline and basaltic), shell fragments, and organics, hard, moist (fill)
	21				10	>4.5				CH	
	22	88			19	4.0	5				Brown CLAY with traces of organics, stiff, damp (alluvium) grades to very stiff, moist
	17				18/2" Ref.		10			SM	Dark orangish brown SILTY SAND, very dense, damp (alluvium)
	34				26		15			SM	Light gray and dull white SILTY SAND (CORALLINE) with traces of gravel (coralline), medium dense, damp (alluvium)
	82				21		20			SM	Grayish brown SILTY SAND, medium dense, damp (alluvium)
	100				23		25				Boring terminated at 26.5 feet
							30				
							35				
							40				
							45				
							50				
							55				
							60				
							65				
							70				
							75				

Date Started:	May 22, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 22, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	26.5 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 5537-00TO30.GPJ GEOLABS.GDT 09/1/11

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

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)
Date: January 20, 2015

SHEET No. G-11 OF 25 SHEETS

GEOLABS, INC. — Geotechnical Engineering
KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 10

Approximate Ground Surface Elevation (feet MSL): 95 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)
	21	98			78		
	21				28		
	24	91			30	3.3	5
	24				15	2.3	10
Direct Shear	21	98			50/6" Ref.		15
	32				28	3.3	20
	75				25		25
			10				
	30		19		50/6" Ref.	0.8	30
	46				32		35
UC= 5800			76	14			
UC= 17700			87	70			40
			47	18			45
			78	53			50
UC=140			92	78			55
UC= 10200			90	47			60
UC= 16700			100	70			65
			100	25			70
							75

USCS / Description

- GW-GM — Dark brown and gray SILTY GRAVEL (BASALTIC) with sand, dense to very dense, damp (fill)
- GM — Dark gray and brown SILTY GRAVEL (BASALTIC), very dense, damp (fill)
- CH — Dark brown and gray CLAY with sand and highly weathered gravel (basaltic), very stiff, damp (fill)
- CH — Brown and dull black CLAY with traces of completely weathered sand (basaltic), very stiff, moist (alluvium)
  - grades to stiff at 10 feet
- SM — Brown with black mottling SILTY SAND with traces of highly weathered gravel (basaltic), very dense, damp (alluvium)
- CH — Grayish brown and light tan SILTY CLAY with traces of highly weathered gravel (basaltic) and fine sand, very stiff, moist (alluvium)
- SM — Olive brown SILTY SAND, dense, damp (alluvium)
- Reddish brown and dark gray moderately weathered vesicular BOULDERS AND COBBLES (BASALTIC) in a clayey silt matrix, hard (alluvium)
- MH — Reddish brown CLAYEY SILT with moderately weathered boulders and cobbles (basaltic), hard, moist (residual soil)
- ML — Brown and dark reddish brown CLAYEY SILT with fine sand, hard (residual soil)
- Brown and reddish brown BASALT, severely to moderately fractured, highly weathered, soft to medium hard
- Light gray vesicular BASALT, moderately fractured, slightly weathered, hard
  - grades to closely fractured, slightly to moderately weathered, hard to very hard at 43 feet
  - grades to closely to severely fractured, moderately weathered, hard at 46.5 feet
- Reddish brown and dull purplish gray VOLCANIC BRECCIA, closely to severely fractured, highly weathered, medium hard to hard
- Light gray BASALT, moderately fractured, moderately weathered, hard
- Light gray BASALT, closely to severely fractured, slightly to moderately weathered, hard
- Light gray slightly vesicular BASALT, slightly to severely fractured, slightly weathered, hard to very hard
  - grades to closely to severely fractured, slightly to moderately weathered
- Boring terminated at 71.7 feet

Date Started:	May 8, 2006	Water Level: ∇	Not Encountered
Date Completed:	May 8, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	71.7 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC. — Geotechnical Engineering
KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 11

Approximate Ground Surface Elevation (feet MSL): 96 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)
						1.3	
	20	78			49		
	13				15/3" Ref.		
UC=22.9	23	101			18	2.3	5
	26	103					
	26				15	2.0	10
UC=22.2	27	97			50	>4.5	15
	26				17		20
	50	62			33/6" +30/2"		25
			13				
	63				35	1.3	30
			0				
	29				64	>4.5	35
			35			2.5	
			83	32			40
UC= 7700			57	42			45
			10	0			50
	45				28		55
			33	19			
			93	8			60
UC= 16200			100	100			65
UC= 4100			100	100			70
							75

USCS / Description

- CH — Reddish brown SILTY CLAY, stiff, moist (fill)
- GW/GC — Dark brown and gray SILTY GRAVEL (BASALTIC) with sand and traces of clay, dense, damp (fill)
- Dark gray moderately weathered vesicular BOULDERS AND COBBLES (BASALTIC) in a clayey silt matrix, very dense, damp (fill)
- CH — Brown with black mottling CLAY, very stiff, moist (alluvium)
  - grades with orangish brown, stiff
  - grades to hard
- SM — Brown and grayish tan SILTY SAND with traces of highly weathered gravel (basaltic), medium dense (alluvium)
- SM — Olive and grayish brown SILTY SAND with traces of completely weathered gravel (basaltic), very dense (alluvium)
  - grades with moderately to highly weathered cobbles and gravel (basaltic)
- ML — Dark brown and dark gray SANDY SILT with highly weathered gravel (basaltic), hard (alluvium)
- CH — Reddish brown CLAY, very hard (alluvium)
- Light gray vesicular BASALT, severely fractured, slightly to moderately weathered, hard
- Light gray vugular BASALT, closely to severely fractured, slightly to moderately weathered, hard
- Gray and reddish brown VOLCANIC BRECCIA, highly to extremely weathered, soft
- Dark gray and light brown VOLCANIC BRECCIA, highly to moderately weathered, medium hard
- Gray BASALT, moderately to slightly fractured, slightly weathered, hard

