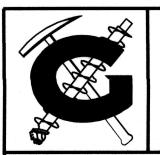
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-18	2018	52	59

GEOTECHNICAL NOTES:

- 1. A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Hana Highway Improvements, District of Hana, Maui, Hawaii" dated March 31, 2014 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 DP-1, DP-4.
- 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.



GEOLABS, INC.

Geotechnical Engineering

Soil Log Legend

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

	MAJOR DIVISIONS		USC	S	TYPICAL DESCRIPTIONS
	CDAVEL C	CLEAN GRAVELS	0000	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
COARSE-	GRAVELS	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
	CANDO	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
	OII 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
	HIGHLY ORGANIC SOI	LS	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

(2-INCH) O.D. STANDARD PENETRATION TEST (3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE SHELBY TUBE SAMPLE **GRAB SAMPLE** CORE SAMPLE WATER LEVEL OBSERVED IN BORING AT TIME OF

LIQUID LIMIT (NP=NON-PLASTIC) PLASTICITY INDEX (NP=NON-PLASTIC)

UNCONSOLIDATED UNDRAINED

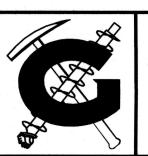
TRIAXIAL COMPRESSION (ksf)

TORVANE SHEAR (tsf) POCKET PENETROMETER (tsf) UNCONFINED COMPRESSION (psi)

WATER LEVEL OBSERVED IN BORING AFTER DRILLING WATER LEVEL OBSERVED IN BORING OVERNIGHT

A-0.1

Plate



GEOLABS, INC.

Geotechnical Engineering

Rock Log Legend

ROCK DESCRIPTIONS

BASALT		FINGER CORAL
BOULDERS		LIMESTONE
BRECCIA		SANDSTONE
CLINKER	× × × × × × × × × × × × × × × × × × ×	SILTSTONE
COBBLES		TUFF
CORAL		VOID/CAVITY
	BOULDERS BRECCIA CLINKER COBBLES	BOULDERS BRECCIA CLINKER COBBLES

ROCK DESCRIPTION SYSTEM

ROCK FRACTURE CHARACTERISTICS

The following terms describe general fracture spacing of a rock:

Slightly Fractured:

12 to 24 inches apart

3 to 6 inches apart

Moderately Fractured:

6 to 12 inches apart

Greater than 24 inches apart

Closely Fractured: 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.

Most minerals decomposed with some corestones present in residual soil mass. Can be broken by hand.

Extremely Weathered:

Highly 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:

Medium Hard:

Soft:

Very Soft:

Specimen breaks with difficulty after several "pinging" hammer blows. Example: Dense, fine grain volcanic rock

Specimen breaks with some difficulty after several hammer blows. Example: Vesicular, vugular, coarse-grained rock

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

Can be indented by one hammer blow. Can be scraped or peeled by knife. SPT can penetrate by

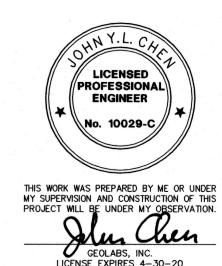
~100 blows per foot. Example: Weathered rock, chalk-like coral reef

Crumbles under hammer blow. Can be peeled and carved by knife. Can be indented by finger

Example: Saprolite

A-0.2

Plate



STATE OF HAWAI'I **DEPARTMENT OF TRANSPORTATION** BORING NOTES, SOIL LEGEND \$ ROCK LEGEND

> HANA HIGHWAY IMPROVEMENTS, PHASE 2C Huelo to Hana Project No. 360AB-01-18

> > Date: March 2018

SHEET No. GT-1 OF 6 SHEETS

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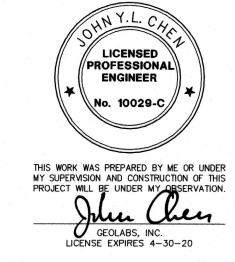
LICENSE EXPIRES 4-30-20

Scale:

