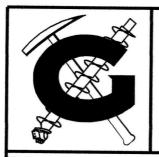
FED. ROAD FED. AID PROJ. NO. FISCAL SHEET YEAR NO. DIST. NO. HAW. | 360AB-01-16 | 2016 | 52

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.



LEGEND

GEOLABS, INC.

Geotechnical Engineering

Soil Log Legend

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

	MAJOR DIVISIONS		US	CS	TYPICAL DESCRIPTIONS
	GRAVELS	CLEAN GRAVELS	000	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
COARSE- GRAINED	SIVIVEES	LESS THAN 5% FINES	0000	GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
SOILS	MORE THAN 50% OF COARSE FRACTION	GRAVELS WITH FINES	0000	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	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
FINE	SILTS			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
FINE- GRAINED SOILS	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
50% OR MORE OF	011 = 2			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 SOIL	S	7 77 7	PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
			W V		

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

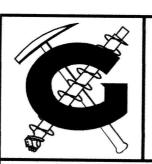
WATER LEVEL OBSERVED IN BORING AFTER DRILLING

WATER LEVEL OBSERVED IN BORING OVERNIGHT

(2-INCH) O.D. STANDARD PENETRATION TEST LIQUID LIMIT (NP=NON-PLASTIC) (3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE PLASTICITY INDEX (NP=NON-PLASTIC) SHELBY TUBE SAMPLE TORVANE SHEAR (tsf) **GRAB SAMPLE** POCKET PENETROMETER (tsf) CORE SAMPLE UNCONFINED COMPRESSION (psi) WATER LEVEL OBSERVED IN BORING AT TIME OF UNCONSOLIDATED UNDRAINED

TRIAXIAL COMPRESSION (ksf)

Plate A-0.1



GEOLABS, INC.

Geotechnical Engineering

Rock Log Legend

ROCK DESCRIPTIONS

With the second second			
	BASALT		FINGER CORAL
99	BOULDERS		LIMESTONE
	BRECCIA		SANDSTONE
× × × × × × × × × × × × × × × × × × ×	CLINKER	× × × × × × × × × × × ×	SILTSTONE
000	COBBLES		TUFF
× × × × × × × × × × × × × × × × × × ×	CORAL		VOID/CAVITY

ROCK DESCRIPTION SYSTEM

ROCK FRACTURE CHARACTERISTICS

The following terms describe general fracture spacing of a rock:

Greater than 24 inches apart 12 to 24 inches apart

Moderately Fractured:

Slightly Fractured:

6 to 12 inches apart

Less than 3 inches apart

3 to 6 inches apart

Closely Fractured:

Severely Fractured:

DEGREE OF WEATHERING

The following terms describe the chemical weathering of a rock:

Unweathered:

Rock shows no sign of discoloration or loss of strength. Slight discoloration inwards from open fractures. Slightly Weathered:

Moderately Weathered:

Discoloration throughout and noticeably weakened though not able to break by hand.

Highly Weathered:

Extremely Weathered:

Saprolite. Mineral residue completely decomposed to soil but fabric and structure preserved.

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

HARDNESS

The following terms describe the resistance of a rock to indentation or scratching:

Very Hard:

Medium Hard:

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

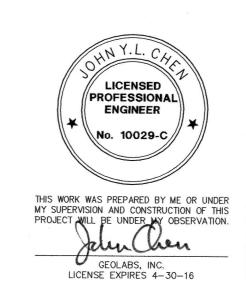
Can be indented by one hammer blow. Can be scraped or peeled by knife. SPT can penetrate by ~100 blows per foot.

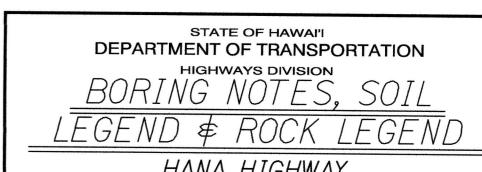
Example: Weathered rock, chalk-like coral reef

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

Example: Saprolite

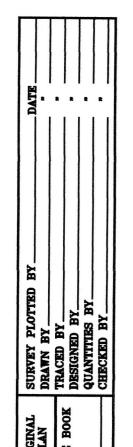
Plate A-0.2





HANA HIGHWAY IMPROVEMENTS, PHASE 2B Huelo to Hana Project No. 360AB-01-16

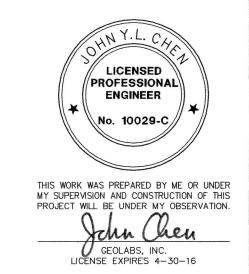
Date: March 2016 SHEET No. GT-1 OF 6 SHEETS