Date Started:	May 9, 2006	Water Level: ∇	14.3 ft. 05/09/2006 1002 HRS; 5.5 ft. 05/10/2006 1155 HRS
Date Completed:	May 11, 2006		
Logged By:	D. Sjolund & F. Meyer	Drill Rig:	MOBILE B-80
Total Depth:	80 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. — APRIL 30, 2016 — LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-H1-1 (261)
Date: January 20, 2015

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	90	524

GEOLABS, INC. Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, 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
UC= 20000			100	100			80				Boring terminated at 80 feet
							85				
							90				
							95				
							100				
							105				
							110				
							115				
							120				
							125				
							130				
							135				
							140				
							145				
							150				

Date Started:	May 9, 2006	Water Level: ▽	14.3 ft. 05/09/2006 1002 HRS 5.5 ft. 05/10/2006 1155 HRS
Date Completed:	May 11, 2006		
Logged By:	D. Sjolund & F. Meyer	Drill Rig:	MOBILE B-80
Total Depth:	80 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC. Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 12

Approximate Ground Surface Elevation (feet MSL): 92 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	8	95			63		0			GM-GW	Brown and gray SILTY GRAVEL (BASALTIC) with traces of sand and clay, very dense, damp (fill)
	32				8	1.3				CH	
	23	87			51	>4.5	5			GM CH	Dark brown and purplish gray CLAY with completely weathered gravel (basaltic), medium stiff, moist (fill)
	24				9	1.5	10			CH	Light tan and dull white SILTY GRAVEL (CORALLINE) with sand, dense, damp (fill)
											Brown with black mottling CLAY, hard, dry (fill)
											Brown CLAY, stiff, moist (alluvium)
	23				25/6" +10/0"	2.0	15			CH	Dark orangish brown and dark gray SILTY CLAY with traces of completely weathered gravel (basaltic), fine sand, and clay, very hard, moist (alluvium)
Direct Shear	35	77			32/4" Ref.		20			SM	Grayish brown and dark gray SILTY SAND with traces of highly to completely weathered gravel (basaltic), very dense, damp (alluvium)
	69		0		22		25			SM	Grayish brown SILTY SAND, medium dense, damp (alluvium)
	72		24		60		30			SM	Brown, bright orange, dull white, and purplish gray SILTY SAND with highly to completely weathered gravel (basaltic), very dense, damp (alluvium)
	23		7		41	1.0	35			MH	grades to reddish brown
	45		0		28	<0.5	40			MH	Reddish brown and gray CLAYEY SILT with gravel and sand (basaltic), stiff to very stiff, moist (alluvium)
											Brown CLAYEY SILT, very stiff, damp (alluvium)
	27		62	55	53	0.5	45			MH	Brown, orangish brown, and dark gray CLAYEY SILT with moderately to completely weathered vesicular gravel (basaltic), very hard, moist (alluvium)
UC= 6000			65	53			50				Gray and orangish brown BASALT, severely to closely fractured, moderately weathered, medium hard
			20	8			55			MH	Light gray vugular BASALT, moderately to slightly fractured, slightly weathered, very hard
	65		43	29	15	0.5	60				Reddish brown, gray, and dull white CLAYEY SILT with completely weathered gravel (basaltic), stiff, moist (saprolite)
			7	0			65				Reddish brown and gray BASALT, closely to severely fractured, highly weathered, medium hard
											grades to severely fractured
UC=250			42	42			70				Brown and gray VOLCANIC BRECCIA, moderately to slightly fractured, highly weathered, medium hard
							75				Boring terminated at 75 feet

Date Started:	May 3, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 3, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	75 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	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.

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

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GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-H1-1 (261)
Date: January 20, 2015

SHEET No. G-13 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	91	524

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 13

Approximate Ground Surface Elevation (feet MSL): 94 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	13	94			53					GM-GW	Brown and gray SILTY GRAVEL (BASALTIC) with traces of sand and clay, very dense, damp (fill)
	23				46	3.5					
UU=12.3	18	122			43	4.5	5			CH	Reddish brown with black mottling SILTY CLAY, hard, moist (fill) grades with traces of sand and organics
	24				20	1.8	10			CH	Brown with black mottling CLAY with traces of sand (basaltic), very stiff, moist (alluvium)
UC=43.0 UU=7.5	20	104			53	4.5	15				grades to hard
	36				35	1.0	20			ML	Brown and dark orange CLAYEY SILT with sand, hard, moist (alluvium)
UC=56.3 UU=8.9	37	79	29		57	>4.5	25			CL-ML	Grayish brown with olive mottling SILTY CLAY with traces of sand, hard, moist (alluvium)
	87		0		31		30			SM	Grayish and orangish brown with black mottling SILTY SAND with highly weathered gravel (basaltic), dense, wet (alluvium)
	26		0		50/5" Ref.		35				grades to reddish brown and gray, very dense
	39				51	<0.5	40			MH	Reddish brown CLAYEY SILT, stiff to very stiff, moist (residual soil)
			81	45							Light gray and brown slightly vesicular BASALT, severely to closely fractured, moderately to highly weathered, medium hard to hard
			50	18			45				
			30	0			50				grades to hard grades to severely fractured
	46				11		55				Reddish brown and dull purple moderately to highly weathered CLINKER with sand and silt, medium dense
			57	17							
UC=6000			60	33			60				Light purplish gray BASALT, severely to closely fractured, moderately to highly weathered, medium hard
UC=11200			53	20			65				Light brownish gray BASALT, moderately to severely fractured, slightly to moderately weathered, hard grades from closely to severely fractured
UC=27500			100	100			70				Light gray slightly vesicular BASALT, slightly fractured to massive, slightly weathered, very hard
							75				Boring terminated at 75 feet

