

Geotechnical Engineering

## Soil Log Legend

### UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

	MAJOR DIVISION	S	US	CS	TYPICAL DESCRIPTIONS
	GRAVELS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
COARSE-	GNAVLLS	LESS THAN 5% FINES		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAINED SOILS	MORE THAN 50% OF COARSE	GRAVELS WITH FINES	0000	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	FRACTION RETAINED ON NO. 4 SIEVE	MORE THAN 12% FINES		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS	CLEAN SANDS	0	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL	SANDS	LESS THAN 5% FINES		SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
RETAINED ON NO. 200 SIEVE	50% OR MORE OF COARSE FRACTION PASSING	SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
	THROUGH NO. 4 SIEVE	MORE THAN 12% FINES		SC	CLAYEY SANDS, SAND-CLAY MIXTURES
	CII TO			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
FINE- GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		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
				МН	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE		СН	INORGANIC CLAYS OF HIGH PLASTICITY
				ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIC	GHLY ORGANIC SC	DILS	7 77 7 7 77 7	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

#### **LEGEND**

(2-INCH) O.D. STANDARD PENETRATION TEST

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

SHELBY TUBE SAMPLE

XSG **GRAB SAMPLE** 

CORE SAMPLE

WATER LEVEL OBSERVED IN BORING

LIQUID LIMIT (NP=NON-PLASTIC)

PLASTICITY INDEX (NP=NON-PLASTIC)

TORVANE SHEAR (tsf)

POCKET PENETROMETER (tsf)

UNCONFINED COMPRESSION (psi)

UNCONSOLIDATED UNDRAINED

TRIAXIAL COMPRESSION (ksf)

A-0.1

Plate

LICENSED PROFESSIONAL ENGINEER

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION. GEOLABS, INC.

APRIL 30, 2016
LIC. EXP. DATE

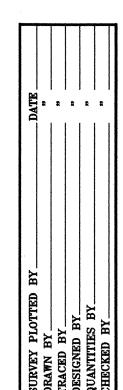
STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

# BORING LOG LEGEND

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-6 OF 25 SHEETS



D. ROAD	STATE	FED. AID	FISCAL	SHEET	TOTAL
DIST. NO.		PROJ. NO.	YEAR	NO.	SHEETS
AWAII	HAW.	IM-H1-1(261)	2015	84	524



Geotechnical Engineering

### Rock Log Legend

#### **ROCK DESCRIPTIONS**

	BASALT		FINGER CORAL
	BOULDERS		LIMESTONE
Δ Δ Δ Δ Δ Δ	BRECCIA		SANDSTONE
× <sub>0</sub> × × × × × × × × × × × × × × × × × × ×	CLINKER	× × × × × × × × × × × × × × × ×	SILTSTONE
× > 00 00			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

6 to 12 inches apart

Moderately Fractured:

3 to 6 inches apart

Severely Fractured:

Closely 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

oressure.

Example: Saprolite

A-0.2

Plate

#### 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.



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

APRIL 30, 2016
LIC. EXP. DAT

STATE OF HAWAI'I
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-H1-1 (261)

Date: January 20, 2015

SHEET No. G-7 OF 25 SHEETS

ORIGINAL SURVEY PLOTT
PLAN DRAWN BY
TRACED BY
NOTE BOOK DESIGNED BY

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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(261)	2015	85	<i>524</i>

					3S, IN				KAI	POLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII  Log of Boring 1
Other Tests	ontent (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	SOSO	Approximate Ground Surface Elevation (feet MSL): 80 *  Description
O	5 26 18	92	OR	<u> </u>	18 46 34	2.3 >4.5	5		GW- GM CH	5-inch ASPHALTIC CONCRETE  Dark brown and gray SILTY GRAVEL (BASALTIC) with sand and traces of clay, medium dense, damp (fill) Light brown with black mottling and gray SILTY CLAY with boulders and traces of gravel
	36 36	60			20/2" Ref. 25/5"	1.3	15		SM ML	(basaltic), sand, and organics, very stiff, moist (fill)  Dark brown, orangish brown, and gray CLAY with gravel (basaltic) and traces of sand, hard, moist (fill)  Brown SILTY SAND, very dense, damp (alluvium)
	13		444		Ref. 37/4" Ref.	2.5	20		СН	Dark brown CLAYEY SILT with fine sand, very hard, moist (alluvium) grades with cobbles  Dark brown and gray SILTY CLAY with cobbles,
	11				31/6" +25/4"		25 30	0.00	GW	boulders, and gravel, very stiff, moist (alluvium)  Reddish brown and purplish gray vesicular GRAVEL (BASALTIC) in a silt matrix, moderately to extremely weathered, very dense, damp (weathered basalt)
							35-			* Elevations estimated from Topographic Survey Maps received from Engineering Concepts, Inc. on 11/10/05.
							40			
							50	- - - - - - - - - - - - - - - - - - -		
							55			- - - - -
							65	- - - - - - - - -		
							70			- - - -
Date Sta			May 1				75-			Water Level: ☑ Not Encountered
Date Co Logged Total De	By: pth:		May 1 D. Sjo 26.3 f	olund eet						Drill Rig: MOBILE B-80 Drilling Method: 4" Solid-Stem Auger
	Work Order: 5537-00TO30(A)									Driving Energy: 140 lb. wt., 30 in. drop

THE STATE OF THE S					BS, IN				KAF	POLEI INTERCH	IANGE COMPLEX SE 2	Log of Boring
Ser Co	L				Engine			T		EWA, OAHL		2
Other Tests	Moisture Content (%	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen (tsf)	Depth (feet	Graphic	nscs	Appr Ele	oximate Ground Surface vation (feet MSL): 83 *	
5 0			S &	- RC		Po (ts)	De Sa	<u>ن</u> ا دوا		∖4-inch ASPHAL	Description TIC CONCRETE	
LL=46	18 20 20	<ul><li>102</li><li>107</li></ul>			16 11 44	2.3 3.3	5	-1/11		Dark brown, gra (BASALTIC AN traces of clay, r	y, and dull white GRAVE D CORALLINE) with san nedium dense to dense, o	d and damp (fill)
PI=28							10				own and gray CLAY with b), stiff, moist (fill)	traces of
	17				38/6" Ref.	>4.5				grades to very h		
	25				76		15	0	SW SM	gravel and trace	rown SAND (CORALLIN es of silt, dense, damp (fil TY SAND, very dense, da	1)
	38				35	1.5	20		ML	(alluvium) Grayish brown (	CLAYEY SILT with sand a reathered gravel (basaltic	and traces
	56				58		25		SM	moist (alluvium)	and tan SILTY SAND (B	ASALTIC)
							30				ighly weathered gravel, volliuvium)	
				. Ag		·	35					
				<b>8.</b> -			40-					• •
						ψ	-					•
							45-				•	
							50					
				,			55					- -
							60					• •
							1					•
				- ,			65					-
							70					• •
							75					
Date Star			May 1 May 1							Water Level: <u>∑</u>	Not Encountered	
Logged E	By:		D. Sjo	olund				,		Drill Rig:	MOBILE B-80	
Total Der Work Ord			26.5 f 5537-		30(A)	Massarin Grand Color on cases				Drilling Method: Driving Energy:	4" Solid-Stem Auger 140 lb. wt., 30 in. drop	



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-8 OF 25 SHEETS

A A					BS, IN				KAI		g of ring		
		Geot	echr	nical	Engine	ering				EWA, OAHU, HAWAII 3			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	SS	Approximate Ground Surface Elevation (feet MSL): 88.5 *	-		
Oth	Moi	Dry We	Rec	RQ	Per Res (blo	Poc (tsf)	Dep	Sar Gra	nscs	Description			
	7 16	110			50/6" Ref.	1.3		X 00	GM	Light gray and brown SILTY GRAVEL AND COBBLES (BASALTIC) with traces of sand ar organics, very dense, damp (fill)	nd		
	20	72			9 14	1.8	5			Reddish brown and gray CLAY with traces of coarse sand (basaltic) and organics, stiff, mois (fill)	st		
	23				11	2.5	10	- - -	СН	grades with traces of gravel and sand (coralling Brown with black mottling CLAY with traces of sand and organics, stiff, moist (alluvium)	•		
	20	80	·		50/5" Ref.		15	- - -	SM	Dark reddish brown and gray SILTY SAND wit traces of highly weathered gravel (basaltic), vendense, damp (alluvium)			
	42				30	1.0	20		МН	Orangish and grayish brown CLAYEY SILT, ve stiff, moist (alluvium)	ery		
	71				35	1.3	25			grades to hard  Boring terminated at 26.5 feet			
			and the second s					1					
Date Sta	rted:		May 2	2, 200	06		30			Water Level:   Not Encountered			
Date Cor			May 2		16			***		D.III D.			
Logged E Total Dep			D. Sjo 26.5 f				Partition of the second of the			Drill Rig: MOBILE B-80 Drilling Method: 4" Solid-Stem Auger			
Work Ord					)30(A)				······································	Driving Energy: 140 lb. wt., 30 in. drop			

					3S, IN Engine				KA	POLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII  Log of Boring 5
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	nscs	Approximate Ground Surface Elevation (feet MSL): 105 *  Description
UC= 4300 UC= 13000 UC= 4100	27 27		6 19 100	90 100	20 20/1" Ref.	1.5	10 15 20 25		GP MH	Light and dark gray GRAVEL (BASALTIC) AND CONCRETE GRAVEL (fill) Reddish brown and gray CLAYEY SILT with moderately weathered vesicular gravel (basaltic), very stiff (alluvium)  Gray vesicular BOULDERS AND COBBLES (BASALTIC) in a clayey silt matrix, hard (alluvium)  Light brownish gray vesicular and vugular BASALT, closely to slightly fractured, slightly weathered, very hard grades to moderately to slightly fractured  Brownish gray vesicular BASALT, closely to slightly fractured, slightly to moderately weathered, hard to very hard  Boring terminated at 26.5 feet
Date Star  Date Con	nplete	ed: I	May 2	2, 200 2, 200	)6		<u> </u>			Water Level: ∑ Not Encountered
Logged B Total Dep Work Ord	oth:	4	26.5 f		)30(A)					Drill Rig: MOBILE B-80 Drilling Method: 4" Solid-Stem Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop

						DO, III				, 10 (	PHASE 2
					nicai	Engine			1	<b>-</b>	EWA, OAHU, HAWAII 4
	Other Tests	Moisture Content (%)	<u> </u>	Core Recovery (%)	(%) O	Penetration Resistance (blows/foot)	Pocket Pen (tsf)	Depth (feet)	Sample Graphic	SS	Approximate Ground Surface Elevation (feet MSL): 92 *
	Oth	Moi Co	Ve	Cor	RQD	Per Res (blo	Poc (tsf)	Dep	Sar Gra	NS	Description
		16 17 19	109			52 18 38	>4.5 3.0 >4.5		X	GC CH	Gray-brown CLAYEY GRAVEL (BASALTIC) (fill) Brown, orangish brown, and light gray CLAY with gravel (basaltic), traces of sand (basaltic), and organics, hard, moist (fill) grades to very stiff
		27				31	3.0	10-		СН	Brown CLAY, hard, moist (alluvium)
		9				50/5" Ref.		15-		SM	Dark brown SILTY SAND with gravel (basaltic), very dense, damp (alluvium)
		26				71		20-		SM	Light brown SILTY SAND with traces of highly weathered gravel (basaltic), very dense, damp [7]
GPJ GEOLABS.GDT 10/11/11		43				50/4" Ref.	1.0	25		ML	Brown CLAYEY SILT with traces of fine sand, very hard, moist (alluvium)  Boring terminated at 25.8 feet
-00TO30.	Date Star	ted:		May 1	11, 20	006		30-			Water Level:   Not Encountered
G DOT 5537.	Date Con Logged E	nplet		May 1	11, 20	_		·			Drill Rig: MOBILE B-80
RING LO	Total Dep			25.8 f		)30(A)					Drilling Method: 4" Solid-Stem Auger
8	Work Ord	<u> </u>		3337-	-0010	)30(A)					Driving Energy: 140 lb. wt., 30 in. drop