					3S, IN Engine					NA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII 101
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): 53 *
ō	ŽŬ	≥َ۵	0 %	R	유 <u>명</u>	PC (ts)	۵	S		Description 6-inch ASPHALTIC CONCRETE
	33				21				CL	Dark brown CLAY with some gravel and a little fire
	49	68			12		_			sand, very stiff to medium stiff, moist
	35				7		5	-\	СН	Dark brown and dark gray CLAY with a little fine sand, medium stiff, moist (saprolite)
	,			'				1 //		Sand, mediam san, moist (sapronte)
	74	55			11		10			
	14	55			11			-		
					e e		4 =			
	22			×	7		15		SC	Dark brown angular CLAYEY SAND with some
	× ;				,			1 111		medium to coarse gravel, loose, moist (saprolite)
		4	100	100			20			Gray massive BASALT, slightly weathered, hard
				100						Cray massive british territory weathered, nara
		4.	87	60			25	上次		
			-				25			
	6 2 2	3	47	10						grades to severely to closely fractured,
	2	13 20	47	10	, a		30			moderately weathered
									200	Deals because and readiled because an evilor OLAVEV
	53				52		35	1	SC	Dark brown and reddish brown angular CLAYEY SAND with a little gravel, very dense, moist
n.			0	0			33			(saprolite)
	49				49				The state of the s	
	43		0	0	49		40	\mathbf{H}		
			-							
ži	55		4.5		57		45	1		
			45	0			. •			
4	66							╀╢		
			57	17			50			
										Gray vugular BASALT, severely fractured, moderately to highly weathered, hard
×			77	27			55			moderately to highly weathered, hard
			2						SM	Reddish brown SILTY SAND with some gravel, dense (saprolite)
					,			11		Boring terminated at 58.5 feet
							60	- -		
	а		,			9		1		* Elevations estimated from Roadway Plans transmitted by Wilson Okamoto Corporation or
	± s			N.			65	1		January 18, 2013.
	-				S]	Per de la constanta de la cons	
	*				v		70]		
,				8			70			
	a a							1	Vertice and a state of the stat	
Date Sta	rted.	<u> </u>	June	26 2	012		75		<u> </u>	Water Level:
Date Cor	mplet	ed:	June	26, 20	012					
Logged E Fotal De				us Gru feet	uver	······································		anterior anno anterior anno anterior		Drill Rig: MOBILE B-53.1 Drilling Method: 4" Auger & HQ Coring

Sieve #200 = 27.1% LL=86 PI=29	(%) Content (%) Content (%)	S S Dry Unit G S Weight (pcf)	O & Core Recovery (%)	O O RQD (%)	ωω Βenetration κοως Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	SOSO G S	Approximate Ground Surface Elevation (feet): 53.5 * Description 7-inch ASPHALTIC CONCRETE 12-inch AGGREGATE BASE COURSE Brown SILTY GRAVEL with sand, stiff, moist
Sieve #200 = 27.1% 1 LL=86 PI=29	46 41 19 67	80	30	0	31 9		5	X 000000000000000000000000000000000000	GC	7-inch ASPHALTIC CONCRETE 12-inch AGGREGATE BASE COURSE
LL=86 6 PI=29							10	- 000		
PI=29			0	0				- 000 - 000 - 000	GP	Brownish gray COBBLES AND BOULDERS (BASALTIC) in sand and silt matrix, medium dense to dense
PI=29							15		МН	Brown CLAYEY SILT, very stiff to hard, moist
7	76		0	0	32		20			grades with gravel
# ₂₂			0	0	22		25			
6	60		0	0	70	ž.	30			grades to very hard Brownish gray BASALT, severely fractured, highly weathered, medium soft
			40	0			35	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\		weathered, mediam soft
		t V	100	0			40			grades to closely fractured, moderate to highly weathered, moderately hard
			50	0			45	\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	,	grades to gray, severely to closely fractured, moderately weathered
	00		z.		25		50			grades to brownish gray, severely fractured, highly to completely weathered, soft
6	88				35		55] \ .\.\.\		Boring terminated at 54 feet
							60	- - - -		
							65	-		
							70	-		
Date Starte			June				75			Water Level:
Date Comp Logged By: Total Depth	/ :		June Marcu 54 fee	us Gr						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-01-16	2016	53	59