Date Started:	May 4, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 4, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	75 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG_DOT_5537-00TO30.GPJ GEOLABS.GDT 10/11/11

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 14

Approximate Ground Surface Elevation (feet MSL): 115 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	13				42					GW	4-inch ASPHALTIC CONCRETE
	18	84			53						Brown and gray SILTY GRAVEL (BASALTIC) with sand, dense, damp (fill)
	35	65			33		5				Dark brown and gray SILTY COBBLES AND GRAVEL (BASALTIC) with sand, dense, moist (fill) grades to medium dense
	12	77			37		10				Light brownish and purplish gray SILTY COBBLES AND GRAVEL (BASALTIC) with sand, medium dense, damp (fill)
	21				21		15			ML	Light brown and light gray CLAYEY SILT with sand and gravel (basaltic), very stiff, damp (fill)
	12				45		20			GM-GW	Dark brown and light gray SILTY GRAVEL, SAND, AND BOULDERS (BASALTIC), dense, moist (fill)
	5				28		25			SM	Dark brown and tan SILTY SAND (CORALLINE) with traces of concrete gravel, medium dense, damp (fill)
	12	95			32/4" Ref.		30			GM-GW	Dark brown, dark gray, and tan SILTY GRAVEL (BASALTIC) with sand and boulders, dense, moist (fill)
										CH	Brown with black mottling CLAY, very hard, moist (alluvium)
	19				73	>4.5	35				Boring terminated at 36.5 feet
							40				
							45				
							50				
							55				
							60				
							65				
							70				
							75				

Date Started:	May 12, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 12, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	36.5 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG_DOT_5537-00TO30.GPJ GEOLABS.GDT 10/11/11

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

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)
Date: January 20, 2015

SHEET No. G-14 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(261)	2015	92	524

GEOLABS, INC. — Geotechnical Engineering
KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 25

Approximate Ground Surface Elevation (feet MSL): 128 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	USCS	Description
LL=65 PI=46	19	95			70	>4.5	CH	Brown with black mottling CLAY with traces of organics, very hard, moist (alluvium)
	20		50	33	12/0" Ref.	>4.5		Light gray BOULDERS (BASALTIC), hard (alluvium)
								Reddish brown and gray VOLCANIC BRECCIA, closely to severely fractured, moderately weathered, medium hard
UC=400			80	43				
								grades to moderately to highly weathered, medium hard to soft
			60	7				
								Orangish brown and gray CLINKER, closely to severely fractured, moderately to highly weathered, hard to medium hard
UC=13100			90	90				Light gray vesicular BASALT, slightly to closely fractured, slightly weathered, very hard
			89	39				grades from closely to severely fractured
								Boring terminated at 25 feet

Date Started:	May 17, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 17, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	25 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC. — Geotechnical Engineering
KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 28

Approximate Ground Surface Elevation (feet MSL): 135 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	USCS	Description
LL=42 PI=23	19	91			54	>4.5	CL	Reddish brown CLAY with traces of organics, hard, moist (alluvium)
	15				83			Light gray vesicular BOULDERS & COBBLES (BASALTIC), very dense/hard (alluvium)
			19					
UC=17700			93	93	15/0" Ref.			Light gray slightly vesicular BASALT, closely fractured to massive, slightly weathered to unweathered, hard to very hard
UC=7900			63	30				Light gray slightly vesicular BASALT, moderately to severely fractured, slightly to moderately weathered, hard
			66	47				Light gray BASALT, moderately to severely fractured, moderately weathered, hard
UC=10000			100	100				Light gray BASALT, slightly fractured, unweathered, very hard
								Boring terminated at 25 feet

Date Started:	May 16, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 16, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	25 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC. — Geotechnical Engineering
KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 26

Approximate Ground Surface Elevation (feet MSL): 162 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	USCS	Description
	21	80			25/6" +50/4"	>4.5	CH	Brown SILTY CLAY with traces of organics, very stiff to hard, moist (alluvium)
							SM	Light gray and orangish brown SILTY SAND with highly to completely weathered gravel (basaltic), very dense, damp (saprolite)
UC=6300			68	25				
								Light brownish gray vesicular BASALT, closely to severely fractured, moderately weathered, hard
UC=5500			97	73				
								Light gray vesicular BASALT, moderately to closely fractured, moderately to slightly weathered, hard
			78	37				grades to closely to severely fractured, moderately weathered
UC=5000			100	53				Light gray vesicular BASALT, moderately to closely fractured, moderately to slightly weathered, hard
			78	78				
								Boring terminated at 25 feet

Date Started:	May 17, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 17, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	25 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC. — Geotechnical Engineering
KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 30

Approximate Ground Surface Elevation (feet MSL): 144 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	USCS	Description
	22	91			25	1.0	MH	Brown to reddish brown CLAYEY SILT with traces of organics, very stiff, moist (fill)
	12				50/5" Ref.	3.5		Brown CLAY AND BOULDERS with traces of organics, very stiff, moist (alluvium)
	12	95			50/5" Ref.			Dark brown SILTY SAND AND BOULDERS with gravel (basaltic), very dense, damp (alluvium)
	12				31/4" Ref.			
								Light gray vesicular and vugular BASALT, moderately to severely fractured, slightly to moderately weathered, hard
			93	85	12/0" Ref.			
UC=2400			70	32				
								Boring terminated at 25 feet

Date Started:	May 16, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 16, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	25 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. — APRIL 30, 2016 — LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-H1-1 (261)