KAPOLEI INTERCHANGE COMPLEX

Log of Boring

GEOLABS, INC. Seotechnical Engineering	KAPOLEI INTERCHANGE COMPLEX PHASE 2  EWA OARLI HAWAII
pcf) (%) (ce ) (ce	Approximate Ground Surface Elevation (feet MSL): 104 *  Description  CH Brown with black mottling CLAY with concrete gravel, boulders, and traces of organics, very stiff, moist (fill) Brown and dull black CLAY with highly weathered gravel (clinker) and organics, very hard, moist (fill)  ML grades to hard Light tan and gray SANDY SILT, very hard, damp Brownish gray vesicular BASALT, severely fractured, moderately to highly weathered, medium hard to hard Orangish brown and gray vesicular BASALT, severely to closely fractured, highly to moderately weathered, medium hard to hard Light gray vesicular BASALT, closely to moderately fractured, slightly weathered, hard  Boring terminated at 25 feet
May 18, 2006 d: May 18, 2006 D. Sjolund 25 feet	Water Level:     Drill Rig:   MOBILE B-80     Drilling Method:   4" Solid-Stem Auger & HQ Coring
d:	May 18, 2006 D. Sjolund



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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

## BORING LOGS

FED. ROAD DIST. NO.

HAWAII

FISCAL YEAR

FED. AID PROJ. NO.

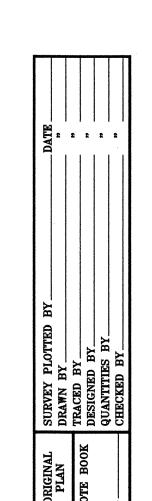
IM-H1-1(261)

SHEET NO.

TOTAL SHEETS

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-9 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	<i>8</i> 7	524

	Ī	GI	EOI	LAE	BS, IN	IC.			KAI	POLEI INTERCHANGE COMPLEX PHASE 2	Log of Boring
		Geot			Engine	ering	J			EWA, OAHU, HAWAII	7
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	nscs	Approximate Ground Surface Elevation (feet MSL): 100 *  Description	
	20 21	99			35 22	>4.5 >4.5			СН	Brown with black mottling CLAY with trace organics, very hard, moist (alluvium)	es of
JC=43.8	19	104	:		37	3.0	5				
			13				10-			grades with boulders	
	32		0	-	76	1.5	15		МН	Brown with black mottling CLAYEY SILT value and traces of completely weathered grave (basaltic), very hard (alluvium)	
	22		0		50/4" Ref.	1.0	20		МН	Brown CLAYEY SILT with moderately wear gravel (basaltic) and traces of sand, very (alluvium)	
	1		17		15/2" Ref.		25		МН	Brown CLAYEY SILT with cobbles (basalt traces of sand, very stiff, moist (alluvium)	,
			72	63	12/0" Ref.		30			Light brownish gray vesicular BASALT, closeverely fractured, moderately weathered	•
			77	23			35	からなった。		grades to closely to severely fractured	
UC= 6400			100	100			40	スペーン・		Light gray vesicular BASALT, slightly to moderately fractured, slightly to moderate weathered, hard	ly
			88	72			45	スススス		grades to severely fractured	
			63	40			50	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		Light gray vesicular BASALT, closely to se fractured, moderately weathered, hard	everely
			37	20			55-	- 1/2-1/2-1		Daniela la como DAOALT de adameta la trada	
			88	43		,	60	となった。		Brownish gray BASALT, moderately to clo fractured, slightly to moderately weathere medium hard to hard	
UC= 11900		,	100	83			65-	127.77		Light gray slightly vesicular BASALT, close severely fractured, slightly to moderately weathered, hard to very hard	ely to
			43	31			70	大人な人		grades to moderately to severely fractured	l, hard
			100	67			75-	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\			
Date Sta Date Cor				19, 20 22, 20						Water Level: ∑ Not Encountered	
Logged E	эy:		D. Sjo	olund						Drill Rig: MOBILE B-80	
Total Dep Work Ord			75 fee 5537-		)30(A)					Drilling Method: 4" Solid-Stem Auger & HQ Cori Driving Energy: 140 lb. wt., 30 in. drop	ing

			Penetration Hesistance (blows/foot)		5-	Graphic	(Continued from previous plate)  Description  Light brownish gray BASALT, closely to ser fractured, slightly to moderately weathered Boring terminated at 75 feet	verely , hard
				85	5-		Light brownish gray BASALI, closely to se fractured, slightly to moderately weathered Boring terminated at 75 feet	vereiy I, hard
					1			•
				9(	)- -			
					]			·
				95	5			
				100	- - - -			
				105	- - - -			
				115	- - - -	,		
				120	<b>)</b>			
				125	5			*
				130	<b>)</b>			
				135	5	No.		
				140	-			
		,	,	145				
Date Started: Date Complet Logged By: Total Depth:	eted: N	May 19, 20 May 22, 20 D. Sjolund 75 feet	2006				Water Level:   Not Encountered  Drill Rig: MOBILE B-80  Drilling Method: 4" Solid-Stem Auger & HQ Corin	



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-10 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	88	524

					BS, IN				KAI	POLEI INTERCHANGE COMPLEX PHASE 2	Log of Boring O
		GeOT	ecni	ncal	Engine			<del>                                     </del>		EWA, OAHU, HAWAII	8
Other Tests	Moisture Content (%)	Unit ight (pcf	Core Recovery (%	D (%)	Penetration Resistance (blows/foot)	Pocket Pen (tsf)	oth (feet)	Sample Graphic	SS	Approximate Ground Surface Elevation (feet MSL): 100 *	,
Oth	Moi Co o	Dry	Corr	RQD	Per Res (blo	Poc (tsf)	Depth	Sar Gra	USCS	Description	
LL=46 PI=27	22 23	94			34 18	>4.5 >4.5	1	X	CL	Brown with black mottling CLAY with trace organics, very stiff, moist (alluvium)	es of
Direct Shear	21	103			35	>4.5	5				
	17				50/5" Ref.	1.0	10-		МН	Dark orangish brown CLAYEY SILT, very moist (alluvium)	hard,
	20				30/4" Ref.	1.0	15				
	17				44		20		SM	Light grayish brown and dull white SILTY (CORALLINE) with gravel, dense, damp (	
	19				50/4" Ref.		25		ML	Dark orangish brown with black mottling C SILT with traces of moderately to complet weathered gravel (basaltic), very hard, mo (residual soil)	tely
	22				30/5" Ref.		30				
			63	27	11/0" Ref.		35			Light gray vesicular BASALT, closely fract slightly weathered, hard	tured,
			57	57			40	-\.\\.\\.\\.\\.\\.\\.\\.		grades to slightly to moderately fractured	
			100	80			45	× × × × × × × × × × × × × × × × × × ×		Reddish brown to grayish brown GRAVEL medium dense (clinker) Light brownish gray vugular BASALT, clos	sely to
			52	10			50-	かない		severely fractured, moderately weathered medium hard Light gray slightly vesicular BASALT, mas	
			53	48	,		- -	× × × × × × × × × × × × × × × × × × ×		slightly weathered, very hard grades to slightly to severely fractured	
			80				55-	× × × × × × × × × × × × × × × × × × ×		Reddish brown to grayish brown GRAVEL COBBLES, medium dense (clinker)	. AND
		·	60	25			60	× × × × × × × × × × × × × × × × × × ×		Light gray slightly vacioular DASALT mad	lerately.
			70	52			65	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		Light gray slightly vesicular BASALT, mod to severely fractured, slightly to moderate weathered, hard	
							70			Boring terminated at 70 feet	
Date Sta	rted.		May 3	22, 20	006		75-			Water Level:	
Date Co	mplete	ed:	May 2	23, 20	·						
Logged I			D. Sjo 70 fe						······································	Drill Rig: MOBILE B-80 Drilling Method: 4" Solid-Stem Auger & HQ Cor	ina
Total De	թւու der:		***************************************		)30(A)		······································			Drilling Method: 4" Solid-Stem Auger & HQ Cor Driving Energy: 140 lb. wt., 30 in. drop	1119

	GEOLABS, INC.  Geotechnical Engineering									KAPOLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII  Log of Boring 9				
\$ S	(%	œot Jeot								EWA, OAHU, HAWAII 9				
er Tests	0 <u></u>	Dry Unit Weight (po	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	oth (feet)	Graphic	SS	Approximate Ground Surface Elevation (feet MSL): 90 *				
Other	Moi Cor	Dry Wei	Cor	RQ	Res (blo	Poc (tsf)	Depth	Gra	SOSO	Description  Prown CLAY with traces of cond (corolling and				
	19 21	73			39 10	>4.5 >4.5			СН	Brown CLAY with traces of sand (coralline and basaltic), shell fragments, and organics, hard, moist (fill)				
	22	88			19	4.0	5			Brown CLAY with traces of organics, stiff, damp (alluvium)				
	17				18/2" Ref.	·	10	<u></u>	SM	grades to very stiff, moist  Dark orangish brown SILTY SAND, very dense, damp (alluvium)				
	34				26		15		SM	Light gray and dull white SILTY SAND				
	J <del>4</del>				20		<u>`</u>		SM	(CORALLINE) with traces of gravel (coralline),				
	82	V.			21		20		OIVI	Grayish brown SILTY SAND, medium dense, damp (alluvium)				
	100		·	:	23		25							
			`			·				Boring terminated at 26.5 feet				
							30							
							25							
							35							
							40							
	*						45							
							50							
							50		. •					
,							55		·					
							60							
							65							
							70							
							75							
Date Sta Date Cor			May 2 May 2				73			Water Level: <u>∇</u> Not Encountered				
Logged E	Зу:		D. Sjo	olund	,00					Drill Rig: MOBILE B-80				
Total Dep Work Ord	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		26.5 f 5537-		)30(A)					Drilling Method: 4" Solid-Stem Auger Driving Energy: 140 lb. wt., 30 in. drop				



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-11 OF 25 SHEETS

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 FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(261)	2015	89	524

