
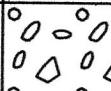
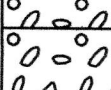
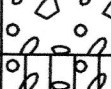
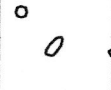
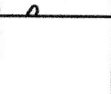
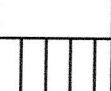




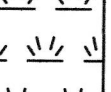










GEOTECHNICAL NOTES:

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.	Soil Log Legend		
		Geotechnical Engineering			
UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)					
MAJOR DIVISIONS			USCS	TYPICAL DESCRIPTIONS	
COARSE-GRAINED SOILS	GRAVELS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		LESS THAN 5% FINES		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		LESS THAN 5% FINES		SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
				SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE-GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS	
			OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
		SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE		MH
			CH	INORGANIC CLAYS OF HIGH PLASTICITY	
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
	HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS


NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS




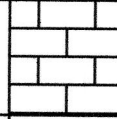
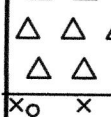
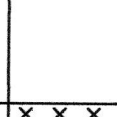
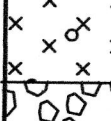
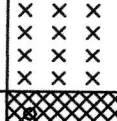

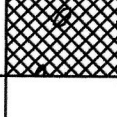
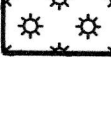
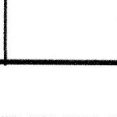
LEGEND

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

Plate

A-0.1

		GEOLABS, INC.	Rock Log Legend	
		Geotechnical Engineering		

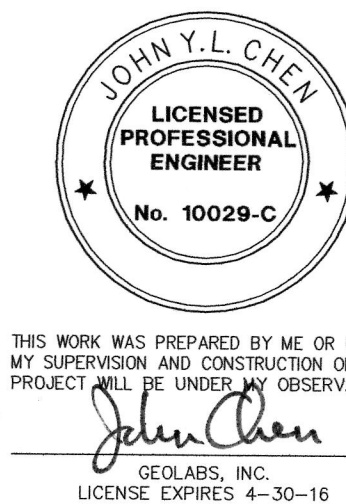
ROCK DESCRIPTIONS			
	BASALT		FINGER CORAL
	BOULDERS		LIMESTONE
	BRECCIA		SANDSTONE
	CLINKER		SILTSTONE
	COBBLES		TUFF
	CORAL		VOID/CAVITY

ROCK DESCRIPTION SYSTEM	
ROCK FRACTURE CHARACTERISTICS	
<i>The following terms describe general fracture spacing of a rock:</i>	
Massive:	Greater than 24 inches apart
Slightly Fractured:	12 to 24 inches apart
Moderately Fractured:	6 to 12 inches apart
Closely Fractured:	3 to 6 inches apart
Severely Fractured:	Less than 3 inches apart
DEGREE OF WEATHERING	
<i>The following terms describe the chemical weathering of a rock:</i>	
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	
<i>The following terms describe the resistance of a rock to indentation or scratching:</i>	
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 broken by one hammer blow. Cannot be scraped by knife. SPT may penetrate by ~25 blows per inch with bounce. Example: Porous rock such as clinker, cinder, and coral reef
Soft:	Can be indented by one hammer blow. Can be scraped or peeled by knife. SPT can penetrate by ~100 blows per foot. Example: Weathered rock, chalk-like coral reef
Very Soft:	Crumbles under hammer blow. Can be peeled and carved by knife. Can be indented by finger pressure. Example: Saprolite

Plate

A-0.2

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	CHECKED BY	
	QUANTITIES BY	
	CHECKED BY	



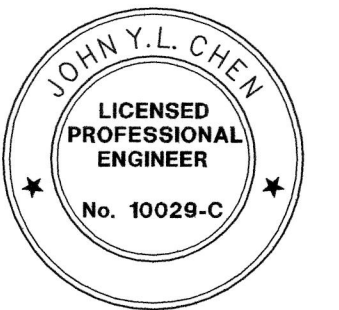
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**BORING NOTES, SOIL
LEGEND & ROCK LEGEND**
HANA HIGHWAY
IMPROVEMENTS, PHASE 2B
Huelo to Hana
Project No. 360AB-01-16
Scale: Date: March 2016
SHEET No. GT-1 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-16	2016	53	59