Date: January 20, 2015

SHEET No. G-15 OF 25 SHEETS

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

GEOLABS, INC. — Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 33

Approximate Ground Surface Elevation (feet MSL): 165 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	22	91			42	3.5		CH	Reddish brown and gray SILTY CLAY with highly to completely weathered gravel (basaltic) and traces of organics, hard, moist (fill)
	21				35	2.0		CL	
	22	83			59	>4.5	5	CH	Light gray and orangish brown SILTY CLAY with traces of fine sand, hard, moist (fill)
									Brown and gray SILTY CLAY with traces of completely weathered gravel (basaltic), hard, moist (fill)
	23				43		10		Dark brown and gray BOULDERS AND GRAVEL (BASALTIC) in a silt matrix, very dense, damp (fill/alluvium)
	9				50/4" Ref.		15		grades to light brown and gray
	12				28/4" Ref.		20		
	22				23/4" Ref.		25		grades to dark brown and dark gray
									Boring terminated at 25.3 feet
							30		
							35		
							40		
							45		
							50		
							55		
							60		
							65		
							70		
							75		

Date Started:	May 16, 2006	Water Level: ▽	Not Encountered
Date Completed:	May 16, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	25.3 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 5537-00TO30.GPJ GEOLABS.GDT 10/1/11

GEOLABS, INC. — Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 101

Approximate Ground Surface Elevation (feet MSL): 116 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
								GW	6-inch ASPHALTIC CONCRETE
	8	100			46			GC	Reddish gray SANDY GRAVEL (BASALTIC) with silt, medium dense, damp (fill)
	17				11				
LL=NP PI=NP Sieve - #200 = 22.7%	9	121			43		5		Dark gray with red mottling CLAYEY GRAVEL (BASALTIC) with silt and sand, medium dense, damp (fill)
	13				13		10		
	19	65			35		15		grades with cobbles
								CH	Reddish brown SILTY CLAY with some sand and traces of gravel, hard, damp to dry (fill)
	15				33	4.5	20		
	17				26	>4.5	25		
					5/1"		30		grades w/ some basaltic cobbles
								CH	Orangeish brown with black mottling CLAY with some sand, hard, damp (alluvium)
	20				44	4.5	35		
	21	104			20/3"	>4.5	40		
								SM	Light grayish tan SILTY SAND with clay, dense, moist (alluvium)
	38				48	>4.5	45		
Direct Shear	68	53			22/6" +25/3"	>4.5	50		grades to very dense
	82				27	>4.5	55	ML	Light gray SANDY SILT, very hard, wet (alluvium)
	54	61			24/6" +25/3"		60	ML	Dark yellowish brown with black mottling SANDY SILT, hard, moist (alluvium)
	41				20	4.5	65	CL	Reddish brown and white mottling SANDY CLAY with little silt, hard, moist (alluvium)
	44				18	4.5	70		
								CL	Brown SANDY CLAY with some gravel and cobbles (basaltic), very stiff, moist (alluvium)
							75		

Date Started:	May 27, 2009	Water Level: ▽	Not Encountered
Date Completed:	May 28, 2009		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	101 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 5537-00TO30.GPJ GEOLABS.GDT 10/1/11

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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. — APRIL 30, 2016 — LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-H1-1 (261)

Date: January 20, 2015

SHEET No. G-16 OF 25 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	94	524

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 101

(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
	36	84			20/3"	2.5	80			CL	
					8/1"						Gray dense BASALT, moderately fractured, slightly weathered, very hard
UC= 17730			99	90	5/1"		85				
UC= 6320			100	75			90				Grayish red VOLCANIC BRECCIA, closely fractured, highly weathered, medium hard
UC=460			98	90			95				Gray vesicular BASALT, moderately fractured, moderately to slightly weathered, very hard
							100				Boring terminated at 101 feet
							105				
							110				
							115				
							120				
							125				
							130				
							135				
							140				
							145				
							150				

Date Started:	May 27, 2009	Water Level: ▽	Not Encountered
Date Completed:	May 28, 2009		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	101 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 5537-00TO30.GPJ GEOLABS.GDT 10/1/11

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 102

Approximate Ground Surface Elevation (feet MSL): 98 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	18	97			41	>4.5				CH	Orangish brown CLAY with some gravel and sand (basaltic), very hard, dry to damp (alluvium)
LL=56 PI=37	19				37	>4.5	5				
Direct Shear	20	98			30/3"	>4.5	10				grades with coarse sand
	19				30/3"	>4.5	15				
	19	82			28/6" +8/0"		20			ML	Tannish brown with light tan mottling SANDY SILT with clay and gravel, very stiff, damp to dry (alluvium)
	4				30/6" +5/0"		25			SW	White with light orange mottling GRAVELLY SAND (CORALLINE) with silt, dense, dry (coralline detritus)
	37				43	4.0	30			ML	Dark tannish brown SANDY SILT with clay, very stiff, damp (alluvium)
	21	88			5/0"	4.5	35			CH	Reddish brown SILTY CLAY with sand and traces of gravel (basaltic), hard, dry to damp (alluvium)
UC=180			85	62	5/1"		40				Gray with gray and brown mottling vesicular BASALT, moderately to closely fractured, moderately to highly weathered, medium hard to hard
			77	37			45				grades to closely fractured
UC= 3720			100	47			50				
UC=500			100	0			55				Purpleish red with brown mottling VOLCANIC BRECCIA, moderately fractured, highly to extremely weathered, medium hard
UC= 5740			100	67			60				
			100	100			65				Light brownish gray vesicular BASALT, moderately fractured, moderately weathered, hard
UC= 10370			100	100			70				Gray BASALT, massive, slightly weathered, very hard
							75				

Date Started:	May 22, 2009	Water Level: ▽	99.5 ft. 05/26/2009 1100 HRS
Date Completed:	May 26, 2009		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	101 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 5537-00TO30.GPJ GEOLABS.GDT 10/1/11

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

GERALD Y. SEKI
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HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)
Date: January 20, 2015

SHEET No. G-17 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(261)	2015	95	524

GEOLABS, INC. — Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 102

(Continued from previous plate)