BORING LOGS 1

HANA HIGHWAY
IMPROVEMENTS, PHASE 2B
Huelo to Hana
Project No. 360AB-01-16
Date: March 2016

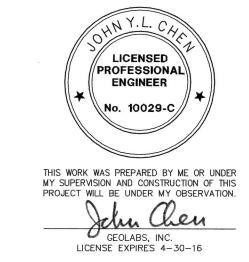
Scale:

SHEET No. GT-2 OF 6 SHEETS

			echr	nical	BS, IN Engine	ering				ANA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII	Log of Boring
Other Tests	Moisture Content (%)		Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	nscs	Approximate Ground Surface Elevation (feet): 53.5 * Description	-
	53	67	OLL	_ Ц_	18	н)	<u> </u>	0)0	CH	7-inch ASPHALTIC CONCRETE	
	55	01			11		_		МН	Reddish brown CLAY with traces of fine satiff, moist (fill)	and, very
Direct Shear	58	64			23		5-			Dark brown SILTY CLAY with some gravel very stiff, moist	, stiff to
	28				Ref/0" Ref.		10		SC	Brown CLAYEY SAND with some gravel, vidense, moist (alluvium)	ery
	34	93			Ref/0" Ref.		15				
					Ref/0" Ref.		20			Boring terminated at 20.1 feet	
						*	25				
	,						30				
							35				
		e e					40				
			-				45				
							50				
							55				
			,				60-				
	-						65		·		
		-					70-				
			ii				-				
Date Sta			June				75-		<u> </u>	Water Level:	
Date Cor Logged E			June : Marcu							Drill Rig: MOBILE B-53.1	
Total De			20.1 f 6193-	eet						Drilling Method: 4" Auger & HQ Coring Driving Energy: 140 lb. wt., 30 in. drop	

					BS, IN					ANA HIGHWAY IMPROVEMENTS	Log of Boring
	<u></u> _'				I Engine				DIC	STRICT OF HANA, MAUI, HAWAII	104
ests	e (%)	t (pcf)	Core Recovery (%)	3	fion oot)	Jen.	eet)			Approximate Ground Surface	
Other Tests	tent	ah Git	over	%) (etral istar ws/f	cet F	Depth (feet)	Ple Pic Pic	်း	Elevation (feet): 54 *	
Othe	Moisture Content (Dry Unit Weight (Sore	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Dep	Sample Graphic	USCS	Description	
		-		_				- 000	• GP	7-inch ASPHALT	
	33	87			73			J.	CL	Brownish gray BOULDERS IN CLAY MA	TRIX,
	54				18		5	THE	A	very dense, moist	
	58	1 1			85		5		CH	Brown SANDY CLAY with some gravel, h	ard,
		1								moist grades to reddish brown, very stiff	
			1				10	.		Brown CLAY with some fine sand, very st	tiff to
	55	1			27		10	-		hard, moist (saprolite)	
	1							1			
	1 - 2	_			1		15				
	58	69			46						
	']			
	-Q			1	16		20			grades to grayish brown with a little sand	and
	58			1	16				1	gravel, stiff to very stiff	
								-	1	Boring terminated at 21.5 feet	
al investment of							25	1	/		
				1				1			
								1			
							30	-			
								-	1		
							25	1	1		
							35	1			
								1			
							40	-			
							40]			
				1]			
							45	11.			
				1				1			
				1				1			
	1			1			50	4			
				1				1			
				1				1			
				1			55	1	1		
				1				-			
				1			20	1			
				1			60	1	1		
				1			•	1			
				1			65	4 '			
								1			
				1							
				1			70	-			
				1				1			
				1				1			
Date Star	rted:		June 2	27, 2	<u></u> 012		75			Water Level:	
Date Con	mplete	ed: 、	June 2	27, 20	2012						
Logged B Total Dep			Marcu 21.5 fe		uver					Drill Rig: MOBILE B-53.1 Drilling Method: 4" Auger & HQ Coring	***
Work Ord			6193-							Driving Energy: 140 lb. wt., 30 in. drop	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-16	2016	54	59