GEOLABS, INC. Geotechnical Engineering		HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII					Log of Boring 101			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 53 *
										Description
	33				21				CL	6-inch ASPHALTIC CONCRETE
	49	68			12					Dark brown CLAY with some gravel and a little fine sand, very stiff to medium stiff, moist
	35				7		5		CH	Dark brown and dark gray CLAY with a little fine sand, medium stiff, moist (saprolite)
	74	55			11		10			
	22				7		15		SC	Dark brown angular CLAYEY SAND with some medium to coarse gravel, loose, moist (saprolite)
			100	100			20			Gray massive BASALT, slightly weathered, hard
			87	60			25			
			47	10			30			grades to severely to closely fractured, moderately weathered
	53		0	0	52		35		SC	Dark brown and reddish brown angular CLAYEY SAND with a little gravel, very dense, moist (saprolite)
	49		0	0	49		40			
	55		45	0	57		45			
	66		57	17			50			
			77	27			55		SM	Reddish brown SILTY SAND with some gravel, dense (saprolite)
							60			Boring terminated at 58.5 feet
							65			* Elevations estimated from Roadway Plans transmitted by Wilson Okamoto Corporation on January 18, 2013.
							70			
							75			
Date Started: June 26, 2012								Water Level:		
Date Completed: June 26, 2012										
Logged By: Marcus Gruver								Drill Rig: MOBILE B-53.1		
Total Depth: 58.5 feet								Drilling Method: 4" Auger & HQ Coring		
Work Order: 6193-00								Driving Energy: 140 lb. wt., 30 in. drop		

GEOLABS, INC. Geotechnical Engineering		HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII							Log of Boring 102	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 53.5 *
										Description
Sieve #200 = 27.1%	46	80			31				GC	7-inch ASPHALTIC CONCRETE
	41				9				GM	12-inch AGGREGATE BASE COURSE
	19	79			9		5			Brown SILTY GRAVEL with sand, stiff, moist
LL=86 PI=29			30	0			10		GP	Brownish gray COBBLES AND BOULDERS (BASALTIC) in sand and silt matrix, medium dense to dense
			0	0			15		MH	Brown CLAYEY SILT, very stiff to hard, moist
	67				32		20			grades with gravel
			0	0			25			
	76		0	0	22		30			grades to very hard
			0	0	70		35			Brownish gray BASALT, severely fractured, highly weathered, medium soft
			40	0			40			grades to closely fractured, moderate to highly weathered, moderately hard
			100	0			45			grades to gray, severely to closely fractured, moderately weathered
			50	0			50			grades to brownish gray, severely fractured, highly to completely weathered, soft
	68				35		55			Boring terminated at 54 feet
						60				
						65				
						70				
						75				
Date Started: June 27, 2012									Water Level:	
Date Completed: June 28, 2012										
Logged By: Marcus Gruver									Drill Rig: MOBILE B-53.1	
Total Depth: 54 feet									Drilling Method: 4" Auger & HQ Coring	
Work Order: 6193-00									Driving Energy: 140 lb. wt., 30 in. drop	


SURVEY PLOTTED BY	DATE
DRAWN BY	
NOTED BY	
REVIEWED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTE BOOK	
No.	




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John Chen
GEOLABS, INC.
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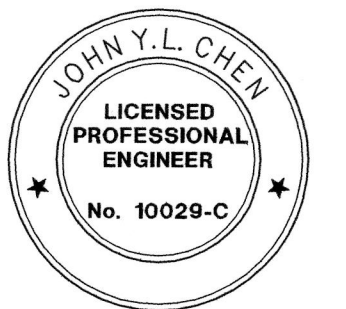
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS 1	
HANA HIGHWAY IMPROVEMENTS, PHASE 2B	
Huelo to Hana	
Project No. 360AB-01-16	
Scale:	Date: March 2016
SHEET No. GT-2 OF 6 SHEETS	