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Description
			100	100			grades to dense, slightly fractured
UC= 17600			100	97			
			100	30			
							Orangish red with brown mottling VOLCANIC BRECCIA, moderately fractured, highly to extremely weathered, soft to medium hard
UC=150			75	13			grades to yellow with red mottling
UC=470							
							Gray vesicular BASALT, closely fractured, slightly weathered, very hard
UC= 10190			73	50			
							Boring terminated at 101 feet

Depth (feet): 80, 85, 90, 95, 100, 105, 110, 115, 120, 125, 130, 135, 140, 145, 150

Date Started:	May 22, 2009	Water Level: ▽	99.5 ft. 05/26/2009 1100 HRS
Date Completed:	May 26, 2009		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	101 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC. — Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 103

Approximate Ground Surface Elevation (feet MSL): 105 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	USCS	Description
UC=31.9	19	99			47	4.5	CH	Reddish brown with black mottling CLAY with some fine sand, very hard, dry to damp (alluvium)
	20				20	>4.5		
Direct Shear	24	89			65	>4.5		grades with brown mottling
			48					grades with cobbles (basaltic)
	21		40		21/6" +20/3"	>4.5		
			10		10/1"			
							SM	Brownish tan with white mottling SILTY SAND, dense (alluvium)
	46		39		15/3"			Gray with brown mottling COBBLES AND BOULDERS (BASALTIC) with clayey sand, dense (alluvium)
			20					
			50					
UC= 4690			75	58				Gray vesicular BASALT, moderately to closely fractured, moderately weathered, very hard
			83	53				grades to slightly fractured
UC= 7430			80	40				grades to closely to severely fractured
			87	80				grades to slightly fractured, slightly weathered
			53	0				Reddish brown COBBLES AND GRAVEL (BASALTIC) with some sand, medium dense (clinker)
UC= 8070			98	92				Gray dense BASALT, slightly fractured, slightly weathered, very hard
			100	93				
UC=350			80	0				Gray dense BASALT, closely fractured, moderately to highly weathered, hard

Depth (feet): 5, 10, 15, 20, 25, 30, 35, 40, 45, 50, 55, 60, 65, 70, 75

Date Started:	May 20, 2009	Water Level: ▽	104.5 ft. 05/21/2009 1247 HRS
Date Completed:	May 21, 2009		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	108.5 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

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

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GEOLABS, INC. — APRIL 30, 2016 — LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-H1-1 (261)
Date: January 20, 2015

SHEET No. G-18 OF 25 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	96	524

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 103

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= 2830			100	77			80				Orangish red VOLCANIC BRECCIA, moderately fractured, highly to extremely weathered, medium hard
											grades to yellow
UC= 6960			93	47							grades to gray with brown mottling, moderately fractured, moderately weathered, hard
							85				Gray vesicular BASALT, moderately fractured, slightly weathered, very hard
			100	0							Gray with brown mottling COBBLES AND GRAVEL (BASALTIC) with sand, medium dense (clinker)
			37	0			90				
			67	0			95				
			63	0			100				
			75	0			105				
							110				Boring terminated at 108.5 feet
							115				
							120				
							125				
							130				
							135				
							140				
							145				
							150				

Date Started:	May 20, 2009	Water Level: ▽	104.5 ft. 05/21/2009 1247 HRS
Date Completed:	May 21, 2009		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	108.5 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_5537-00TO30(A).GPJ GEOLABS.GDT 10/1/11

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 201

Approximate Ground Surface Elevation (feet MSL): 102 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	24	105			9	1.5	0			CH	Brown CLAY, medium stiff, moist (alluvium)
	26				9	2.0					grades to stiff
	25	105			27	2.5	5				grades with some weathered gravel, very stiff
											Brownish gray BOULDERS (BASALTIC) (alluvium)
LL=36 PI=13	20				80	>4.5	10			CL	Brown SILTY CLAY, very hard, dry (alluvium)
	24				53/6"	>4.5	15				
										ML	Brownish tan and white SANDY SILT (CORALLINE) with some weathered gravel, very stiff, damp
	36				20		20				
										MH	Brown with black mottling CLAYEY SILT with some fine sand, very hard, dry (residual soil)
	26		0		81	>4.5	25				
	35				20/6"		30				
			100	86	+34/4"						Gray vesicular BASALT, severely to slightly fractured, moderately weathered, hard
UC= 18950							35				
			83	77							
UC= 13790							40				
			100	18			45				
			83	52							
			40	0			50				Reddish gray COBBLES AND GRAVEL (BASALTIC) with sand, medium dense (clinker)
			40	0			55				
			73	40			60				
			90	82			65				Gray BASALT, slightly fractured, moderately weathered, hard
UC= 5570			100	93			70				
							75				

Date Started:	April 13, 2011	Water Level: ▽	Not Encountered
Date Completed:	April 15, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	76.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_5537-00TO30(A).GPJ GEOLABS.GDT 10/1/11

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

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

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GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)
Date: January 20, 2015

SHEET No. G-19 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	97	524

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 201

(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
							80				Boring terminated at 76.5 feet
							85				
							90				
							95				
							100				
							105				
							110				
							115				
							120				
							125				
							130				
							135				
							140				
							145				
							150				

Date Started:	April 13, 2011	Water Level: ▽	Not Encountered
Date Completed:	April 15, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	76.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 5537-00TO30.GPJ GEOLABS.GDT 10/1/11