The state of the s					BS, IN				KAI	POLEI INTERCHANGE COMPLEX PHASE 2  Log of Boring
8		Geof	echr	nical	Engine	_		<del></del>	<u> </u>	EWA, OAHU, HAWAII 10
Other Tests	sture	Unit ight (pcf	Core Recovery (%	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen (tsf)	Depth (feet)	Sample Graphic	SS	Approximate Ground Surface Elevation (feet MSL): 95 *
Ö	Moist Conte	V V V V V V V V V V V V V V V V V V V	Con	RQ	Per Res (blo	Poc (tsf)	Dep	Sar Gra	S)	Description ON TV ODAY (DAGALTIC
	21 21	98			78 28			- P	GM	Dark brown and gray SILTY GRAVEL (BASALTIC with sand, dense to very dense, damp (fill)  Dark gray and brown SILTY GRAVEL
	24	91			30	3.3	5		CH CH	(BASALTIC), very dense, damp (fill)  Dark brown and gray CLAY with sand and highly
	24				15	2.3	10			weathered gravel (basaltic), very stiff, damp (fill)  Brown and dull black CLAY with traces of
Direct	21	98	٠		50/6"		15		SM	completely weathered sand (basaltic), very stiff, moist (alluvium) grades to stiff at 10 feet
Shear	<b>-</b> 1				Ref.		20.	-	СН	Brown with black mottling SILTY SAND with traces of highly weathered gravel (basaltic), very dense,
	32				28	3.3	<b>2</b> U	-	SM	damp (alluvium) Grayish brown and light tan SILTY CLAY with traces of highly weathered gravel (basaltic) and
	75		10		25		25		J SIVI	fine sand, very stiff, moist (alluvium) Olive brown SILTY SAND, dense, damp (alluvium)
	30		19		50/6" Ref.	0.8	30 <sup>-</sup>		МН	Reddish brown and dark gray moderately weathered vesicular BOULDERS AND COBBLES (BASALTIC) in a clayey silt matrix, hard (alluvium
UC=	46		76	14	32		35		ML	Reddish brown CLAYEY SILT with moderately weathered boulders and cobbles (basaltic), hard, moist (residual soil)
5800 UC=			87	70			40	- <u>八</u>		Brown and dark reddish brown CLAYEY SILT with fine sand, hard (residual soil)
17700			47	18			45	- ハハハハ 		Brown and reddish brown BASALT, severely to moderately fractured, highly weathered, soft to medium hard
			78	53			50 <sup>-</sup>	-		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
UC=140			92	78			55	××××××××××××××××××××××××××××××××××××××		weathered, hard at 46.5 feet Reddish brown and dull purplish gray VOLCANIC BRECCIA, closely to severely fractured, highly
UC= 10200			90	47			60			weathered, medium hard to hard Light gray BASALT, moderately fractured, moderately weathered, hard
UC= 16700			100	70			65 <sup>-</sup>	· / / / / / / / / / / / / / / / / / / /		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 ver
			100	25			70			hard grades to closely to severely fractured, slightly to moderately weathered
Det - 01	-11		NA	0000	6		75			Boring terminated at 71.7 feet
Date Sta Date Cor			May 8 May 8							Water Level: <u>∇</u> Not Encountered
Logged E	Зу:		D. Sjo	olund						Drill Rig: MOBILE B-80
Total Dep			71.7 f		120(A)			**************************************		Driving Energy: 140 lb wt 30 in drop

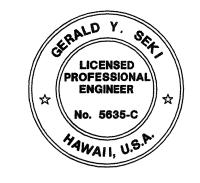
Driving Energy: 140 lb. wt., 30 in. drop

ATE

Work Order:

5537-00TO30(A)

THE PARTY OF THE P					3S, IN Engine				KAI	POLEI INTERCHANGE COMPLEX PHASE 2	Log of Boring
S	<u> </u>		<del>ि</del>	licai					T	EWA, OAHU, HAWAII	
Other Tests	re >t (%	iit t (pc	) (J	(%)	Penetration Resistance (blows/foot)	Pocket Per (tsf)	(feet)	ن و		Approximate Ground Surface Elevation (feet MSL): 96 *	
Ter	Moistur Conter	Dry Uni Weight	Core Recovery	RQD (	netr sista	ckel	Depth	Sample Graphic	SS		
_ ₹	<u> ဗိပိ</u>	وٍ×ٍ	<u>8</u>	RC	8 <u>a</u>	Po (tst	De	Sa	SO	Description	/ <b>2</b> 1113
	20	78			49	1.3				Reddish brown SILTY CLAY, stiff, moist (	· /
	13	. 0			15/3"			FC	GW/ GC	Dank brown and gray order to the trace	
					Ref.		5		CH	with sand and traces of clay, dense, dam	ıp (IIII)
C=22.9		101			18	2.3				Dark gray moderately weathered vesicula	ar .
	26	103								BOULDERS AND COBBLES (BASALTIC	
					4		10-			clayey silt matrix, very dense, damp (fill)	
	26				15	2.0	10			Brown with black mottling CLAY, very stif	f, moist
						·	,			(alluvium)	
						Ž	715			grades with orangish brown, stiff	
JC=22.2	2/	97			50	>4.5				grades to hard	
			-		1 2 2 2						
	00				47		20		SIM	Brown and grayish tan SILTY SAND with highly weathered gravel (basaltic), mediu	
	26				17			7		(alluvium)	iiii ueiise
		·						- 1	CM		<u> </u>
	ΕO	60			22/6"		25		SM	Olive and grayish brown SILTY SAND winder of completely weathered gravel (basaltic	
	50	62	13		33/6" +30/2"			A		dense (alluvium)	, very
					. 00/2					grades with moderately to highly weather	ed
	63			`	35	1.3	30-		ML	cobbles and gravel (basaltic)	
	03	3	0		33	1.3		$ \mathbf{A}  $	IVIL	Dark brown and dark gray SANDY SILT	with highly
							•			weathered gravel (basaltic), hard (alluviu	
	29				64	>4.5	35-		CH	Reddish brown CLAY, very hard (alluviun	n)
	23		35	•	07	2.5					
·											
			83	32			40-	1		Light gray vesicular BASALT, severely fra	actured,
				02						slightly to moderately weathered, hard	
									,	Light gray vugular BASALT, closely to se	
UC=			57	42			45			fractured, slightly to moderately weathered	ed, hard
7700			0.	•			•				
. ,			10	0			50-	<del>ا بُرُ</del> پُور		Croy and raddish brown VOLCANIC PDE	CCIA
								× ^ × × × 0×	d	Gray and reddish brown VOLCANIC BRE highly to extremely weathered, soft	CCIA,
				w.				××	4	ringing to extremitly weathered, con	
	45				28		55	××	d		
			33	19			•	. П × ×	d		
								× × × × <sub>0</sub>	d		NEOO!4
		-	93	8			60	××	d	Dark gray and light brown VOLCANIC BF highly to moderately weathered, medium	•
								×××	d	ringing to inoderately weathered, inediani	naiu
							GE.	×°× × ×			
UC=			100	100			65	冷	1	Gray BASALT, moderately to slightly frac	tured,
16200								i k		slightly weathered, hard	
							70-				
UC=			100	100			<i>i</i> U <sup>-</sup>	核			
4100								I K			
							75-	竹			
Date Star	rted:		May 9	9, 200	6					Water Level: <u>□</u> 14.3 ft. 05/09/2006 1002 HR	
Date Con				11, 20						5.5 ft. 05/10/2006 1155 HRS	
Logged E Total Dep			D. Sjo 80 fee		& F. Mey	er		***************************************		Drill Rig: MOBILE B-80 Drilling Method: 4" Solid-Stem Auger & HQ Co	rina
باتنا اسلامه ومسو	- wi I i		IUC	~ ~						Driving Energy: 140 lb. wt., 30 in. drop	9



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

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-12 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	90	524

					BS, IN Engine				KAI	POLEI INTERCH PHAS EWA, OAHL	Log of Boring	
O Other Tests	ı	Dry Unit Weight (pcf)	Core ORecovery (%)				Depth (feet)	nple ohic	တ္သ		ntinued from previous plate)	
Othe	Mois	Dry Weig	Core	RQE	Pen Resi (blov	Pocket (tsf)	Dep	Sample Graphic	USCS		Description	
UC= 20000			100	100				- 公公公				-
					·		80		Y	Boring terminat	ted at 80 feet	-
						·		1	,			.
	·				·		85	]				
-			·									
							90-	4	ī			4
								4				1
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							100	1				. ]
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							105					}
							103	1				-
								1	,			1
		·					110	4				4
										·		1
							115	4		·		1
								1				1
								<del>-</del>   -				1
							120	1				1
								<del>-</del>     -				1
							125	1				1
								1				
							100	1				1
							130					1
			64					]				}
						,	135	]	· ·			}
					·			_				]
							140	1	·			
							170	1				1
								4		·		1
							145	<del> </del>				1
								4				
							150·					-
Date Star			May 9 May 1							Water Level: <u>▽</u>	14.3 ft. 05/09/2006 1002 HR 5.5 ft. 05/10/2006 1155 HRS	<b>=</b>
Logged B	By:		D. Sjo	olund	& F. Mey	/er				Drill Rig:	MOBILE B-80	
Total Dep Work Ord			80 fee		)30(A)			·		Drilling Method: Driving Energy:	4" Solid-Stem Auger & HQ Co	ring

		G Dry Unit G Weight (pcf)	y (%)		Penetration G Resistance G (blows/foot)				<b>T</b>	EWA, OAHU, HAWAII 12
Other	8 32	95	Core Recovery (9	RQD (%)	netration sistance ows/foor	Pe	<u> </u>		1	
	8 32	95	Cor	RQ	1 L W 7 7 1	kel)	Depth (feet)	Sample Graphic	SS	Approximate Ground Surface Elevation (feet MSL): 92 *
	32				Pel (blc	Poc (tsf)	Dec	Sar Gra	nscs	Description (DACALTIC)
			i		63			X	GM- GW	,
	23				8	1.3	5		CH	Deals brown and normalish array CLAV with
		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-		СН	Light tan and dull white SILTY GRAVEL (CORALLINE) with sand, dense, damp (fill) Brown with black mottling CLAY, hard, dry (fill)
	23				25/6"		15			Brown CLAY, stiff, moist (alluvium)
					+10/0"	2.0	-		CH	Dark orangish brown and dark gray SILTY CLAY with traces of completely weathered gravel (basaltic), fine sand, and clay, very hard, moist
Direct Shear	35	77			32/4" Ref.		20-	×		(alluvium) Grayish brown and dark gray SILTY SAND with
	69				22		25		SM	traces of highly to completely weathered gravel (basaltic), very dense, damp (alluvium)
·			0		·		-			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
4	45				28	<0.5	40		MH	Reddish brown and gray CLAYEY SILT with grave and sand (basaltic), stiff to very stiff, moist (alluvium)
			0				4.5			Brown CLAYEY SILT, very stiff, damp (alluvium)
	27		62	55	53	0.5	45-		МН	Brown, orangish brown, and dark gray CLAYEY SILT with moderately to completely weathered
UC=		Section 2	65	53			50			vesicular gravel (basaltic), very hard, moist (alluvium)
6000							55	なるない		Gray and orangish brown BASALT, severely to closely fractured, moderately weathered, medium hard
			20	8			-		МН	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	14.\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		Reddish brown and gray BASALT, closely to severely fractured, highly weathered, medium
							70	×××		hard \grades to severely fractured
JC=250			42	42			70-	× × × × × × × ×	d	Brown and gray VOLCANIC BRECCIA, moderately to slightly fractured, highly weathered, medium hard
Date Starte	ed.		May 3	3 200	<u> </u>  6		75	×°×		Boring terminated at 75 feet   Water Level:
Date Com	plete	ed:	May 3	3, 200						
Logged By Total Dept			D. Sjo 75 fe							Drill Rig: MOBILE B-80 Drilling Method: 4" Solid-Stem Auger & HQ Coring



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-13 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	91	524