BORING LOGS 2

HANA HIGHWAY

IMPROVEMENTS, PHASE 2B

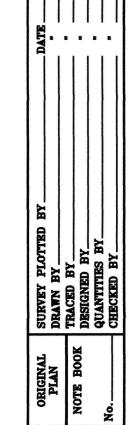
Huelo to Hana

Project No. 360AB-01-16

Date: March 2016

SET No. GT-3 OF 6

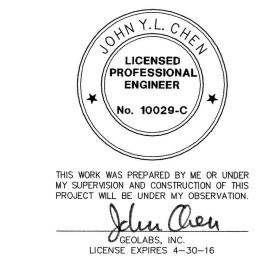
SHEET No. GT-3 OF 6 SHEETS



					3S, IN					ANA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII 501
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): 52 * Description
LL=64 PI=11 Direct Shear	61 56 62	63			28 10 18	1.5 1.5 2.0	5	X	GC	4-inch ASPHALTIC CONCRETE 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) Dark gray COBBLES AND BOULDERS
L=56 PI=17	60		0	0	31	1.0	15		МН	(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	一次に		Brownish gray BASALT, severely fractured, highle weathered, soft
			97	72			30 ⁻			grades to slightly fractured, unweathered, very hard
			100	72			35	イングラングラング		
			97	38			40			
			100	75	· ·		45	ハルシー		
		ų.	W		e e e e e e e e e e e e e e e e e e e		50			Boring terminated at 50 feet
							55			
							60			
							65			
			2 1				70			
Date Sta			July 1				75			Water Level:
Date Co Logged I Total De	Ву:		July 1 Greg 50 fee	Youn						Drill Rig: MOBILE B-53.1 Drilling Method: 4" Auger & HQ Coring
Work Or			6193-							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	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): 57.5 * Description	
	63	62	OIL	<u> </u>	18	1.5		N C	GC MH	6-inch ASPHALTIC CONCRETE 6-inch AGGREGATE BASE COURSE	
LL=72 PI=21 Direct Shear Direct	50	63	·		31	1.5	5			Brown CLAYEY SILT with traces of gravel stiff, moist (residual soil) grades to medium stiff grades to very stiff	l, very
Shear LL=75 PI=18	60				18	1.5	10			grades with a little gravel	
	52	70	50 23	0 10	Ref/0" Ref.		15 20		СН	Gray COBBLES AND BOULDERS (BASA with sand, very hard Reddish brown CLAY, very stiff, moist (responsible)	
	56		19	0	14	1.5	25		СН	Gray COBBLES AND BOULDERS (BASA with sand, very hard Reddish brown CLAY, stiff, moist (residual	l soil)
LL=46 PI=9	39		17	0	32	2.0 2.0	30	- No ^c	ML	Brownish gray COBBLES AND BOULDER (BASALTIC) in a sand and silt matrix, hard Greenish gray SILT with traces of course signavel, very stiff	d
	56		54	0	55/6" +Ref/0 Ref.	2.0	35			Dark gray BASALT, severely fractured, moweathered, hard	oderately
			40	40			40	+ - - - - - - - - - -			
			82	37	Ref/0" Ref.		45			Dark gray BASALT, moderately fractured, unweathered, very hard grades to severly fractured, moderately	
			100	46			50			weathered, medium hard grades to slightly to moderately fractured, unweathered, very hard Boring terminated at 51 feet	
							55	- - - -		Boning terminated at 51 leet	
							60	- - - -			
				g v			65	- - - -			
					·		70	- - - - -			
							75	1			
Date Sta			July 1							Water Level:	er englande en en de grave en englande en
Date Cor Logged F			July 1 Greg							Drill Rig: MOBILE B-53.1	
T	pth:		51 fee	2 †						Drilling Method: 4" Auger & HQ Coring	

FED. ROAD DIST. NO. FED. AID PROJ. NO. TOTAL SHEETS

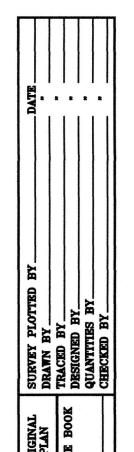


STATE OF HAWAI'I
DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

BORING LOGS 4

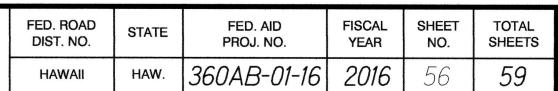
<u>HANA HIGHWAY</u> <u>IMPROVEMENTS, PHASE 2B</u> <u>Huelo to Hana</u> <u>Project No. 360AB-01-16</u> Date: March 2016