N. S.		G	EOI	LAE	BS, IN	IC.			HA	NA HIGHWAY IMPROVEMENTS Log of Boring
		Geot	echi	nical	Engine	eering			DIS	STRICT OF HANA, MAUI, HAWAII 101
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): 53 *
Ŏ Ţ	<u>8</u> 8	Ve Ve Ve	Rec	RO	Per Res (blc	Poc (tsf	Del	Sar	Sn	Description
	33		_ * *		21			H	CL	6-inch ASPHALTIC CONCRETE
	49	68	2		12					Dark brown CLAY with some gravel and a little fine sand, very stiff to medium stiff, moist
4 "	35				7		5		СН	Dark brown and dark gray CLAY with a little fine
	00	,		-	•					sand, medium stiff, moist (saprolite)
a a a		, ,								
	74	55	*		11	1	10			
			8					1 💹		
	00		2	,	7	*	15			
a n n	22		* .		1				SC	Dark brown angular CLAYEY SAND with some
								<u> </u>		medium to coarse gravel, loose, moist (saprolite)
			100	100			20	╅╅ ┦		Gray massive BASALT, slightly weathered, hard
			87	60			25			
							20			
			47	10						grades to severely to closely fractured,
			47	10			30			moderately weathered
		,								
	53		n - 2		52	, , , ,	0.5	N	SC	Dark brown and reddish brown angular CLAYEY SAND with a little gravel, very dense, moist
			0	0			35	\mathbf{H}		(saprolite)
	4.5				10					
	49		0	0	49		40			
								111		
	55		20		57			N		
			45	0			45	1		
									, I	
	66		57	17			50	-		
			37	17						Gray vugular BASALT, severely fractured,
	9		77	27				H):		moderately to highly weathered, hard
							55		SM	Reddish brown SILTY SAND with some gravel,
	, *									dense (saprolite)
							60			Boring terminated at 58.5 feet
								1		* Elevations estimated from Roadway Plans
								1		transmitted by Wilson Okamoto Corporation on
							65	1		January 18, 2013.
								1 1		
	e i	, , , , , , , , , , , , , , , , , , ,					70	1		
							, 0	1		
								1		
Date Sta	rted.		June	26, 2	2012		75			Water Level:
Date Co	mplet		June	26, 2	012					
Logged Total De			Marc 58.5	us Gr feet	ruver					Drill Rig: MOBILE B-53.1 Drilling Method: 4" Auger & HQ Coring
Work Or			6193							Driving Energy: 140 lb. wt., 30 in. drop

					BS, IN Engine					NA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII	Log of Boring
Other Tests	isture ntent (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	nscs	Approximate Ground Surface Elevation (feet): 53.5 *	
₹	<mark>ဠ</mark> ၓ	28	Rec	RQ	Reg (blc	Pod (tsf	De	Sal	ns	Description	
				y			**	- 97	GC	7-inch ASPHALTIC CONCRETE	
0:	46	80		2	31		1	Maja	GM	12-inch AGGREGATE BASE COURSE	
Sieve	41		a "	2	9					Brown SILTY GRAVEL with sand, stiff, m	noist
#200 = 27.1%	19	79			9		J				
27.170			30	0				- 19	GP	Brownish gray COBBLES AND BOULDE	RS
		* * * * * * * * * * * * * * * * * * *		J			40	- 00	,	(BASALTIC) in sand and silt matrix, med	
							10	- 00	•	dense to dense	
		* **	0	0			n	100	MH	Brown CLAYEY SILT, very stiff to hard, r	noiet
							4 5			DIOWIT OLATET OILT, VOIY 3till to Hard, I	iioist
							15				
LL=86	67			18	32						
PI=29	07		0	0	32		00			grades with gravel	
							20			grades with graver	
	76				22		a si				
	10		0	0	22		0.5				
							25				
	60	2		2	70					grades to very hard	
	00		0	0	70				1	Brownish gray BASALT, severely fracture	od biably
			U	U			30	上於		weathered, medium soft	eu, mgmy
			40					+13		Woddinorou, modium con	
			40	0			. 2				
							35				
			400								
			100	0				1		grades to closely fractured, moderate to	highly
				7			40			weathered, moderately hard	
							2	-1.			
			50	0						grades to gray, severely to closely fractu	ıred,
							45	计论		moderately weathered	
							* * * * * * * * * * * * * * * * * * *	业位			
								1 (grades to brownish gray, severely fractu	red,
							50	一管	, , , , , , , , , , , , , , , , , , ,	highly to completely weathered, soft	
		y 9									
	68				35			N:			
							55	;- ·		Boring terminated at 54 feet	
							2	1			
								1			
							60) 			
				*				1			
						,		1			
							65	i-			
								11			
							**	1			
							70	4			
				in the second				<u> </u>			
							e e v e	4			
							75	11_			
Date Sta			June			7				Water Level:	
Date Co Logged		ea:	June Marci							Drill Rig: MOBILE B-53.1	
Total De	Depth: 54 feet							*		Drilling Method: 4" Auger & HQ Coring	
Work O	rder		6193-	-00		8 8				Driving Energy: 140 lb. wt., 30 in. drop	