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 202

Approximate Ground Surface Elevation (feet MSL): 104 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	26	115			15	2.0	0			CH	Brown CLAY, stiff, wet (alluvium)
	31				13	2.0					
Direct Shear	23	94			45/4"	>4.5	5			CH	Tannish brown SILTY CLAY with some gravel, very hard, dry (alluvium)
	27				43	>4.5	10				grades to brown with black mottling
										ML	Dark brown CLAYEY SILT with sand and some gravel, very hard, moist (residual soil)
	17	114	0	0	36/4"		15				
			30								
			100	27			20				Gray vesicular BASALT, severely to moderately fractured, moderately weathered, hard
UC= 1610			100	63			25				grades to severely to slightly fractured
			82	30			30				
			75	35			35				
							40				Reddish gray GRAVEL (BASALTIC) with sand, medium dense (clinker)
			100	47							Gray vugular BASALT, severely to moderately fractured, moderately weathered, hard
			88	37			45				grades to purplish gray, highly weathered, medium hard
			75	32			50				
							55				Reddish gray VOLCANIC BRECCIA, severely to moderately fractured, highly weathered, medium hard
UC= 21750			100	87			60				Gray massive BASALT, closely to slightly fractured, moderately weathered, hard
UC= 7460			100	62			65				
			87	78			70				
			100	92			75				Grayish red VOLCANIC BRECCIA, severely to slightly fractured, highly weathered, medium hard

Date Started:	April 12, 2011	Water Level: ▽	Not Encountered
Date Completed:	April 13, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	76.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 5537-00TO30.GPJ GEOLABS.GDT 10/1/11

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

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

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GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)
Date: January 20, 2015

SHEET No. G-20 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	98	524

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 202

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)
											Boring terminated at 76.5 feet
							80				
							85				
							90				
							95				
							100				
							105				
							110				
							115				
							120				
							125				
							130				
							135				
							140				
							145				
							150				

Date Started:	April 12, 2011	Water Level: ▽	Not Encountered
Date Completed:	April 13, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	76.5 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 5537-00TO30.GPJ GEOLABS.GDT 10/1/11

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 203

Approximate Ground Surface Elevation (feet MSL): 106 *

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=41 PI=18	20 21	81			10 5	>4.5 2.5				CL	Brown SILTY CLAY, stiff, dry (alluvium)
Direct Shear	21	80			13	3.0	5			MH	Reddish brown with traces of gray mottling CLAYEY SILT with weathered gravel, stiff, damp (alluvium)
	27		0 0		36/3"		10			ML	Grayish brown with black mottling CLAYEY SILT with sand, very hard, damp (residual soil)
	18	118	30	0	55/6"		15				Grayish brown VOLCANIC BRECCIA, severely fractured, highly weathered, medium hard
UC= 7750			35	22			20				Gray vesicular BASALT, severely to moderately fractured, moderately weathered, hard
UC= 11430			77	32			25				Gray VOLCANIC BRECCIA, severely fractured, highly weathered, medium hard
			75	35			30				Gray to reddish gray vesicular BASALT, severely to slightly fractured, moderately to highly weathered, medium hard to hard
UC=580			100	60			35				
			100	67			40				Gray vesicular BASALT, severely to slightly fractured, moderately weathered, hard
UC= 2470			100	22			45				
			100	17			50				Reddish gray VOLCANIC BRECCIA, severely fractured, highly weathered, medium hard
			100	60			55				Brownish gray vugular BASALT, severely to closely fractured, moderately to highly weathered, medium hard
UC= 1120			100	88			60				Reddish gray VOLCANIC BRECCIA, severely to slightly fractured, highly weathered, medium hard
UC= 1300			93	72			65				Gray BASALT, severely to slightly fractured, moderately weathered, hard
			95	68			70				Yellow VOLCANIC BRECCIA, closely to slightly fractured, highly weathered, medium hard
							75				

Date Started:	April 11, 2011	Water Level: ▽	Not Encountered
Date Completed:	April 12, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	76 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 5537-00TO30.GPJ GEOLABS.GDT 10/1/11

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

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. APRIL 30, 2015 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)
Date: January 20, 2015

SHEET No. G-21 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	99	524

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 203

(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
							80				Reddish gray VOLCANIC BRECCIA, severely to moderately fractured, highly weathered, medium hard
											Boring terminated at 76 feet
							85				
							90				
							95				
							100				
							105				
							110				
							115				
							120				
							125				
							130				
							135				
							140				
							145				
							150				

Date Started:	April 11, 2011	Water Level: ▽	Not Encountered
Date Completed:	April 12, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	76 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 5537-00TO30.GPJ GEOLABS.GDT 10/1/11

GEOLABS, INC.
Geotechnical Engineering

KAPOLEI INTERCHANGE COMPLEX
PHASE 2
EWA, OAHU, HAWAII

Log of Boring 204

Approximate Ground Surface Elevation (feet MSL): 109.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
Direct Shear	19 23	78			25 10	4.0 4.0				CH	Reddish brown SILTY CLAY with some cobbles and boulders, very stiff, moist (alluvium) grades to stiff
UC=22.2	20	103			50	>4.5	5			MH	Light reddish brown CLAYEY SILT, hard, dry (alluvium)
	16				53/5"		10			ML/ MH	Brown with tan mottling CLAYEY SILT with some weathered sand and gravel, very hard, dry (residual soil)
UC= 9420			100 88	100 50	15/2"		15				Gray vesicular BASALT, slightly fractured, moderately weathered, hard
							20				Brownish gray GRAVEL (BASALTIC), medium dense (clinker)
			87	18							Gray vesicular BASALT, severely to closely fractured, moderately weathered, hard
							25				Grayish brown GRAVEL (BASALTIC) with sand, medium dense (clinker)
			90	28							Gray vesicular BASALT, severely to closely fractured, moderately to highly weathered, medium hard
			100	52			30				
							35				
			77	27							Gray GRAVEL (BASALTIC), medium dense (clinker)
			92	23			40				Gray vesicular BASALT, severely to closely fractured, moderately weathered, hard
			97	45			45				
											Reddish gray VOLCANIC BRECCIA, severely to closely fractured, moderately to highly weathered, medium hard
			12	12			50				Tannish gray vesicular BASALT, severely to closely fractured, moderately weathered, hard
			0	0			55				
	14				63		60				Gray VOLCANIC BRECCIA, severely fractured, moderately to highly weathered, medium hard
			0	0			65				
UC= 2650 UC	29		98	81	53/6"						Gray vesicular BASALT, severely to moderately fractured, moderately weathered, hard
			80	72			70				
							75				