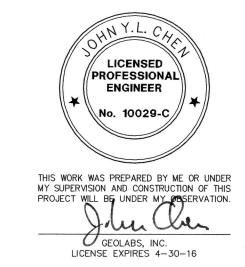
Scale: SHEET No. GT-4 OF 6 SHEETS



					BS, IN					ANA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII	Log of Boring
		Geol		ncai	Engine			-		TITLE OF TIANA, WAOI, TIAVVAII	503
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	တ္	Approximate Ground Surface Elevation (feet): 67 *	
Othe	Mois	Vei	Sore	ğ	Pen Resi blov	Poct tsf)	Эері	Sam	nscs	Description	
	20		OH	Щ.		ш		87	GC	6-inch ASPHALTIC CONCRETE	
					40				CH	6-inch AGGREGATE BASE COARSE	
			37	13		2				Brown CLAY, moist (residual soil)	
9			31	13			5		СН	Gray BOULDERS in a sand and silt matrix	, very
					15				OII	hard	
			24	0		,				Brown CLAY, stiff to very stiff, moist (resid	iuai soii)
							10			grades to very hard	
	62			wes	53	,					
		,	48	0			4-	- 4	MH	Reddish brown CLAYEY SILT with traces	of sand,
							15			moist, very hard (saprolite)	
	36				118						
			40	0			00	- 1	1		
					,		20				
	ø		63	0	50/0"						
					Ref.		0.5	1			
						***	25				
8			67	30						Grayish brown BASALT, moderately to clo	sely
	5						20	- ,>-		fractured, extremely weathered, soft	
							30				
			80	37				工作			
		÷					25				
							35				
			40	0						grades to brownish gray, severly fractured	d,
						à	40			completely weathered, soft	
			40	_	50/01		40	-11,7-			
			40	0	50/0" Ref.					anadaa ta anay aayank fuaatiyaad waadana	4alo
					ivei.		45			grades to gray, severly fractured, modera weathered, hard	tely
	16	e			EE/G"		10			grades to brownish gray, completely weat	thered.
	46		50	8	55/6" +Ref/0	•				soft	,
					Ref.	v	50			grades to gray	
	9			in in						grades to brownish gray	
				el .						Boring terminated at 51.5 feet	
							55	1			
							60]			
				×			Si .				
	z.				7		9	1			
							65				
							17	1			
	я							1			
							70				
		And the second s					8]			
ata Sta	rtod.		July 4	2 00	12		75		<u> </u>	I Water Level	
ate Star ate Con			July 1 July 1			***************************************	Actor of the second contract	***************************************		Water Level:	
ogged B	By:		Greg	Youn						Drill Rig: MOBILE B-53.1	
otal Dep	oth:		51.5 f	eet						Drilling Method: 4" Auger & HQ Coring	

			echr		3S, IN Engine					ANA HIGHWAY IMPROVEMENTS STRICT OF HANA, MAUI, HAWAII 50	ing
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): 55 * Description	
O	20		10	0	U K 5)	g t)	5		GC GP MH	6-inch ASPHALTIC CONCRETE 12-inch AGGREGATE BASE COURSE Dark grayish brown BOULDERS in a sand and matrix, hard	A
LL=60 PI=20	55		0	0	24	1.5	10-			Brown SILT with fine sand and traces of gravel, very stiff, moist (residual soil)	, - - -
	46		26	0	52/6" +50/3"	2.0	15			Grayish brown COBBLES AND BOULDERS in	a
	29		14	0	108	2.0	20	0 (0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	CL	Brown SANDY CLAY, stiff, moist (residual soil) Grayish brown COBBLES AND BOULDERS in sand and silt matrix, hard	a /
					Ref/0" Ref.		25		-	Brown SANDY CLAY, very stiff, moist (saprolite Grayish brown BASALT, severely fractured, moderately to highly weathered, medium hard Boring terminated at 23 feet	?) /
							30-				1
							35				
							40				1
							45				- - - - -
•							50				-
							55-				1
				,			60				
							65				
							70-				- - - - -
Date Sta	rted:	~~~~~	July 1				75-			Water Level:	
Date Cor Logged B			July 1 Greg			Administration of the second o			alan da kananangan termenye da ka	Drill Rig: MOBILE B-53.1	
Total De	pth:	-	23 fee	et	J					Drilling Method: 4" Auger & HQ Coring	
Work Or	der:	(3193-	00						Driving Energy: 140 lb. wt., 30 in. drop	