					3S, IN Engine				KAI	POLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII  Log of Boring 13
War D								<del>                                      </del>	<del></del>	EWA, OAHU, HAWAII 13
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	SS	Approximate Ground Surface Elevation (feet MSL): 94 *
Oth	Moi Cor	Dry	Core	RQ	Pen Res (blo	Poc (tsf)	Dep	San	nscs	Description
	13	94			53			X 0 0 0	GM- GW	Brown and gray SILTY GRAVEL (BASALTIC) with traces of sand and clay, very dense, damp (fill)
JU=12.3	<ul><li>23</li><li>18</li></ul>	122			46 43	3.5 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	-	СН	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	1		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	
	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		МН	Reddish brown CLAYEY SILT, stiff to very stiff, moist (residual soil)
			81	45			45			Light gray and brown slightly vesicular BASALT, severely to closely fractured, moderately to highly weathered, medium hard to hard
			50	18			<b>TO</b>			aradaa ta bard
			30	0			50	- × ×		grades to hard grades to severely fractured Reddish brown and dull purple moderately to
	46		57	17	11		55	- ×°× - ×°× - ×°×	d	highly weathered CLINKER with sand and silt, medium dense
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
			A 4	4 000			75	11/		Boring terminated at 75 feet
Date Star Date Cor				4, 200 4, 200			·			Water Level: <u>∇</u> Not Encountered
Logged E				olund	3					Drill Rig: MOBILE B-80
Total Dep	oth:		75 fe 5537							Drilling Method: 4" Solid-Stem Auger & HQ Coring

	Geotechnical Engineering						3	Managara and a constant of the	KA	POLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII  Log of Boring 14
Other Tests	sture ntent (%)	Unit eight (pcf)	Core Recovery (%)	(%) Q		Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic USCS	Approximate Ground Surface Elevation (feet MSL): 115 *
<u></u>	So C So So	Me	Ze Co	RQD	Per Res bic	Poc (tsf	De	Sar		Description
	13		1		42			0.0	GW	
1			'		53			To the second	<del>हैं</del>	Brown and gray SILTY GRAVEL (BASALTIC) with
J	18						5	Hop	7 4	Sand, dense, damp (fill)  Dark brown and gray SILTY COBBLES AND
	35	65			33			00000	7 8000	Dark brown and gray SILTY COBBLES AND GRAVEL (BASALTIC) with sand, dense, moist (fill)
·	12	77			37		10	1 10	<u> </u>	grades to medium dense
	12	11			31			- 10	200	Light brownish and purplish gray SILTY COBBLES AND GRAVEL (BASALTIC) with sand, medium
)	1 24				24		15	; 11		( asing ( iii)
1	21	!			21		•			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)
		,			1			1	4 204	
1	1 _ '	,	1		'		25	- 1	SM	Dark brown and tan SILTY SAND (CORALLINE) with traces of concrete gravel, medium dense,
J	5				28		2			damp (fill)
1									g GM-	
. ,	12	95			32/4"		30	1 30	GW GW	
)		00			Ref.			1	CH	2011
		1					35			Brown with black mottling CLAY, very hard, moist (alluvium)
1	19	,			73	>4.5			<b></b>	Boring terminated at 36.5 feet
1	1							]		Boring terminated at 30.5 leet
ļ	1	1			1		40	<b>,</b>		
ļ	1	1	1	1	1			1		
J	1				1			1		
J	1						45	[ز		
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J	1				1			]		
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	1							]		
	1	1								
ļ	1		1				65	/		
J	1							-		
,	1							1		
	1						70	1		
J	1							-		
	1						75	_] [_		
Date Star	arted:		May 1	12, 20	006		<sup>1</sup> 75			Water Level: <u>∇</u> Not Encountered
Date Con	mplete	ted:	May 1	12, 20	006					
Logged E Total Dep			D. Sjo 36.5 f							Drill Rig: MOBILE B-80 Drilling Method: 4" Solid-Stem Auger
Work Ord				<del></del>	O30(A)					Driving Energy: 140 lb. wt., 30 in. drop

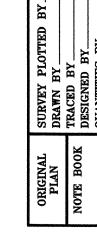


STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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-14 OF 25 SHEETS



					BS, IN			The Philippin decisis (games and here	KAI	POLEI INTERCHANGE COMPLEX PHASE 2	Log of Boring
		Geot	echr	nical	Engine	eering				EWA, OAHU, HAWAII	25
Other Tests	oisture ontent (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	nscs	Approximate Ground Surface Elevation (feet MSL): 128 *	
LL=65 1	≥ 0 19 20	95	50	33	70 12/0"	>4.5 >4.5			CH	Description Brown with black mottling CLAY with trace organics, very hard, moist (alluvium) Light gray BOULDERS (BASALTIC), hard	
10-400					Ref.		5			(alluvium)  Reddish brown and gray VOLCANIC BRE closely to severely fractured, moderately	
UC=400			80 60	43 7			10	× × × × × × × × × × × × × × × × × × ×	c c	weathered, medium hard grades to moderately to highly weathered, hard to soft	medium
UC=			90	90			15	× × × × × × × × × × × × × × × × × × ×	4	Orangish brown and gray CLINKER, close severely fractured, moderately to highly weathered, hard to medium hard	
13100			89	39			20			Light gray vesicular BASALT, slightly to clear fractured, slightly weathered, very hard	osely
							30-			grades from closely to severely fractured Boring terminated at 25 feet	
Date Starte	ed:		May 1	7, 20	006		JU			Water Level: ∑ Not Encountered	
	Date Completed: May 17, 2006								<b></b>		
	Logged By: D. Sjolund  Total Depth: 25 feet							Drill Rig: MOBILE B-80			
									<del></del>	Drilling Method: 4" Solid-Stem Auger & HQ Cori	na

THE STATE OF THE S					BS, IN				KAI	POLEI INTERCHANGE COMPLEX PHASE 2  Log of Boring			
					Engine	ering		****		EWA, OAHU, HAWAII 28			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	SOSN	Approximate Ground Surface Elevation (feet MSL): 135 *  Description			
LL=42 PI=23	19 15	91		L.E.	54 83	>4.5			CL	Reddish brown CLAY with traces of organics, hard, moist (alluvium)  Light gray vesicular BOULDERS & COBBLES			
			19				5	MOON		(BASALTIC), very dense/hard (alluvium)			
UC= 17700	·		93	93	15/0" Ref.		10	Light gray slightly vesicular BASALT, closely fractured to massive, slightly weathered to unweathered, hard to very hard					
UC= 7900			63	30			15	14.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.4.		Light gray slightly vesicular BASALT, moderately to severely fractured, slightly to moderately weathered, hard			
			66 47					(公公公)		Light gray BASALT, moderately to severely fractured, moderately weathered, hard			
UC= 10000							25			Light gray BASALT, slightly fractured, unweathered, very hard Boring terminated at 25 feet	<u> </u>		
Data Ota	Date Started: May 16, 2006										4		
Date Sta		_	<u>мау</u> Мау			an Andreas and a second of the Angelon and the	<u></u>			_ Water Level: <u>▽</u> Not Encountered			
Logged E			D. Sjo							Drill Rig: MOBILE B-80			
Total Depth: 25 feet										Drilling Method: 4" Solid-Stem Auger & HQ Coring			
Work Or	Work Order: 5537-00TO30(A)									Driving Energy: 140 lb. wt., 30 in. drop			

					Engine				,	PHASE 2 EWA. OAHU, HAWAII					
				IICai		-		т т		EWA, OAHU, HAWAII					
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen (tsf)	Depth (feet)	Sample	SS	Approximate Ground Surface Elevation (feet MSL): 162 *					
<del> </del>	Moi	Dry We	Cor	RQ	Per Res (blo	Poc (tsf	Deg	Sar	USCS	Description					
	21	80			25/6" +50/4"	>4.5	•		CH SM	Brown SILTY CLAY with traces of organics, very stiff to hard, moist (alluvium)  Light gray and orangish brown SILTY SAND with					
6300			68	25			5		-  -	highly to completely weathered gravel (basaltic), very dense, damp (saprolite)					
UC= 5500			97	73			10			Light brownish gray vesicular BASALT, closely to severely fractured, moderately weathered, hard					
			78	37			15-			Light gray vesicular BASALT, moderately to closely fractured, moderately to slightly weathered, hard grades to closely to severely fractured, moderately weathered					
UC= 5000			100 78	<ul><li>53</li><li>78</li></ul>			20			Light gray vesicular BASALT, moderately to closely fractured, moderately to slightly weathered, hard					
175761			70	70			25-	-		Boring terminated at 25 feet					
7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7							30-								
<u> </u>	Date Started: May 17, 2006  Date Completed: May 17, 2006									Water Level: ∑ Not Encountered					
Date Con			···					Water de la companya		Drill Rig: MOBILE B-80					
Logged By: D. Sjolund Total Depth: 25 feet										Drill Rig: MOBILE B-80  Drilling Method: 4" Solid-Stem Auger & HQ Coring					
Work Ord										Driving Energy: 140 lb. wt., 30 in. drop					

KAPOLEI INTERCHANGE COMPLEX

GEOLABS, INC.

Log of Boring

					3S, IN Engine		ı	N.	KAF	POLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII  Log of Boring 30					
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet).	Sample Graphic	nscs	Approximate Ground Surface Elevation (feet MSL): 144 *					
Otto	22 12 12	91 95	Cor	RQ	25 50/5" Ref. 50/5" Ref. 31/4"	1.0 3.5	<u>Б</u> О	A LIVE Sar	MH						
	12		93	85	12/0" Ref.		15			Light gray vesicular and vugular BASALT, moderately to severely fractured, slightly to moderately weathered, hard					
UC= 2400			70	32			25	- - - -		Boring terminated at 25 feet					
Date Star			May ´ May ´				<u>3U</u>			Water Level: <u>∇</u> Not Encountered					
Logged By: D. Sjolund  Total Depth: 25 feet  Work Order: 5537-00TO30(A)										Drill Rig: MOBILE B-80 Drilling Method: 4" Solid-Stem Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop					



FISCAL SHEET YEAR NO.

92

TOTAL SHEETS

FED. AID PROJ. NO.

IM-H1-1(261)

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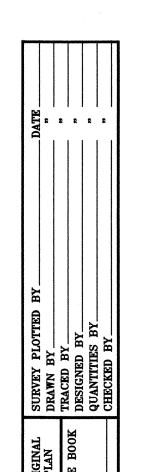
STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

BORING LOGS

FED. ROAD DIST. NO.