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

		GEOLABS, INC. Geotechnical Engineering		HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII				Log of Boring 103		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet) : 53.5 *
										Description
Direct Shear	53	67			18				CH	7-inch ASPHALTIC CONCRETE
	55				11				MH	Reddish brown CLAY with traces of fine sand, very stiff, moist (fill)
	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			
							65			
							70			
							75			
Date Started: June 26, 2012										Water Level:
Date Completed: June 26, 2012										
Logged By: Marcus Gruver										Drill Rig: MOBILE B-53.1
Total Depth: 20.1 feet										Drilling Method: 4" Auger & HQ Coring
Work Order: 6193-00										Driving Energy: 140 lb. wt., 30 in. drop

		GEOLABS, INC. Geotechnical Engineering		HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII				Log of Boring 104		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet) : 54 *
										Description
	33	87			73				GP	7-inch ASPHALT
	54				18				CL	Brownish gray BOULDERS IN CLAY MATRIX, very dense, moist
	58	69			85		5		CH	Brown SANDY CLAY with some gravel, hard, moist
							10			grades to reddish brown, very stiff
	55				27		15			Brown CLAY with some fine sand, very stiff to hard, moist (saprolite)
	58	69			46		20			grades to grayish brown with a little sand and gravel, stiff to very stiff
	58				16		25			Boring terminated at 21.5 feet
							30			
							35			
							40			
							45			
							50			
							55			
							60			
							65			
							70			
							75			
Date Started: June 27, 2012										Water Level:
Date Completed: June 27, 2012										
Logged By: Marcus Gruver										Drill Rig: MOBILE B-53.1
Total Depth: 21.5 feet										Drilling Method: 4" Auger & HQ Coring
Work Order: 6193-00										Driving Energy: 140 lb. wt., 30 in. drop



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






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GEOLABS, INC.
LICENSE EXPIRES 4-30-16

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<i>BORING LOGS 2</i>	
HANA HIGHWAY IMPROVEMENTS, PHASE 2B	
Huelo to Hana	
Project No. 360AB-01-16	
Scale:	Date: March 2016
SHEET No. 54-3 OF 6 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-16	2016	55	59

		GEOLABS, INC. Geotechnical Engineering					HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII					Log of Boring 501	
Other Tests	Moisture Content (%)	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			
LL=64 PI=11 Direct Shear Direct Shear	61	63			28	1.5			GC	4-inch ASPHALTIC CONCRETE			
	56				10	1.5	MH		8-inch AGGREGATE BASE COURSE				
										Brown CLAYEY SILT with a little gravel (basaltic), very stiff, moist (residual soil) grades to very stiff			
	62	60			18	2.0	5						
LL=56 PI=17			33	0			10		CH	Dark gray COBBLES AND BOULDERS (BASALTIC), hard			
			22	0						Brown CLAY, stiff, moist (residual soil)			
							15		MH	Dark gray COBBLES AND BOULDERS (BASALTIC), hard			
	60		0	0	31	1.0				Brown CLAYEY SILT, hard, moist (residual soil)			
							20			grades to reddish brown			
	47		31	0	43	1.5							
							25			Brownish gray BASALT, severely fractured, highly weathered, soft			
			58	25	Ref/0" Ref.		30			grades to slightly fractured, unweathered, very hard			
			97	72			35						
			100	72			40						
		97	38			45							
		100	75			50				Boring terminated at 50 feet			
							55						
							60						
							65						
							70						
							75						
Date Started: July 16, 2012									Water Level:				
Date Completed: July 16, 2012													
Logged By: Greg Young									Drill Rig: MOBILE B-53.1				
Total Depth: 50 feet									Drilling Method: 4" Auger & HQ Coring				
Work Order: 6193-00									Driving Energy: 140 lb. wt., 30 in. drop				