FED. ROAD	STATE	FED. AID	FISCAL	SHEET	TOTAL
DIST. NO.		PROJ. NO.	YEAR	NO.	SHEETS
HAWAII	HAW.	360AB-01-18	2018	53	59



BORING LOGS 1

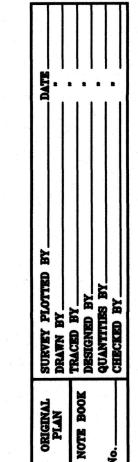
HANA HIGHWAY
IMPROVEMENTS, PHASE 2C
Huelo to Hana
Project No. 360AB-01-18

Date: March 2018

SHEET No. GT-2 OF 6 SHEETS

Scale:

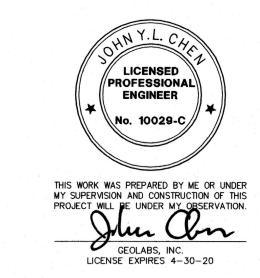
53



					3S, IN Engine					ANA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII 103
Other Tests	Moisture Content (%)	, Unit ight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	nscs	Approximate Ground Surface Elevation (feet): 53.5 *
	800	Dry	Cor	RO	Reg (blc	Poc (tsf	De	Sal	SN	Description
	53	67			18				СН	7-inch ASPHALTIC CONCRETE Reddish brown CLAY with traces of fine sand, very
	55				11	e .			МН	stiff, moist (fill)
Direct Shear	58	64			23		5			Dark brown SILTY CLAY with some gravel, stiff to very stiff, moist
	28				Ref/0" Ref.		10		SC	Brown CLAYEY SAND with some gravel, very dense, moist (alluvium)
	34	93			Ref/0" Ref.		15			
					Ref/0" Ref.		20	-		Boring terminated at 20.1 feet
							25			
							30	-		
							35	- - - - -		
							40	-		
							45	-		
							50	-		
							55	- - - -		
							60	1		
							65	1 1 1 1 1 1 1 1 1 1		
							70	1 1 1 1 1 1 1 1 1 1		
				000	0040		75		1	1 Wotor Loveli
Date Solution Date C					2012 2012					Water Level:
Logged	By:		Marc	cus G	ruver					Drill Rig: MOBILE B-53.1
Total D Work C	epth: Order:		20.1 6193			*				Drilling Method: 4" Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop

		Geot	techr	nical	BS, IN I Engine		3			NA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII	Log of Boring
Other Tests	Moisture Content (%)	ry Unit Veight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 54 * Description	
0	33 54 58	87 69		<u>r</u>	73 18 85	G =	5		GP CL CH	7-inch ASPHALT Brownish gray BOULDERS IN CLAY MAT very dense, moist Brown SANDY CLAY with some gravel, had moist grades to reddish brown, very stiff Brown CLAY with some fine sand, very stihard, moist (saprolite)	ard,
	58	69			46		15				•
	58				16		20			grades to grayish brown with a little sand gravel, stiff to very stiff Boring terminated at 21.5 feet	and
							30				
							40	1			
							50	-			
							55				
							65				
							70	1			
Date Sta		eted:	June	27, 2 27, 2			[_] 75.			Water Level: Drill Rig: MOBILE B-53.1	

,	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	HAWAII	HAW.	360AB-01-18	2018	54	59



BORING LOGS 2

HANA HIGHWAY
IMPROVEMENTS, PHASE 2C

Huelo to Hana
Project No. 360AB-01-18

Date: March 2018

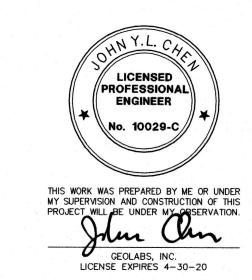
SHEET No. GT-3 OF 6 SHEETS

54

		Geo	techr	nical	3S, IN Engine	ering				NA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII 501
Other Tests	loisture ontent (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 52 * Description
0			QE	8			Ω	S O	GC	4-inch ASPHALTIC CONCRETE
LL=64 PI=11 Direct Shear	61 56 62				28 10 18	1.5 1.5 2.0	5	X	МН	8-inch AGGREGATE BASE COURSE Brown CLAYEY SILT with a little gravel (basaltic), very stiff, moist (residual soil) grades to very stiff
Direct Shear			33 22	0			10		СН	Dark gray COBBLES AND BOULDERS (BASALTIC), hard Brown CLAY, stiff, moist (residual soil)
LL=56 PI=17	60		0	0	31	1.0	15		МН	Dark gray COBBLES AND BOULDERS (BASALTIC), hard Brown CLAYEY SILT, hard, moist (residual soil)
	47		31	0	43	1.5	20			grades to reddish brown
			58	25	Ref/0" Ref.		25	 		Brownish gray BASALT, severely fractured, highly weathered, soft
			97	72			30	100		grades to slightly fractured, unweathered, very hard
			100	72			35			
			97	38			40			
	4-		100	75			45 50			
										Boring terminated at 50 feet
							55			
							60	-		
							70			
Date Sta			July 1				75			Water Level:
Date Co Logged	Ву:	ted:	July 'Greg	Your						Drill Rig: MOBILE B-53.1
Total De Work Or			50 fe 6193							Drilling Method: 4" Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop

					3S, IN Engine					NA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII	Log of Boring 502
Other Tests			Core Recovery (%)	6	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	nscs	Approximate Ground Surface Elevation (feet): 57.5 * Description	
LL=72 PI=21 Direct Shear Direct Shear LL=75 PI=18	63 51 50 60	62			18 7 31 18	1.5 1.5 1.5	5 10		GC MH	6-inch ASPHALTIC CONCRETE 6-inch AGGREGATE BASE COURSE Brown CLAYEY SILT with traces of gravel stiff, moist (residual soil) grades to medium stiff grades to very stiff grades with a little gravel	, very
	52 56	70	50 23 19	0 10	Ref/0" Ref. 14	1.5	15 20		CH	Gray COBBLES AND BOULDERS (BASA with sand, very hard Reddish brown CLAY, very stiff, moist (respond) Gray COBBLES AND BOULDERS (BASA with sand, very hard	idual
LL=46 PI=9	39		17	0	32	2.0 2.0	30		ML	Reddish brown CLAY, stiff, moist (residual Brownish gray COBBLES AND BOULDER (BASALTIC) in a sand and silt matrix, hard Greenish gray SILT with traces of course s gravel, very stiff	RS d
	56		5440	40	55/6" +Ref/0 Ref.	2.0	35 40	サンクングングングング		Dark gray BASALT, severely fractured, moweathered, hard	oderately
		Ŷ	100		Ref/0" Ref.		45 50	公公公公公公		Dark gray BASALT, moderately fractured, unweathered, very hard grades to severly fractured, moderately weathered, medium hard grades to slightly to moderately fractured, unweathered, very hard Boring terminated at 51 feet	
							55 60				
							70				
Date Sta Date Cor Logged E Total De Work Ore	mpleted: July 12, 2012 By: Greg Young pth: 51 feet									Water Level: Drill Rig: MOBILE B-53.1 Drilling Method: 4" Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop	

FED. ROAD DIST. NO. FED. AID PROJ. NO.



STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

BORING LOGS 4

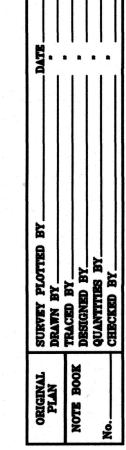
HANA HIGHWAY
IMPROVEMENTS, PHASE 2C

Huelo to Hana
Project No. 360AB-01-18

Date: March 2018

SHEET No. GT-4 OF 6 SHEETS

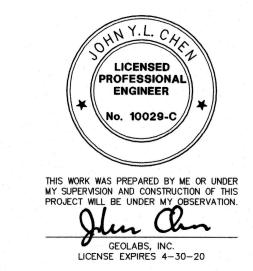
55



A A					BS, IN					NA HIGHWAY IMPROVEMENTS	Log of Boring
		Geot	echr	nical	Engine	ering			DIS	STRICT OF HANA, MAUI, HAWAII	503
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): 67 * Description	
<u> </u>	20					10	100.00	27/	GC	6-inch ASPHALTIC CONCRETE	
a e					40	er E			CH	6-inch AGGREGATE BASE COARSE	
			0.7	40	*					Brown CLAY, moist (residual soil)	
		4	37	13			5		СН	Gray BOULDERS in a sand and silt matri	x, very
					15			- M	CH	hard	
		. 1	24	0						Brown CLAY, stiff to very stiff, moist (resi	dual soil)
	, "						10			aradaa ta yami bard	
	62				53	2 × 2 ×				grades to very hard	
P and U	02		48	0		sal.	* "		МН	Reddish brown CLAYEY SILT with traces	of sand.
	x x				9 9 9		15		1	moist, very hard (saprolite)	
	36				118			N			
	JU		40	0	110			1			
		×					20				
a i e		*, .	63	0	50/0"	. 1		HA			
	*.		บง	U	Ref.	1 4 4		1			
			,	2 .			25				
			67	30				14	1	Gravish brown RASALT moderately to al	osaly
			0/	JU				11		Grayish brown BASALT, moderately to cl fractured, extremely weathered, soft	OSCIY
							30	110		madarda, ozuromory wodumorda, gont	
			00	07							
	*,		80	37				16	A 250 L		
	*						35		1		
							55	-11			
	*		40	0						grades to brownish gray, severly fracture	ea,
							40			completely weathered, soft	
	, v v				F0.10"		→∪				
			40	0	50/0" Ref.			1		arados to anove sovenius fractioned reader	atoly
				, ,	INCI.		45			grades to gray, severly fractured, moderate weathered, hard	al c iy
	40			*	FF 10"		70			grades to brownish gray, completely wea	athered.
	46		50	8	55/6"			力		soft	
					+Ref/0 Ref.		50		1	grades to gray	
							50		1	grades to brownish gray	
								11.		Boring terminated at 51.5 feet	
							55	1 1			
								1 1 1			
	× ,]			
							60	1			
			2 0	Egglo So				11			
						**	65	1			
				B			55	1			
]			
							70	11			
							' 0	-			
								11			
	e Started: July 13, 2012						75	1			
Date Sta										Water Level:	
Date Co	mple		July	13, 20	012					D-III Di 1400 II E D 50 4	
ogged otal De			Greg 51.5	Your	ng	***************************************				Drill Rig: MOBILE B-53.1 Drilling Method: 4" Auger & HQ Coring	
Vork O			6193							Driving Energy: 140 lb. wt., 30 in. drop	