Date Started:	April 7, 2011	Water Level: ▽	Not Encountered
Date Completed:	April 11, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	76 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 5537-00TO30.GPJ GEOLABS.GDT 10/1/11

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

GERALD Y. SEKI
LICENSED PROFESSIONAL ENGINEER
No. 5535-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. — APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)
Date: January 20, 2015

SHEET No. G-22 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(261)	2015	100	524

GEOLABS, INC. — Geotechnical Engineering
KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 204

(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
									Grayish yellow VOLCANIC BRECCIA, slightly fractured to massive, highly weathered, medium hard
							80		Boring terminated at 76 feet
							85		
							90		
							95		
							100		
							105		

Date Started:	April 7, 2011	Water Level: ▽	Not Encountered
Date Completed:	April 11, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	76 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC. — Geotechnical Engineering
KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 302

Approximate Ground Surface Elevation (feet MSL): 174 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
								ML	Reddish brown SANDY SILT with clay and gravel, very stiff, dry (fill)
LL=49 PI=27	18				102	>4.5		CL	Reddish brown CLAY with some sand and some weathered gravel, very hard, dry (residual soil)
	18				31	>4.5			
Direct Shear	16					>4.5	5		grades with cobbles, hard grades with some boulders, very hard
	16						10		
UC= 9440			100	100			15		Gray BASALT, closely to moderately fractured, moderately weathered, very hard
UC= 12190			100	63			20		
UC= 13710			100	100			25		
UC= 15630			100	35			30		
							35		Boring terminated at 35 feet

Date Started:	June 27, 2011	Water Level: ▽	Not Encountered
Date Completed:	June 27, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	35 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC. — Geotechnical Engineering
KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 301

Approximate Ground Surface Elevation (feet MSL): 135 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
								ML/MH	Reddish brown CLAYEY SILT with sand and gravel, very stiff, dry (fill)
	12		27		25/3"				grades with cobbles and boulders, very hard
			14		15/1"		5	MH	Reddish brown CLAYEY SILT with some weathered gravel and cobbles, very hard (residual soil)
	10		98	28	6/1"		10		Gray dense BASALT, severely to closely fractured, slightly weathered, very hard
							15		Boring terminated at 15 feet
							20		
							25		
							30		

Date Started:	June 27, 2011	Water Level: ▽	Not Encountered
Date Completed:	June 27, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	15 feet	Drilling Method:	4" Auger & PQ Coring
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC. — Geotechnical Engineering
KAPOLEI INTERCHANGE COMPLEX PHASE 2, EWA, OAHU, HAWAII — Log of Boring 303

Approximate Ground Surface Elevation (feet MSL): 139 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
LL=35 PI=14	18	83			27	>4.5		CL	Reddish brown CLAY with some fine sand and some weathered gravel, very stiff, dry (alluvium)
	25				15	>4.5			
					10/0" Ref.		5		Gray BOULDER (BASALTIC), very dense (alluvium)
								ML	Grayish brown SANDY SILT with gravel, very hard, dry (residual soil)
	15				42		10		
	10	99			60/5"		15		Boring terminated at 15.9 feet
							20		
							25		
							30		

Date Started:	July 12, 2011	Water Level: ▽	Not Encountered
Date Completed:	July 12, 2011		
Logged By:	D. Gremminger	Drill Rig:	CME-45C
Total Depth:	15.9 feet	Drilling Method:	4" Auger & N/A
Work Order:	5537-00TO30(A)	Driving Energy:	140 lb. wt., 30 in. drop

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. — APRIL 30, 2016 — LIC. EXP. DATE

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

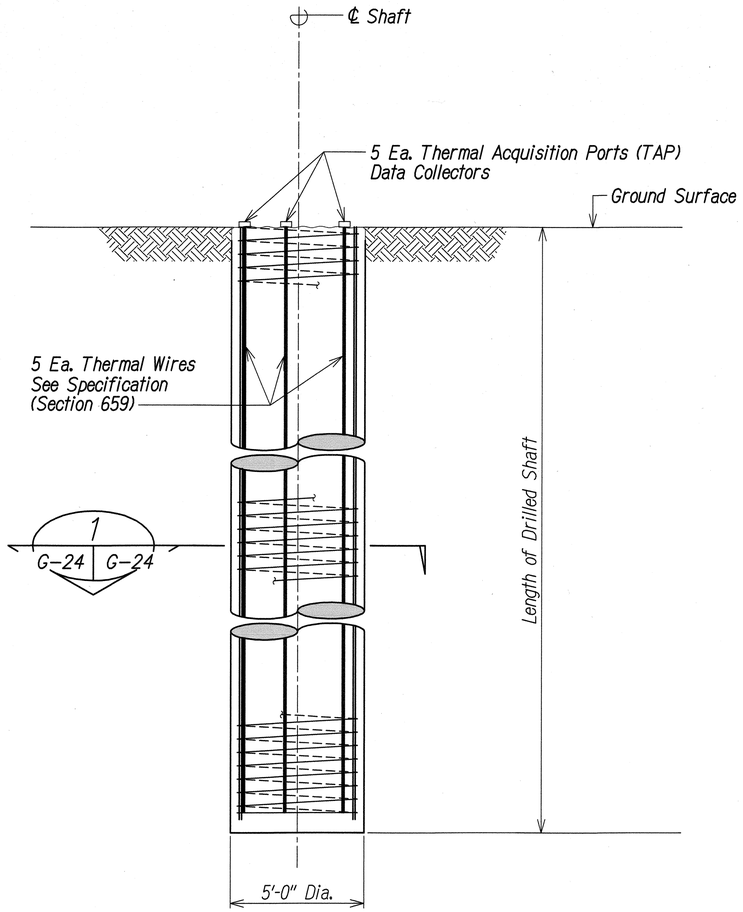
INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-H1-1 (261)