		GEOLABS, INC. Geotechnical Engineering					HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII				Log of Boring 502	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 57.5 *		
										Description		
LL=72 PI=21 Direct Shear Direct Shear LL=75 PI=18	63	62			18	1.5			GC MH	6-inch ASPHALTIC CONCRETE		
	51				7	1.5	6-inch AGGREGATE BASE COURSE					
	50	63			31	1.5	5			Brown CLAYEY SILT with traces of gravel, very stiff, moist (residual soil) grades to medium stiff grades to very stiff		
	60				18	1.5	10			grades with a little gravel		
LL=46 PI=9	52	70	50	0	Ref/0" Ref.		15		CH CH ML	Gray COBBLES AND BOULDERS (BASALTIC) with sand, very hard		
			23	10			20			Reddish brown CLAY, very stiff, moist (residual soil)		
	56				14	1.5				Gray COBBLES AND BOULDERS (BASALTIC) with sand, very hard		
			19	0			25			Reddish brown CLAY, stiff, moist (residual soil)		
	39				32	2.0				Brownish gray COBBLES AND BOULDERS (BASALTIC) in a sand and silt matrix, hard		
			17	0		2.0	30			Greenish gray SILT with traces of coarse sand and gravel, very stiff		
	56		54	0	55/6" +Ref/0" Ref.	2.0				Dark gray BASALT, severely fractured, moderately weathered, hard		
			40	40			35					
				82	37	Ref/0" Ref.	40	Dark gray BASALT, moderately fractured, unweathered, very hard grades to severely fractured, moderately weathered, medium hard grades to slightly to moderately fractured, unweathered, very hard				
			100	46			45					
							50	Boring terminated at 51 feet				
							55					
							60					
							65					
							70					
							75					
Date Started: July 12, 2012									Water Level:			
Date Completed: July 12, 2012												
Logged By: Greg Young									Drill Rig: MOBILE B-53.1			
Total Depth: 51 feet									Drilling Method: 4" Auger & HQ Coring			
Work Order: 6193-00									Driving Energy: 140 lb. wt., 30 in. drop			






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









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John Y. L. Chen
GEOLABS, INC.
LICENSE EXPIRES 4-30-16

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS 4	
HANA HIGHWAY IMPROVEMENTS, PHASE 2B Huelo to Hana Project No. 360AB-01-16	
Scale:	Date: March 2016
SHEET No. GT-4 OF 6 SHEETS	

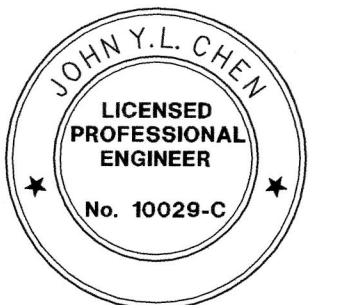
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-16	2016	56	59

GEOLABS, INC.		HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII					Log of Boring 503				
Geotechnical Engineering											
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet) : 67 *	
										Description	
	62				40				GC CH	6-inch ASPHALTIC CONCRETE	
										6-inch AGGREGATE BASE COARSE	
										Brown CLAY, moist (residual soil)	
										Gray BOULDERS in a sand and silt matrix, very hard	
										Brown CLAY, stiff to very stiff, moist (residual soil)	
										grades to very hard	
										Reddish brown CLAYEY SILT with traces of sand, moist, very hard (saprolite)	
	36					15			MH		
					50/0" Ref.				Grayish brown BASALT, moderately to closely fractured, extremely weathered, soft		
					55/6" +Ref/0" Ref.				grades to brownish gray, severely fractured, completely weathered, soft		
					50/0" Ref.				grades to gray, severely fractured, moderately weathered, hard		
									grades to brownish gray, completely weathered, soft		
									grades to gray		
									grades to brownish gray		
									Boring terminated at 51.5 feet		

Date Started: July 13, 2012				Water Level:			
Date Completed: July 13, 2012							
Logged By: Greg Young				Drill Rig: MOBILE B-53.1			
Total Depth: 51.5 feet				Drilling Method: 4" Auger & HQ Coring			
Work Order: 6193-00				Driving Energy: 140 lb. wt., 30 in. drop			