					BS, IN			HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII				
Geotechnical Engineering												
Other Tests	Moisture Content (%)	Unit ight (pcf	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	SS	Approximate Ground Surface Elevation (feet): 55 *		
₽	Moi	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Rec Peg	RQ	Per Res (blc	Poc (tsf	Dep	Sar Gra	nscs	Description		
			1 H H H H	g 4				- 7/2	GC	6-inch ASPHALTIC CONCRETE		
		1	10	0				18	GP	12-inch AGGREGATE BASE COURSE	d and ailt	
							5		МН	Dark grayish brown BOULDERS in a san matrix, hard	u anu siii	
LL=60	55				24	1.5				Brown SILT with fine sand and traces of	gravel,	
PI=20	00		0	0		1.0				very stiff, moist (residual soil)	•	
							10					
	46			n u	52/6"	2.0	n 1				_	
			26	0	+50/3"					Grayish brown COBBLES AND BOULDE	DS in a	
	a a			,			15			sand and silt matrix, hard		
	29				108	2.0		M	CL	Brown SANDY CLAY, stiff, moist (residua	al soil) ,	
			14	0			20	- Co		Grayish brown COBBLES AND BOULDE	- /	
					Detion		20		CH	sand and silt matrix, hard	mralita)	
	, e e e			0 0	Ref/0" Ref.] [於		Brown SANDY CLAY, very stiff, moist (sa Grayish brown BASALT, severely fracture	• , ,	
							25	1		moderately to highly weathered, medium		
				*						Boring terminated at 23 feet		
	a a										- 	
	8						30	1	E**			
								-				
	,						0.5]	* *			
							35	1				
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				ž.			40	1				
				2				1			<u>-</u>	
								11				
	# ¹						45	_			, , , , , , , , , , , , , , , , , , ,	
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			* ¥ .				65					
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							70	1				
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							75	11_				
Date Sta			July '			and a continue of the property				Water Level:		
Data Ca	いいいに	i c u.	July									
Date Co Logged			Greg	Your	ng					Drill Rig: MOBILE B-53.1 Drilling Method: 4" Auger & HQ Coring		

	FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
]	HAWAII	HAW.	360AB-01-18	2018	56	59



BORING LOGS 4

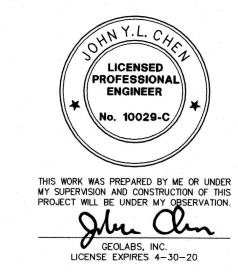
<u>HANA HIGHWAY</u> <u>IMPROVEMENTS, PHASE 2C</u> Huelo to Hana Project No. 360AB-01-18 Date: March 2018

SHEET No. GT-5 OF 6 SHEETS

		GEOLABS, INC. Geotechnical Engineering					,		NA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII 505	
Other Tests	Noisture 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): 58 * Description
			47	0	50/0" Ref.		5		GC GP	6-inch ASPHALTIC CONCRETE 6-inch AGGREGATE BASE COURSE Dark gray COBBLES AND BOULDERS in a sand and silt matrix, moist, hard Brown SILTY SAND with traces of gravel, stiff,
Sieve #200 = 29.9%	54 54		29	0	12 14	1.3	10	P is	СН	moist (residual soil) Gray COBBLES AND BOULDERS in a sand and silt matrix, moist, hard Brown CLAY, stiff, moist (residual soil)
	22		0	0	40/0"	2.0	15			
	33		57	0	10/6" +50/0" Ref.	2.0	20		ML	Greenish gray SILT, stiff, moist (residual soil) Gray BASALT, severely fractured, moderately weathered, medium hard to hard Boring terminated at 21 feet
							25			
							30			
							35			
		3					40			
							45			
	8						50			
							55			
							60			
							65			
							70			
<u> </u>				0.00	140		75			I \\/
Date Sta			July 1 July 1							Water Level:
Date Co										■ The state of th
Logged I Total De	Ву:		Greg 21 fee		ng					Drill Rig: MOBILE B-53.1 Drilling Method: 4" Auger & HQ Coring