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



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(261)	2015	93	<i>524</i>

		G	EOI	_AE	BS, IN	IC.			KAI	POLEI INTERCHANGE COMPLEX PHASE 2	Log of Boring				
					Engine	ering		EWA, OAHU, HAWAII							
Other Tests	sture itent (%)	Unit ght (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	SS	Approximate Ground Surface Elevation (feet MSL): 165 *					
Oth	Mois Con	Dry Wei	Core	RQI	Pen Res (blor	Poc (tsf)	Dep	San Gra	nscs	Description					
	22 21	91			42 35	3.5 2.0	5		CH	Reddish brown and gray SILTY CLAY with to completely weathered gravel (basaltic) traces of organics, hard, moist (fill)	and				
	22	83			59	>4.5	3		СП	Light gray and orangish brown SILTY CLA traces of fine sand, hard, moist (fill) Brown and gray SILTY CLAY with traces or					
	23	i i			43		10			completely weathered gravel (basaltic), had moist (fill)  Dark brown and gray BOULDERS AND GI	ard,				
	9		,		50/4" Ref.		15			(BASALTIC) in a silt matrix, very dense, de (fill/alluvium) 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	- - -		Boning terminated at 20.0 leet					
							35	- - - -							
							40	- - - -							
							45	- - - -							
				,			50	- - - -							
							55	- - - -							
							60 <sup>-</sup>	- - - - -							
							65	- - - - -							
							70	- - - - -							
							75 <sup>-</sup>	-							
Date Star			May 1						,	Water Level: <u>∇</u> Not Encountered					
Date Con Logged E			May 1 D. Sjo							Drill Rig: MOBILE B-80					
Total Dep	oth:		25.3 f	eet						Drilling Method: 4" Solid-Stem Auger					
Work Ord	der:		<u>5537-</u>	00TC	)30(A)					Driving Energy: 140 lb. wt., 30 in. drop					

	Geotechnical Engineerii								KAF	PHASE 2	og of foring
Other Tests	<u> </u>	)ct)			Penetration Resistance (blows/foot)		Depth (feet)	ole hic	6	EWA, OAHU, HAWAII  Approximate Ground Surface Elevation (feet MSL): 116 *	
Othe	Moisture Content	Dry L Weig	Core Reco	RQD (%)	Pene Resis (blow	Pock (tsf)	Dept	Sample Graphic	SSS	Description	
	8	100			46			- X 9 0	GW GC	6-inch ASPHALTIC CONCRETE Reddish gray SANDY GRAVEL (BASALTIC)	with
L=NP PI=NP	9	121			43		5			silt, medium dense, damp (fill)  Dark gray with red mottling CLAYEY GRAVE (BASALTIC) with silt and sand, medium dense	<u> </u>
Sieve #200 = 22.7%	13				13		10			damp (fill)	- - - -
	19	65			35		15		:	grades with cobbles	- - -
	15				33	4.5	20		СН	Reddish brown SILTY CLAY with some sand traces of gravel, hard, damp to dry (fill)	and .
	17				26	>4.5	25				- - - -
					5/1"		30	-		grades w/ some basaltic cobbles	- - - -
	20	·		·	44	4.5	35		СН	Orangeish brown with black mottling CLAY w some sand, hard, damp (alluvium)	ith -
	21	104			20/3"	>4.5	40		SM	Light grayish tan SILTY SAND with clay, dens	-
	38				48	>4.5	45	- - - -	Sivi	moist (alluvium)	
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 (alluv	ium) .
	54	61			24/6" +25/3"		60	-	ML	Dark yellowish brown with black mottling SAN SILT, hard, moist (alluvium)	IDY
	41				20	4.5	65	-	CL	Reddish brown and white mottling SANDY CL with little silt, hard, moist (alluvium)	_AY _
	44				18	4.5	70		CL	Brown SANDY CLAY with some gravel and	-
							75			cobbles (basaltic), very stiff, moist (alluvium)	
Date Sta			May 2 May 2	·					·	Water Level: ∑ Not Encountered	
Logged I	Ву:	,	Y. Ch	iba						Drill Rig: CME-75	
Total De Work Or	<del></del>		101 fe 5537-		)30(A)					Drilling Method: 4" Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop	



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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-16 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	94	524

	GEOLABS, INC.  Geotechnical Engineering								KAI	POLEI INTERCHANGE COMPLI PHASE 2	EX	Log of Boring
**										EWA, OAHU, HAWAII		101
Other Tests	Moisture Content (%)	1	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	တ္လ	(Continued from previous	us plate)	
Othe	Mois	Dry	Core	RQE	Pen Resi (blov	Pocl (tsf)	Dep	San Gray	USCS	Description	n je drama, poveda se se provincia se provin	
	36	84			20/3"	2.5			CL			
				·	8/1"	·	80-					
							05	<b>以</b> 公		Gray dense BASALT, moderate slightly weathered, very hard	ely fracture	d,
UC= 17730			99	90	5/1"		85	が込む				
UC= 6320			100	75			90	\\\ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\		Grayish red VOLCANIC BRECO fractured, highly weathered, me	CIA, closely edium hard	<b>y</b>
JC=460			98	90			95	Δ Δ		Gray vesicular BASALT, moder moderately to slightly weathere	ately fractu d, very hai	ıred, d
							100-			Boring terminated at 101 feet		
							105-					
							110					
							110-		,			
							115-					
							120-					
							125-					
							130-		· ·			
							105					
							135					
							140					
				- -			145- 145-					
							150					
Date Sta			May 2				150-			Water Level: ∑ Not Encountered		3 ·
Date Cor Logged I			May 2 Y. Ch		<u>109</u>					Drill Rig: CME-75		
Total De			101 fe							Drilling Method: 4" Auger & HQ Co	oring	

					BS, IN Engine				KAI	POLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII  POLEI INTERCHANGE COMPLEX Boring 102
Other Tests	Moisture Content (%)	(Jo	(%) ^		Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	iple	S	Approximate Ground Surface Elevation (feet MSL): 98 *
Othe			Core	RQL				Sample	OSN CH	Description Orangish brown CLAY with some gravel and sand
	18	97			41	>4.5				(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
	4				30/6" +5/0"		25	90	SW	(alluvium) White with light orange mottling GRAVELLY SAND (CORALLINE) with silt, dense, dry (coralline
	37				43	4.0	30	-		detritus) 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)
C=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			
C=500			100	0			55		4	Purpleish red with brown mottling VOLCANIC BRECCIA, moderately fractured, highly to extremely weathered, medium hard
UC= 5740			100	67		·	60		4	
J140			100	100			65			Light brownish gray vesicular BASALT, moderately fractured, moderately weathered, hard
UC= 10370			100	100			70	(1) (1) (1) (1) (1) (1) (1) (1) (1) (1)		Gray BASALT, massive, slightly weathered, very hard
Date Sta	***************************************			22, 20			75			Water Level: <u>∇</u> 99.5 ft. 05/26/2009 1100 HRS
Date Cor Logged E	Зу:		Y. Ch		UJ					Drill Rig: CME-75
Total Dep Work Ord			101 fe		30(A)			<del></del>	J	Drilling Method: 4" Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop



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APRIL 30, 2016

GEOLABS, INC.

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-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				
sts:	<u></u>						et)			LVVA, OATO, FIAVVAII	102		
Other Tests	Moisture Content (	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	လ်	(Continued from previous plate)			
Othe	Mois	Dry	Core	RQE	Pen Resi (blov	Pocl (tsf)	Dep	San	nscs	Description			
				100			-	トンシン		grades to dense, slightly fractured			
UC= 17600			100	97	·		80-	ルバルバ			·		
			100	30			85-	ハーハーム		Orangish red with brown mottling VOLCA	NIC		
UC=150 UC=470			75	13			90-			BRECCIA, moderately fractured, highly to extremely weathered, soft to medium hat grades to yellow with red mottling	0		
UC= 10190			73	50		-	95-	次-次-次-		Gray vesicular BASALT, closely fractured weathered, very hard	d, slightly		
							100			Boring terminated at 101 feet			
							105-						
							110-						
						,	115- -				- -		
							120-						
							125-						
,							130-						
							135-				- -		
						4	140- -				- -		
							145 - -				- - - -		
D-1- Ot		(		20.00	00		150-						
Date Star Date Cor		ed:	May 2							Water Level: <u>∇</u> 99.5 ft. 05/26/2009 1100 HR			
Logged E	Зу:		Y. Ch	iba						Drill Rig: CME-75			
Total Dep Work Ord	***************************************		101 fc		30(A)				***************************************	Drilling Method: 4" Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop			

	GEOLABS, INC.  Geotechnical Engineering							KAI	POLEI INTERCHANGE COMPLEX PHASE 2  Log of Boring		
					·	_				EWA, OAHU, HAWAII	103
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	ket Pen.	Depth (feet)	Sample Graphic	SS	Approximate Ground Surface Elevation (feet MSL): 105 *	
Othe	Mois	Dry	Core	RQI	Pen Res (blov	Pocket I (tsf)	Dep	San Gra	USC	Description	
UC=31.9		99			47 20	4.5 >4.5			СН	Reddish brown with black mottling CLAY v some fine sand, very hard, dry to damp (a	
Direct Shear	24	89	,		65	>4.5	5			grades with brown mottling	
· ·			48				10			grades with cobbles (basaltic)	
	21		40		21/6" +20/3"	>4.5	15	- N			
			10		10/1"		13		SM	Brownish tan with white mottling SILTY SA	ND
	46		00		15/3"		20			dense (alluvium)  Gray with brown mottling COBBLES AND	
	*		39				25			BOULDERS (BASALTIC) with clayey sand (alluvium)	d, dense
			20				30	000000000000000000000000000000000000000			
			50					- 100°			
UC=			75	58			35			Gray vesicular BASALT, moderately to clo fractured, moderately weathered, very har	₩
4690			02	53			40	· 公公 · 公公 · · · · ·		inactured, intoderatery weathered, very har	
			83	55			45	-   於 -   於		grades to slightly fractured	
UC= 7430			80	40			<b>5</b> 0	- MAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA		grades to closely to severely fractured	
			87	80			50			grades to slightly fractured, slightly weather	ered
			53	0			55			Reddish brown COBBLES AND GRAVEL	
							60	- 0000		(BASALTIC) with some sand, medium der (clinker)	nse
UC= 8070			98	92		·	65	- NA - NA - NA		Gray dense BASALT, slightly fractured, sli weathered, very hard	ghtly
			100	93			may 🗪	1- // - // - //			
JC=350			80	0			70			Gray dense BASALT, closely fractured, moderately to highly weathered, hard	
							75				,
Date Sta Date Cor			May 2 May 2							Water Level: <u>⊽</u> 104.5 ft. 05/21/2009 1247 HRS	o o
Logged E	Зу:		Y. Ch	iba						Drill Rig: CME-75	
Total Dep Work Ord			108.5	_	)30(A)					Drilling Method: 4" Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop	



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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	IM-H1-1(261)	2015	96	524

	The state of the s	GEOLABS, INC.  Geotechnical Engineering								KA	POLEI INTERCHANGE COMPLEX PHASE 2  Log of Boring
	Service Control of the Control of th		Geo	. 2		_					EWA, OAHU, HAWAII 103
	Other Tests	Moisture Content (%)	Dry Unit Weight (pcf	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	nscs	(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			85		· · · · · · · · · · · · · · · · · · ·	grades to gray with brown mottling, moderately fractured, moderately weathered, hard Gray vesicular BASALT, moderately fractured,
				100	0			90	000000		Gray with brown mottling COBBLES AND GRAVEL (BASALTIC) with sand, medium dense (clinker)
				37	0			95		,	
		-		67	0			100			
		·		63	0		<u> </u>	<del>1</del> 05	7000000		
				75	0			110			Boring terminated at 108.5 feet
								115			
								120-		ē.	
								125			
								130			
								135			
		,						140			
								145			
	Date Sta			May 2				150·	11_		Water Level: <u>∇</u> 104.5 ft. 05/21/2009 1247 HRS
	Date Cor Logged E Total De	Зу:	ed:	May 2 Y. Ch 108.5	iba	009		-			Drill Rig: CME-75 Drilling Method: 4" Auger & HQ Coring
1	Work Or					)30(A)					Driving Energy: 140 lb. wt., 30 in. drop