BORING LOGS 4

HANA HIGHWAY

IMPROVEMENTS, PHASE 2B

Huelo to Hana

Project No. 360AB-01-16

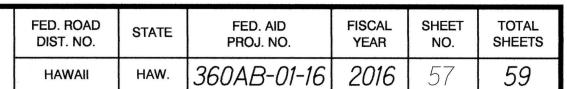
Date: March 2016

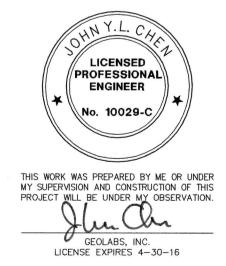
Scale:

SHEET No. GT-5 OF 6 SHEETS

	GEOLABS, INC. Geotechnical Engineering							HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII 50				
Other Tests	Aoisture Content (%)	ory Unit Veight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	USCS	Approximate Ground Surface Elevation (feet): 58 * Description		
0	20		47	0	50/0" Ref.	(t	5		GC GP	O : L AGDUALTIG GOLIGOTET	n a sand	
Sieve #200 = 29.9%	54		29 0 57	0 0	12 14 10/6" +50/0" Ref.	1.3	10	- 1	CH	Brown SILTY SAND with traces of gravel moist (residual soil) Gray COBBLES AND BOULDERS in a second		
	54						15			silt matrix, moist, hard Brown CLAY, stiff, moist (residual soil)		
	33	2					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					
			<i>a</i>				30	- - - - - - -				
							35					
							40					
	,		7				45	-				
			4				50					
	0 ,		*				55					
			r				60	- - - - -				
							70°					
							75 [.]				X-18-1	
Date Sta Date Cor			July 1 July 1							Water Level:		
Logged E	З у :		Greg	Your						Drill Rig: MOBILE B-53.1		
Total Depth: Work Order:			21 feet 6193-00							Drilling Method: 4" Auger & HQ Coring		

					BS, IN Engine			HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII 506			
Other Tests	Moisture		Core Recovery (%)		Penetration Resistance (blows/foot)		Depth (feet)	Sample Graphic	S	Approximate Ground Surface Elevation (feet): 66 *	
Oth	Moi		Core	RQ	Per Res (blo	Poc (tsf)	Dep	Sar Gra	nscs	Description	
			6	_	50/0"	a M			GC	6-inch ASPHALTIC CONCRETE	
н			6	0	Ref.			- 000	GP	6-inch AGGREGATE BASE COURSE Dark gray COBBLES AND BOULDERS in	
		P.			,		5	- 00		and silt matrix, moist, hard	n a Sanu
7	4	1	5	0	16/6" +50/5"			0000		Reddish brown SANDY GRAVEL, moist, (saprolite)	hard
						,	10	000	GP	Dark gray COBBLES AND BOULDERS in	n sand
	3	6			50/6"			000		and silt matrix, moist, hard	
			17	17	+Ref/1	'		- 60		Brownish gray SANDY GRAVEL, moist, s	soft 1
,							15	000	GP	(saprolite) Dark gray COBBLES AND BOULDERS in	o cand
	4	3			37			- 000		and silt matrix, moist, hard	Sanu
		*	57	10				000		Brownish gray SANDY GRAVEL, moist, r	nedium
		П					20			soft (saprolite)	
								_		Dark gray BASALT, moist, closely fracture	ed,
								+ $+$ $+$		moderately weathered, hard	
							25	-		Boring terminated at 21 feet	1
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e e											
							75	1			+
Date Started: July 13, 2012							70			Water Level:	
Date Completed: July 13, 2012											
Logged By: Greg Young Total Donth: 21 foot								nakin andreas garanta da	Drill Rig: MOBILE B-53.1 Drilling Method: 4" Auger & HQ Coring		
Total Depth: 21 feet Work Order: 6193-00										1	





BORING LOGS 5

<u>HANA HIGHWAY</u> <u>IMPROVEMENTS, PHASE 2B</u>

<u>Huelo to Hana</u> <u>Project No. 360AB-01-16</u> Date: March 2016

Scale:

SHEET No. GT-6 OF 6 SHEETS