					BS, IN		a		HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII 50					
र <u>१</u>	>							П	T					
Other Tests	Je Jr	غ <u>نا</u> ا	Core Recovery (%)	(%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	<u>e</u> .2	ا <u>د</u>	Approximate Ground Surface Elevation (feet): 66 *				
Jer	vistu		ည် စည်	RQD (%)	netr sist	cke (pth	Sample Graphic	USCS					
₹	နိုင္ပိ	र हु रू	. <u>8</u> 8	RG	<u>a</u> 8 <u>a</u>	Po (ts)	De	Sa		Description				
					50/0"			Sec.	GC	6-inch ASPHALTIC CONCRETE				
(, !			6	0	Ref.		1 -	0.	GP	6-inch AGGREGATE BASE COURSE				
* * * * * * * * * * * * * * * * * * *			1		Noi.	· ~*		- 000	4	Dark gray COBBLES AND BOULDERS in a sa	and			
,			'		,		5-	000	, ·	and silt matrix, moist, hard				
,	41		_ '		16/6"	1 1		- 00	3	Reddish brown SANDY GRAVEL, moist, hard				
· · · · · · · · · · · · · · · · · · ·		,	5	0	+50/5"	1	1	100	,	(saprolite)	-			
			1		1		10-	- 00	_s GP		nd			
,	36		1	1	50/6"	1 1	1	100	<i>វ</i> ' '	and silt matrix, moist, hard				
	, .		17	17	+Ref/1	, (*		المُحْرِدُ	,1	Brownish gray SANDY GRAVEL, moist, soft				
, , , , , , , , , , , , , , , , , , ,					1		15-	- 000	GP	(saprolite)	-1			
· · · · · · · · · · · · · · · · · · ·	48				37			100	J . ,	Dark gray COBBLES AND BOULDERS in san	10			
			57	10			1	1	<u>,</u>	and silt matrix, moist, hard Brownish gray SANDY GRAVEL moist modium				
			0.		1		20	10		Brownish gray SANDY GRAVEL, moist, medic	um			
	30 30		1		1		20-	12.	1 '	soft (saprolite) Dark gray BASALT, moist, closely fractured,				
··· · · · · · · · · · · · · · · · · ·	22 134 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			y	1		1	1 1 7	1	moderately weathered, hard				
, j					1		1	1 "	1	Boring terminated at 21 feet				
·					1	1 1	25	11 '		Donny terminated at 21 100t				
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,					1		1	1 1 '						
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,							1	1 "	1					
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							35-	1 1 .	1					
					1		30	4 1 '	1					
1		1 2 /			1 1 1 1		1	1 '	1					
				1	1		1 40	4 '	1					
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1			1	1	1		1	1 '	1)	1				
)		<u> </u>		1	1		1	1 '	1					
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,				1			1	11 /	1	1				
		1 - 2		1			[7	11'	1					
1			1		(1 55	11'	1					
	1			1	1		55-	1 1 7	1 2 1					
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				13, 20 13, 20			<u>-/5</u>	2 7		Water Level:				
Date Cor	omplet	ted:	July 1 July 1 Greg	13, 20	012		<u>- 75</u>	\$ \$ \$		Water Level: Drill Rig: MOBILE B-53.1				
Date Sta Date Cor Logged E Total De Work Ord	omplet By: epth:	ted:	July 1	13, 20 Youn et	012									

FED. ROAD	STATE	FED. AID	FISCAL	SHEET	TOTAL	
DIST. NO.		PROJ. NO.	YEAR	NO.	SHEETS	
HAWAII	HAW.	360AB-01-18	2018	57	59	



BORING LOGS 5

HANA HIGHWAY
IMPROVEMENTS, PHASE 2C
Huelo to Hana
Project No. 360AB-01-18
Date: March 2018

SHEET No. GT-6 OF 6 SHEETS