					3S, IN Engine				POLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII	Log of Boring	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	SOSA	Approximate Ground Surface Elevation (feet MSL): 102 *  Description	
	24 26 25	105 105			9 9 27	1.5 2.0 2.5	5	X OR	CH	Brown CLAY, medium stiff, moist (alluvium grades to stiff grades with some weathered gravel, very Brownish gray BOULDERS (BASALTIC)	stiff
LL=36 PI=13	20				80	>4.5	10			Brown SILTY CLAY, very hard, dry (alluvi	um)
	<ul><li>24</li><li>36</li></ul>				53/6"	>4.5	15 20		ML	Brownish tan and white SANDY SILT (CORALLINE) with some weathered gravestiff, damp	vel, very
	26		0		.81	>4.5	25		МН	Brown with black mottling CLAYEY SILT some fine sand, very hard, dry (residual s	
UC= 18950	35		100	86	20/6" +34/4"		35			Gray vesicular BASALT, severely to slight fractured, moderately weathered, hard	tly
UC= 13790			100				40 45	1-20公元			
		z	83	52			50	1.公公			
			40	0			55	- xo - xo - xo - xo - xo - xo - xo - xo		Reddish gray COBBLES AND GRAVEL (BASALTIC) with sand, medium dense (c	linker)
			73	0 40			60	- x x x x x x x x x x x x x x x x x x x			
UC=			90	82	· ·		65	* × × × × × × × × × × × × × × × × × × ×	· · · · · · · · · · · · · · · · · · ·	Gray BASALT, slightly fractured, moderat weathered, hard	ely
5570			100	93			70 75	- - - - - - - - - - - - - -	Walter Mark Strikken Brown (All Mark		
Date Sta Date Cor Logged E	nplete 3y:	ed:	April 'April 'D. Gr	15, 20 emmi	011					Water Level:   Not Encountered  Drill Rig: CME-45C	
Total Dep Work Ord		<del></del>	<u>76.5 f</u> 5537-		)30(A)				· · .	Drilling Method: 4" Auger & PQ Coring Driving Energy: 140 lb. wt., 30 in. drop	



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-19 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	97	524

	GEOLABS, INC. Geotechnical Engineering									KAF	POLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII  Log of Boring 201		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	nscs	(Continued from previous plate)  Description		
							-		<u> </u>		Boring terminated at 76.5 feet		
			,				80						
							85						
							00						
							90-						
·							95-						
							100						
		,					105-						
							- - -						
							110-						
							115-						
							120-						
				,			-						
							125- - -						
			·			,	130-						
							135-						
							140						
					,		145-						
Data Sta	rtod.		Annil	3 00	111		150-				Water Level: ☑ Not Encountered		
Date Star	nplet	ed:	April 1 April 1	5, 20	11					***************************************			
Logged E Total Dep			D. Gre 76.5 f		nger						Drill Rig: CME-45C Drilling Method: 4" Auger & PQ Coring		
Work Orc					30(A)						Driving Energy: 140 lb. wt., 30 in. drop		

					BS, IN				KAPOLEI INTERCHANGE COMPLEX PHASE 2 FWA, OAHU, HAWAII  Log of Boring 202					
sts						·				EWA, OAHU, HAWAII  Approximate Ground Surface	202			
Other Tests	sture tent (	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	SS	Elevation (feet MSL): 104 *				
<del>_</del>	<u>S</u> S	We	20 S	RQ	Per Res (blo	Poc (tsf)	Dep	Sar	SOSO H	Description  Prove CLAY stiff west (all unity)				
	26 31	115			15 13	2.0 2.0			СП	Brown CLAY, stiff, wet (alluvium)	- -			
Direct Shear	23	94			45/4"	>4.5	5		СН	Tannish brown SILTY CLAY with some grown very hard, dry (alluvium)	avel,			
	27				43	>4.5	10	-	ML	grades to brown with black mottling  Dark brown CLAYEY SILT with sand and	some			
	17	114	0 30	0	36/4"		15			gravel, very hard, moist (residual soil)	- - -			
			100	27			20		1	Gray vesicular BASALT, severely to mode fractured, moderately weathered, hard	erately			
			100	63	· .		25		1-1-1-	grades to severely to slightly fractured	- - - -			
UC= 1610			00	20			30		1-1-1-		- - -			
			82	30			35				- - -			
			75	35			40	- × × × × × × × × × × × × × × × × × × ×	I × × <sup>d</sup> ×	Reddish gray GRAVEL (BASALTIC) with medium dense (clinker)	sand, .			
			100	47			A 5			Gray vugular BASALT, severely to moder fractured, moderately weathered, hard	ately			
			88	37	Ť		45			grades to purplish gray, highly weathered hard	, medium			
			75	32			50			Reddish gray VOLCANIC BRECCIA, seve				
UC=			100	87	,		55			moderately fractured, highly weathered, r hard Gray massive BASALT, closely to slightly	-			
21750			100	62			60 <sup>-</sup>			fractured, moderately weathered, hard	- - - -			
UC= 7460			87	78			65 <sup>-</sup>							
			100	92			70°	, .,		Grayish red VOLCANIC BRECCIA, sever slightly fractured, highly weathered, medi	•			
Date Sta			April				10			Water Level: <u>∇</u> Not Encountered				
Logged E	Date Completed: April 13, 2011  Logged By: D. Gremminger									Drill Rig: CME-45C				
	otal Depth: 76.5 feet Vork Order: 5537-00TO30(A)									Drilling Method: 4" Auger & PQ Coring Driving Energy: 140 lb. wt., 30 in. drop				



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-20 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	98	524

			GEOLABS, INC.					KAP			POLEI INTERCH	Log of Boring	
		Geo	techr	nical	Engine	eering	3				EWA, OAH		202
sts	(%)	) Ct)	(%)		of)	en.	et)						
Other Tests	Moisture Content (	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	9 : <u>9</u> :	ا <u>د</u>	n N	(Co	ontinued from previous plate)	
the	loist onte	Iry L	ore	QD	ene esis	ock sf)	eptl	am		USCS	(00	Description	
0	<u>≥0</u>	OS	OK	<u> </u>	<u> </u>			Sample	=   9	<u> </u>		Description	
									4		Boring termina	ted at 76.5 feet	
`								1					•
							80						
								1					•
							0.5	4					•
					·		85	1					-
	٠							1					•
							90	]					
					·		90	-					•
					-			1					-
							95	-					-
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								11					•
							100	1					-
								1					-
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							105	4					-
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		Canadaman					110	}					-
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													-
							145	<u> </u>					<b>-</b>
								4					-
			,					1					-
Data Sta	rtad.	<u> </u>	Anril	12 20	111		150		<u></u>		Water Level: 7	Not Encountered	
Date Star Date Cor			April <sup>·</sup> April <sup>·</sup>								Water Level: <u>▽</u>	NOT EHOUGHTEIEU	
ogged E	Зу:		D. Gr	emmi							Drill Rig:	CME-45C	
Total Dep			76.5 f		\20/^\						Drilling Method:	4" Auger & PQ Coring	
Work Ord	uer:		<del>555/-</del>	·UUIC	)30(A)						Driving Energy:	140 lb. wt., 30 in. drop	

					BS, IN			KAPOLEI INTERCHANGE COMPLEX PHASE 2						
***	<u>بـــٰ</u>				I Engine			T	III POOLINI MANAGAMA	EWA, OAHU, HAWAII 203				
Other Tests	Moisture Content (%	Dry Unit Weight (pcf	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen (tsf)	Depth (feet)	Sample Graphic	SOS	Approximate Ground Surface Elevation (feet MSL): 106 *				
LL=41	20	Me Me Me Me Me	လူ	RC	10	>4.5		Sa	SOSUC	Description Brown SILTY CLAY, stiff, dry (alluvium)				
PI=18 Direct	21	80			5 13	3.0	5		MH	Reddish brown with traces of gray mottling				
Shear							10		ML	CLAYEY SILT with weathered gravel, stiff, damp (alluvium)  Grayish brown with black mottling CLAYEY SILT				
	27		0		36/3"					with sand, very hard, damp (residual soil)				
	18	118	30	0	55/6"		15		4	Grayish brown VOLCANIC BRECCIA, severely fractured, highly weathered, medium hard				
UC= 7750			35	22	7		20			Gray vesicular BASALT, severely to moderately fractured, moderately weathered, hard				
UC=			77	32			25			Gray VOLCANIC BRECCIA, severely fractured, highly weathered, medium hard Gray to reddish gray vesicular BASALT, severely				
11430			75	35			30	11000000000000000000000000000000000000		to slightly fractured, moderately to highly weathered, medium hard to hard				
JC=580			100	60			35	スペススス						
			100	67			40	大人人人		Gray vesicular BASALT, severely to slightly fractured, moderately weathered, hard				
UC= 2470			100	22			45							
			100	17			50 <sup>-</sup>		4	Reddish gray VOLCANIC BRECCIA, severely fractured, highly weathered, medium hard				
			100	60			55			Brownish gray vugular BASALT, severely to closely fractured, moderately to highly weathere medium hard				
UC= 1120			100	88			60 <sup>-</sup>			Reddish gray VOLCANIC BRECCIA, severely to slightly fractured, highly weathered, medium har Gray BASALT, severely to slightly fractured,				
UC= 1300			93	72			65 <sup>-</sup>			moderately weathered, hard				
			95	68			70			Yellow VOLCANIC BRECCIA, closely to slightly fractured, highly weathered, medium hard				
Date Sta	rted:		April 1	11.21	011		75		<u>1</u>	Water Level:   Not Encountered				
Date Cor	mplete	ed:	April 1	12, 20	011					-				
Logged E Total Der			D. Gre 76 fee	<del></del>	nger					Drill Rig: CME-45C Drilling Method: 4" Auger & PQ Coring				
Work Ord					O30(A)		· · · · · · · · · · · · · · · · · · ·			Driving Energy: 140 lb. wt., 30 in. drop				



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-21 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	99	524

					3S, IN Engine				KA	POLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII  Log of Boring 203
Other Tests	Moisture Content (%)	<del>(</del> <del>)</del>	(%)		Penetration Resistance (blows/foot)		et)	Sample	SOSO	(Continued from previous plate)
<del>_</del>	<del>န</del> ္ဒပ္ခ	\ <u>\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\</u>	Cor	RQ	Per Res (blc	Poc (tsf	Del	Sal	S	Description
							•	-	1	Reddish gray VOLCANIC BRECCIA, severely to moderately fractured, highly weathered, medium
							90			\hard
							80-			Boring terminated at 76 feet
							85			
							-			
							90-	<u> </u>		
			,							
		ana and a said and a s				·	05			
		Annual contract from the contr					95-			
							•			
							100			
					Na Carlo		•			
		Telephone and the second secon				·	105			
							110-			
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			-				-			
						·	115-			
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		THE PROPERTY OF THE PROPERTY O				v	-			
							125-			
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			·				135-			
							-			
							140-			
			-7				ן <del>'+</del> ∪'			
							-			
							145			
							-			
							150-			
Date Sta Date Cor			April <i>†</i> April <i>†</i>				·	**************************************		Water Level: <u>∇</u> Not Encountered
Logged E	3у:		D. Gr	emmi						Drill Rig: CME-45C  Drilling Method: 4" Auger & PO Coring
Total De Work Ore			76 fee 5537-		)30(A)			***************************************	····	Drilling Method: 4" Auger & PQ Coring Driving Energy: 140 lb. wt., 30 in. drop