Date: January 20, 2015

SHEET No. G-23 OF 25 SHEETS

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

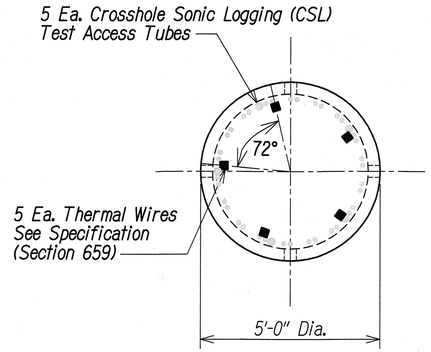
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	101	524



5'–0" DIA. DRILLED SHAFT ELEVATION

Scale: Not To Scale

A
G-24 G-24



5'–0" DIA. SHAFT DETAIL/PLAN

Scale: 1/2"=1'-0"

1
G-24 G-24

Notes:

1. Two (2) 5'-0" Diameter Drilled Shafts each will be instrumented with Thermal Wires at Abutment No. 1 and Abutment No. 2.
2. Engineer will select drilled shafts to be instrumented at each Abutment location.

ORIGINAL PLAN
NOTE BOOK
No.

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

GRAPHIC SCALE:

2' 0 2' 4'

SCALE: 1/2"=1'-0"

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

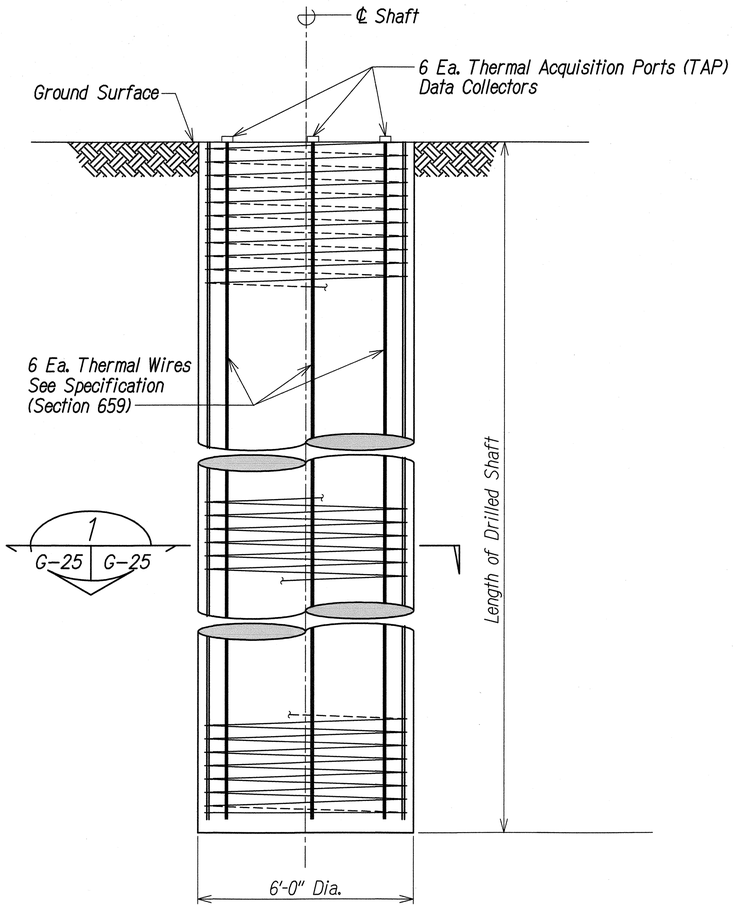
5' DIAMETER DRILLED SHAFT THERMAL WIRE DETAILS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)

Scale: As Noted Date: January 20, 2015

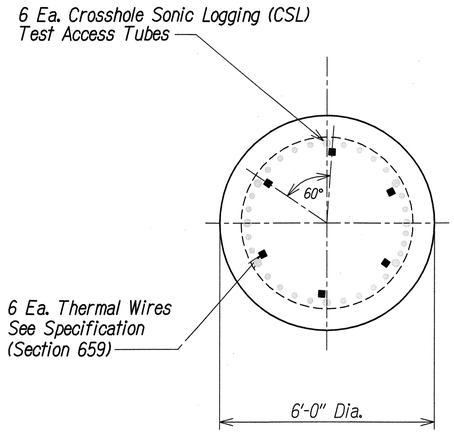
SHEET No. G-24 OF 25 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-HI-1(261)	2015	102	524



6'-0" DIA. DRILLED SHAFT ELEVATION (A, G-25 | G-25)

Scale: Not To Scale



6'-0" DIA. SHAFT DETAIL/PLAN (1, G-25 | G-25)

Scale: 1/2"=1'-0"

Notes:

1. Two (2) 6'-0" Diameter Drilled Shafts each will be instrumented with Thermal Wires at Pier No. 1 and Pier No. 2.
2. Engineer will select drilled shafts to be instrumented at each pier location.

GRAPHIC SCALE:

2' 0 2' 4'

SCALE: 1/2"=1'-0"

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

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

GEOLABS, INC. APRIL 30, 2016 LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

6' DIAMETER DRILLED SHAFT THERMAL WIRE DETAILS

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-HI-1 (261)

Scale: As Noted Date: January 20, 2015

SHEET No. G-25 OF 25 SHEETS

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