		GEOLABS, INC. Geotechnical Engineering					HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII				Log of Boring 504
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet) : 55 *	
										Description	
LL=60 PI=20	55		10	0	24	1.5	5		GC GP MH	6-inch ASPHALTIC CONCRETE	
										12-inch AGGREGATE BASE COURSE	
	46	0	0	52/6" +50/3"	2.0	10			Dark grayish brown BOULDERS in a sand and silt matrix, hard		
									Brown SILT with fine sand and traces of gravel, very stiff, moist (residual soil)		
	29	26	0	108	2.0	15		CL	Grayish brown COBBLES AND BOULDERS in a sand and silt matrix, hard		
									Brown SANDY CLAY, stiff, moist (residual soil)		
		14	0	Ref/0" Ref.		20		CH	Grayish brown COBBLES AND BOULDERS in a sand and silt matrix, hard		
									Brown SANDY CLAY, very stiff, moist (saprolite)		
							25			Grayish brown BASALT, severely fractured, moderately to highly weathered, medium hard	
							30			Boring terminated at 23 feet	
						35					
						40					
						45					
						50					
						55					
						60					
						65					
						70					
						75					
Date Started: July 12, 2012								Water Level:			
Date Completed: July 12, 2012											
Logged By: Greg Young								Drill Rig: MOBILE B-53.1			
Total Depth: 23 feet								Drilling Method: 4" Auger & HQ Coring			
Work Order: 6193-00								Driving Energy: 140 lb. wt., 30 in. drop			

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



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION AND CONSTRUCTION OF THIS PROJECT WILL BE UNDER MY SUPERVISION.
John Y.L. Chen
GEOLABS, INC.
LICENSE EXPIRES 4-30-16

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION



BORING LOGS 4



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

Scale: Date: March 2016

SHEET No. 67-5 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-16	2016	57	59

	GEOLABS, INC.		HANA HIGHWAY IMPROVEMENTS		Log of Boring					
	Geotechnical Engineering		DISTRICT OF HANA, MAUI, HAWAII		505					
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 58 *
										Description
Sieve #200 = 29.9%	54	29	0	0	12	1.3	5		GC GP SM CH ML	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, moist (residual soil)
										Gray COBBLES AND BOULDERS in a sand and silt matrix, moist, hard
54	0	0	0	14	1.3	10	15			Brown CLAY, stiff, moist (residual soil)
										Greenish gray SILT, stiff, moist (residual soil)
33	57	0	0	10/6"	2.0	20				Gray BASALT, severely fractured, moderately weathered, medium hard to hard
										Boring terminated at 21 feet
							25			
							30			
							35			
							40			
							45			
							50			
							55			
							60			
							65			
							70			
							75			
Date Started: July 16, 2012					Water Level:					
Date Completed: July 16, 2012					Drill Rig: MOBILE B-53.1					
Logged By: Greg Young					Drilling Method: 4" Auger & HQ Coring					
Total Depth: 21 feet					Driving Energy: 140 lb. wt., 30 in. drop					
Work Order: 6193-00										

	GEOLABS, INC.		HANA HIGHWAY IMPROVEMENTS		Log of Boring					
	Geotechnical Engineering		DISTRICT OF HANA, MAUI, HAWAII		506					
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet): 66 *
										Description
41	36	17	17	50/0"	16/6"	+50/5"	5		GC GP GP GP	6-inch ASPHALTIC CONCRETE
										6-inch AGGREGATE BASE COURSE
										Dark gray COBBLES AND BOULDERS in a sand and silt matrix, moist, hard
										Reddish brown SANDY GRAVEL, moist, hard (saprolite)
										Dark gray COBBLES AND BOULDERS in sand and silt matrix, moist, hard
36	17	17	50/6"	+Ref/1"	37	10	15			Brownish gray SANDY GRAVEL, moist, soft (saprolite)
										Dark gray COBBLES AND BOULDERS in sand and silt matrix, moist, hard
48	57	10	37				20			Brownish gray SANDY GRAVEL, moist, medium soft (saprolite)
										Dark gray BASALT, moist, closely fractured, moderately weathered, hard
							25			Boring terminated at 21 feet
							30			
							35			
							40			
							45			
							50			
							55			
							60			
							65			
							70			
							75			
Date Started: July 13, 2012					Water Level:					
Date Completed: July 13, 2012					Drill Rig: MOBILE B-53.1					
Logged By: Greg Young					Drilling Method: 4" Auger & HQ Coring					
Total Depth: 21 feet					Driving Energy: 140 lb. wt., 30 in. drop					
Work Order: 6193-00										

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



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John Y.L. Chen
GEOLABS, INC.
LICENSE EXPIRES 4-30-16

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS 5	
HANA HIGHWAY IMPROVEMENTS, PHASE 2B	
Huelo to Hana	
Project No. 360AB-01-16	
Scale:	Date: March 2016
SHEET No. GT-6 OF 6 SHEETS	