					BS, IN Engine				KAI	POLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII	Log of Boring 204
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	SS	Approximate Ground Surface Elevation (feet MSL): 109.5 *	
O T	<u>Ö</u> <u>Š</u>	Dry Wei	2 Pec Pec	RQ	Res (blo	Poc (tsf)	Dec	Sar	nscs	Description	
Direct Shear	19 23	78			25 10	4.0 4.0			СН	Reddish brown SILTY CLAY with some co and boulders, very stiff, moist (alluvium) grades to stiff	obbles
UC=22.2	20	103			50	>4.5	5		МН	Light reddish brown CLAYEY SILT, hard, (alluvium)	dry
	16				53/5"		10		ML/ MH	Brown with tan mottling CLAYEY SILT wit 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	
			87	18			20			Brownish gray GRAVEL (BASALTIC), med dense (clinker) Gray vesicular BASALT, severely to close	
			90	28			25	- x x x x x x x x x x x x x x x x x x x		fractured, moderately weathered, hard Grayish brown GRAVEL (BASALTIC) with medium dense (clinker)	•
							30			Gray vesicular BASALT, severely to close fractured, moderately to highly weathered medium hard	•
			100	52			35	- (人)			
			77	27			40	- × × × × × × × × × × × × × × × × × × ×		Gray GRAVEL (BASALTIC), medium dens (clinker)	se
			92	23		,	45	- * * * * * * * * * * * * * * * * * * *		Gray vesicular BASALT, severely to close fractured, moderately weathered, hard	ly
			97	45	·					Reddish gray VOLCANIC BRECCIA, seve closely fractured, moderately to highly we	
			12	12			50	1 · · · · · · · · · · · · · · · · · · ·		medium hard Tannish gray vesicular BASALT, severely closely fractured, moderately weathered,	
			0	0			55				
	14		0	0	.63		60			Gray VOLCANIC BRECCIA, severely fraction moderately to highly weathered, medium	
	29		98	81	53/6"		65			Gray vesicular BASALT, severely to mode	rately
UC= 2650 UC			80	72	·		70	\-\\\-\\\-\\\-\\\\-\\\\\\\\\\\\\\\\\\\		Gray vesicular BASALT, severely to mode fractured, moderately weathered, hard	
							<del>-,</del> ,-				
Date Sta			April April				<u>/5</u>			Water Level: <u>∇</u> Not Encountered	
Date Cor Logged E			Aprii D. Gr							Drill Rig: CME-45C	
Total Dep Work Ord			76 fee		)30(A)					Drilling Method: 4" Auger & PQ Coring Driving Energy: 140 lb. wt., 30 in. drop	



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-22 OF 25 SHEETS

GEOLABS, INC. Geotechnical Engineering    Secondary   Continued Figure   Continued from previous plate)   Continued from previous p									-				
Geotechnical Engineering  Bate Started: April 7, 2011  Date Completed: April 17, 2011				G	EOL	_AE	BS, IN	IC.			KAI		
Date Started:   April 7, 2011   Date Completed:   April 11, 2011   Date Completed:   April 12, 2011   Date Completed:   April 13, 2011   Date Completed:   April 14, 2011   Date Completed:   April 15, 2011   Date Completed:   April 16, 2011   Date Completed:   April 17, 2011   Date Completed:   April 18, 2011   Date Completed:   April 19, 2011   Date Completed:   April 20, 2011   Date Completed:							·						204
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Drill Rig: CME-45C Drilling Method: 4" Auger & PQ Coring							_	_		T 1	·	EVVA, OATO, TAVVAII	207
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Drill Rig: CME-45C Drilling Method: 4" Auger & PQ Coring		ests		1 g	) (%	(9	tion nce oot)	Pen	feet				
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Drill Rig: CME-45C Drilling Method: 4" Auger & PQ Coring		5	sture	g Cl	over	%) (	etra ista ws/f	ket	th (	P Sich	တ္လ	(Continued from previous plate)	
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Drill Rig: CME-45C Drilling Method: 4" Auger & PQ Coring		O C	Mois	Ory Wei	Core	RQI	Res (blov	Poc (tsf)	Dep	San	USC	Description	
Note Encountered   Date Started: April 1, 2011   Date Completed: April 2, 2011   Date Compl												Grayish yellow VOLCANIC BRECCIA, slig	ghtly
Boring terminated at 76 feet					`			·		]		fractured to massive, highly weathered, n	nedium 📗
Date Started: April 7, 2011   Date Completed: April 11, 2011   Logged By: D. Gremminger   Drill Rig: CME-45C   Total Depth: 76 feet   Drilling Method: 4" Auger & PQ Coring										1			
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Date Started: April 7, 2011 Date Completed: April 11, 2011 Date Completed: April 11, 2011 Date Completed: April 12, 2011 Drill Rig: CME-45C Drilling Method: 4" Auger & PQ Coring									80	1		Boring terminated at 76 feet	
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Date Started: April 7, 2011 Date Completed: April 11, 2011 Date Completed: April 11, 2011 Date Completed: April 12, 2011 Drill Rig: CME-45C Drilling Method: 4" Auger & PQ Coring										1			=
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Date Started: April 7, 2011 Date Completed: April 11, 2011 Date Completed: April 11, 2011 Date Completed: April 12, 2011 Drill Rig: CME-45C Drilling Method: 4" Auger & PQ Coring										]			
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Date Started: April 7, 2011 Date Completed: April 11, 2011 Date Completed: April 11, 2011 Date Completed: April 12, 2011 Date Completed: April 13, 2011 Date Completed: April 14, 2011 Date Completed: April 17, 2011			-						85	1			1
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Date Started: April 7, 2011 Date Completed: April 11, 2011 Date Completed: April 11, 2011 Date Completed: April 12, 2011 Date Completed: April 13, 2011 Date Completed: April 14, 2011 Date Completed: April 17, 2011				,									4
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Date Started: April 7, 2011 Date Completed: April 11, 2011 Date Completed: April 11, 2011 Date Completed: April 12, 2011 Date Completed: April 13, 2011 Date Completed: April 14, 2011 Date Completed: April 17, 2011													-
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Date Started: Drilling Method: 4" Auger & PQ Coring									90				1
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Date Started: Drilling Method: 4" Auger & PQ Coring										1			4
Date Started: April 7, 2011 Date Completed: April 11, 2011 Logged By: D. Gremminger Total Depth: 76 feet  Date Started: Drilling Method: 4" Auger & PQ Coring										1			1
Date Started: April 7, 2011  Date Completed: April 11, 2011  Logged By: D. Gremminger  Total Depth: 76 feet  Water Level: ☑ Not Encountered  Drill Rig: CME-45C  Drilling Method: 4" Auger & PQ Coring									95				
Date Started: April 7, 2011  Date Completed: April 11, 2011  Logged By: D. Gremminger  Total Depth: 76 feet  Water Level: ☑ Not Encountered  Drill Rig: CME-45C  Drilling Method: 4" Auger & PQ Coring										]			-
Date Started: April 7, 2011  Date Completed: April 11, 2011  Logged By: D. Gremminger  Total Depth: 76 feet  Water Level: ☑ Not Encountered  Drill Rig: CME-45C  Drilling Method: 4" Auger & PQ Coring	<b>-</b>									1			1
Date Started:April 7, 2011Water Level: ✓Not EncounteredDate Completed:April 11, 2011Logged By:D. GremmingerDrill Rig:CME-45CTotal Depth:76 feetDrilling Method:4" Auger & PQ Coring	10/11/1								100-	1 1			4
Date Started:April 7, 2011Water Level: ✓Not EncounteredDate Completed:April 11, 2011Logged By:D. GremmingerDrill Rig:CME-45CTotal Depth:76 feetDrilling Method:4" Auger & PQ Coring	VBS.GDT									1			1
Date Started:April 7, 2011Water Level: ✓Not EncounteredDate Completed:April 11, 2011Logged By:D. GremmingerDrill Rig:CME-45CTotal Depth:76 feetDrilling Method:4" Auger & PQ Coring	GEOL/									1			
Date Completed: April 11, 2011 Logged By: D. Gremminger Drill Rig: CME-45C Total Depth: 76 feet Drilling Method: 4" Auger & PQ Coring	30.GPJ								105				
Logged By: D. Gremminger Drill Rig: CME-45C Total Depth: 76 feet Drilling Method: 4" Auger & PQ Coring	37-00TC	<del></del>										Water Level: <u>∇</u> Not Encountered	
Total Depth: 76 feet Drilling Method: 4" Auger & PQ Coring	30T 55							ough management and an arrangement and an arrangement and arrangement arrangement and arrangement				Drill Pig: CME 450	
7	, 10G [			-			ııyeı			n de terrorio de t			
	30RING						)30(A)						

	l			nical	Engine	ering	·			EWA, OAHU, HAWAII 301
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	oth (feet)	Sample	SS	Approximate Ground Surface Elevation (feet MSL): 135 *
Oth	Mois	Dry Wei	Core	RQI	Pen Res (blo	Poc (tsf)	Depth	San	)SO	Description
	12		27 14		25/3" 15/1"		5-		ML/MI	Reddish brown CLAYEY SILT with sand and gravel, very stiff, dry (fill) grades with cobbles and boulders, very hard 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			- - -
							20			· ·
Date Star			June June				30-			Water Level: ∑ Not Encountered
Logged By: D. Gremminger										Drill Rig: CME-45C
Total Dep			15 fee							Drilling Method: 4" Auger & PQ Coring
Work Ord	der:	***************************************	<u> 5537-</u>	OUTC	)30(A)					Driving Energy: 140 lb. wt., 30 in. drop

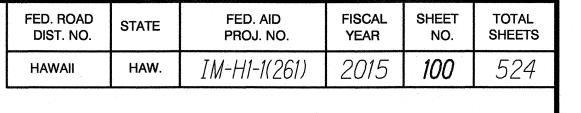
KAPOLEI INTERCHANGE COMPLEX

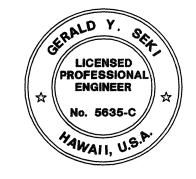
PHASE 2

Log of Boring

						3S, IN Engine			KAPOLEI INTERCHANGE COMPLEX PHASE 2 EWA, OAHU, HAWAII  Log of Boring 302						
	Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Granhic	SOS	Approximate Ground Surface Elevation (feet MSL): 174 *				
	ð	ဋိပ္ပါ	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Cor Rec	RG	Pel Red (bld	Po (tsf	De	Sal	SN	Description				
	LL=49 PI=27	18 18				102 31	>4.5 >4.5			ML CL	Reddish brown SANDY SILT with clay and gravel, very stiff, dry (fill)				
	Direct Shear	16				31	>4.5	5			Reddish brown CLAY with some sand and some weathered gravel, very hard, dry (residual soil) grades with cobbles, hard				
			·		-				7		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			- Inoderatery weathered, very hard				
	UC= 13710			100	100			25							
GEOLABS.GDT 10/11//1	UC= 15630		·	100	35			30							
30.GPJ								35		.\	Boring terminated at 35 feet				
7-00TO	Date Star	ted:		June		······································					Water Level: <u>∇</u> Not Encountered				
OT 553	Date Completed: June 27, 2011										D III DI				
0 D	Logged B			D. Gr		nger					Drill Rig: CME-45C				
RING	Total Dep Work Ord			35 fe∈ 5537-		30(A)					Drilling Method: 4" Auger & PQ Coring Driving Energy: 140 lb. wt., 30 in. drop				

THE PARTY OF THE P		Gl	ΕΟΙ	_AE	BS, IN	1C.		KAPOLEI INTERCHANGE COMPLEX PHASE 2				
		Geot			Engine	eering				EWA, OAHU, HAWAII 303		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	nscs	Approximate Ground Surface Elevation (feet MSL): 139 *  Description		
O LL=35 PI=14	<u>≥0</u> 18 25	83	0 2	<u>«</u>	27 15	>4.5 >4.5		S	CL	Reddish brown CLAY with some fine sand some weathered gravel, very stiff, dry (all		
			·		10/0" Ref.		5	700		Gray BOULDER (BASALTIC), very dense (alluvium)		
-	15				42		10		ML	Grayish brown SANDY SILT with gravel, when hard, dry (residual soil)	very	
	10	99			60/5"		15	-      		Boring terminated at 15.9 feet		
							20					
							25					
							30-					
Date Sta Date Cor			July 1 July 1							Water Level: <u>□</u> Not Encountered		
Logged E	Зу:	······································	D. Gr	emmi						Drill Rig: CME-45C		
Total De Work Ord			15.9 f 5537-		)30(A)					Drilling Method: 4" Auger & N/A Driving Energy: 140 lb. wt., 30 in. drop		





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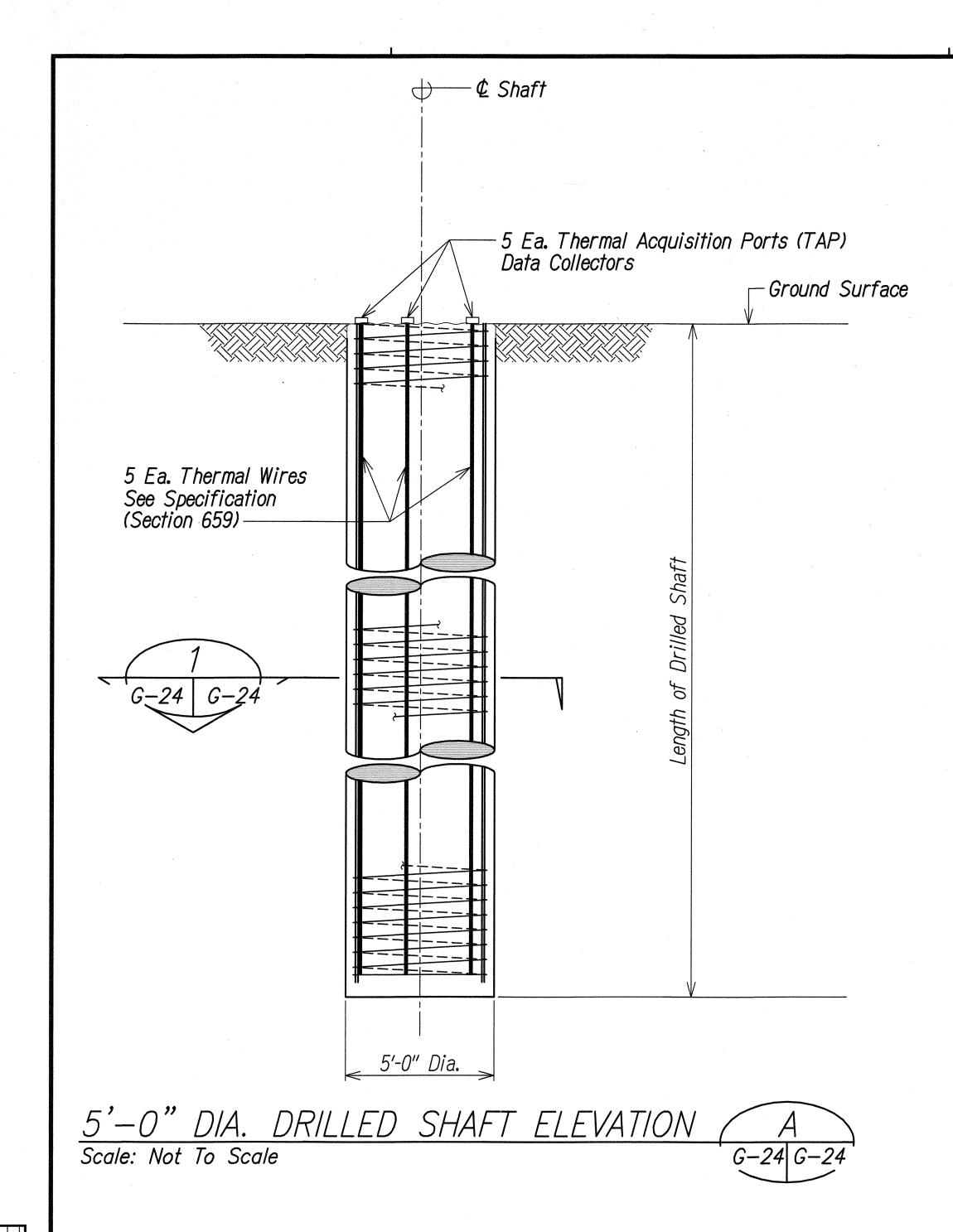
STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

## BORING LOGS

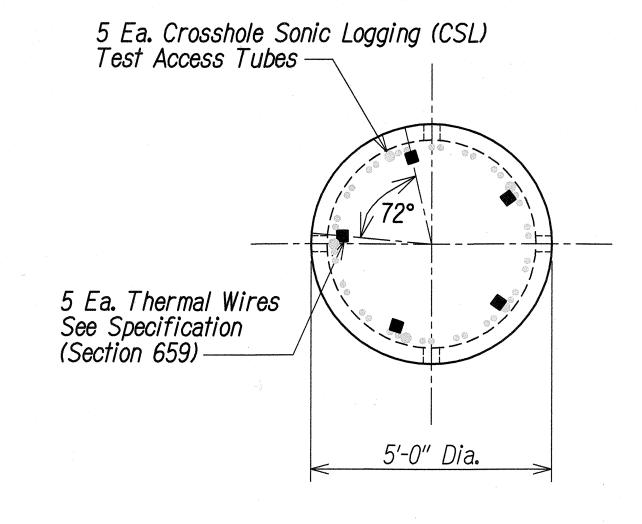
INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS
(Kapolei Interchange Complex), Phase 2
Federal-Aid Project No. IM-H1-1 (261)
Date: January 20, 2015

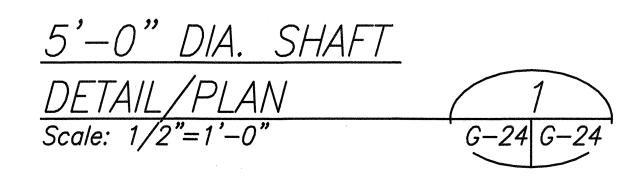
SHEET No. G-23 OF 25 SHEETS





FED. ROAD DIST. NO. FED. AID PROJ. NO. FISCAL YEAR TOTAL SHEETS SHEET NO. IM-H1-1(261) 2015 101 524 HAWAII







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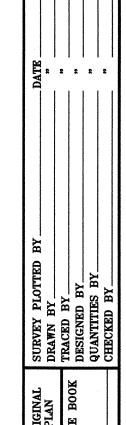
**GRAPHIC SCALE:** 

STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION 5' DIAMETER DRILLED SHAFT

INTERSTATE ROUTE H-1
ADDITION AND MODIFICATION OF FREEWAY ACCESS

(Kapolei Interchange Complex), Phase 2 Federal-Aid Project No. IM-H1-1 (261) Scale: As Noted Date: January 20, 2015

SHEET No. G-24 OF 25 SHEETS



Notes:

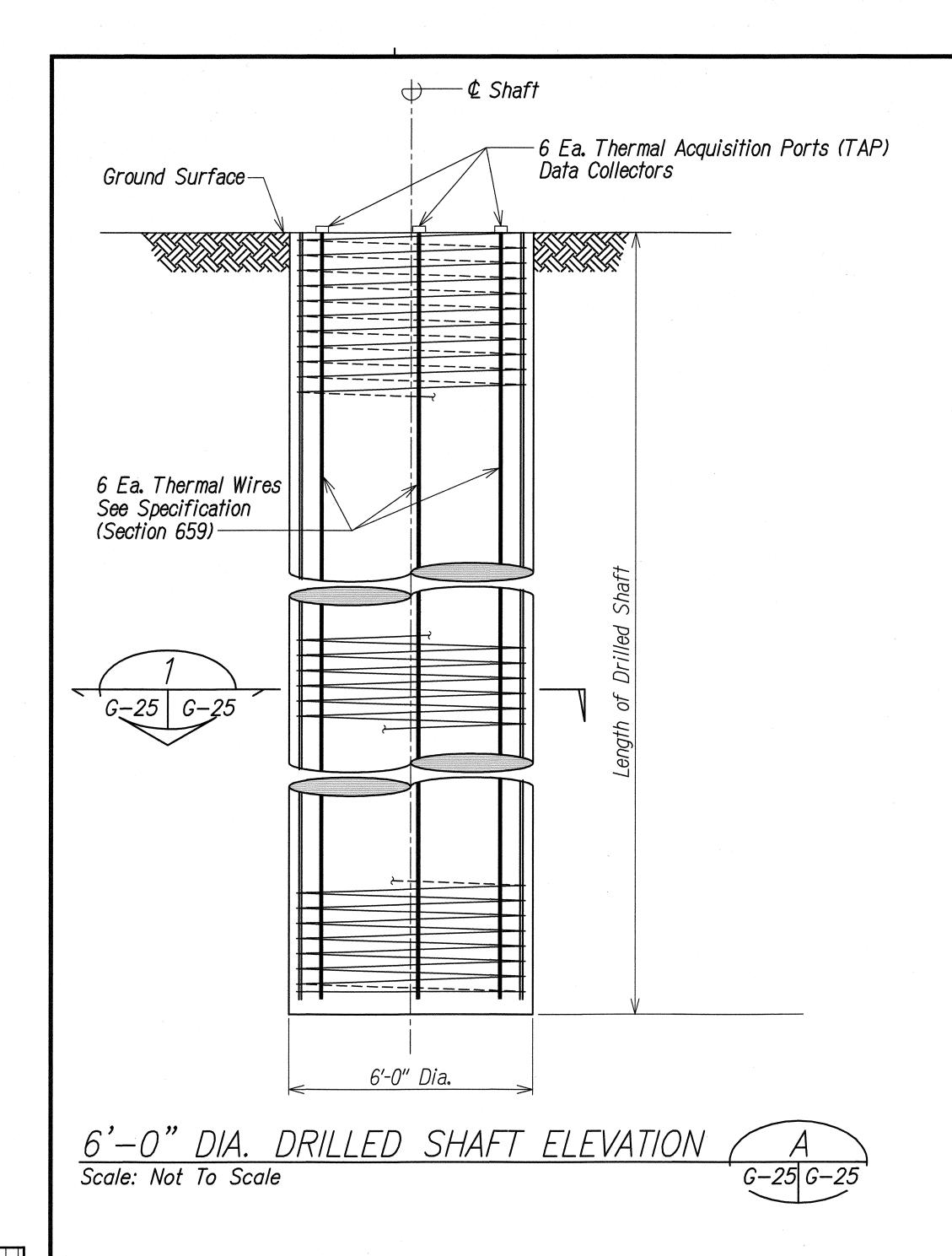
1. Two (2) 5'-0" Diameter Drilled Shafts each

Abutment No. 1 and Abutment No. 2.

2. Engineer will select drilled shafts to be

instrumented at each Abutment location.

will be instrumented with Thermal Wires at



6 Ea. Crosshole Sonic Logging (CSL) Test Access Tubes— 6 Ea. Thermal Wires See Specification (Section 659)——— 6'-0" Dia.

6'-0" DIA. SHAFT

G-25 G-25

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



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STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION

FED. ROAD DIST. NO.

HAWAII

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-H1-1 (261) Date: January 20, 2015 Scale: As Noted

SHEET No. G-25 OF 25 SHEETS

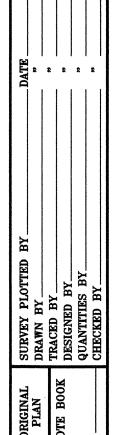
FISCAL SHEET YEAR NO.

*2015* **102** 

FED. AID PROJ. NO.

IM-H1-1(261)

TOTAL SHEETS



## 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.