

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.


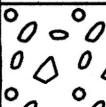

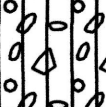

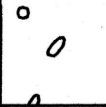
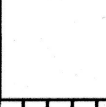

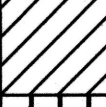
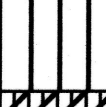


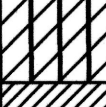
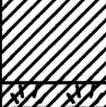














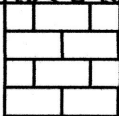
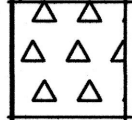
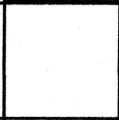
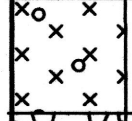
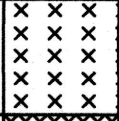

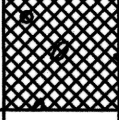
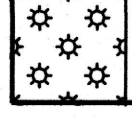
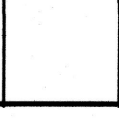
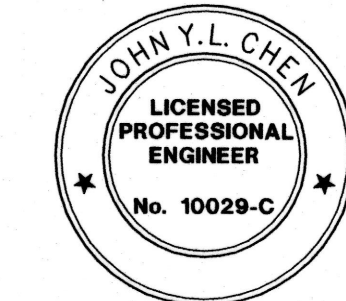
		GEOLABS, INC.	Soil Log Legend			
		Geotechnical Engineering				
UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)						
MAJOR DIVISIONS			USCS	TYPICAL DESCRIPTIONS		
COARSE-GRAINED SOILS	GRAVELS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
		LESS THAN 5% FINES		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES	
		MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			MORE THAN 12% FINES		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	
		50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
			MORE THAN 12% FINES		SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE-GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY	
		LIQUID LIMIT 50 OR MORE		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	
				MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
	SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE		CH	INORGANIC CLAYS OF HIGH PLASTICITY	
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	
		HIGHLY ORGANIC SOILS				
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. Geotechnical Engineering	Rock Log Legend	
ROCK DESCRIPTIONS				
	BASALT		FINGER CORAL	
	BOULDERS		LIMESTONE	
	BRECCIA		SANDSTONE	
	CLINKER		SILTSTONE	
	COBBLES		TUFF	
	CORAL		VOID/CAVITY	
ROCK DESCRIPTION SYSTEM				
ROCK FRACTURE CHARACTERISTICS				
The following terms describe general fracture spacing of a rock:				
Massive:	Greater than 24 inches apart			
Slightly Fractured:	12 to 24 inches apart			
Moderately Fractured:	6 to 12 inches apart			
Closely Fractured:	3 to 6 inches apart			
Severely Fractured:	Less than 3 inches apart			
DEGREE OF WEATHERING				
The following terms describe the chemical weathering of a rock:				
Unweathered:	Rock shows no sign of discoloration or loss of strength.			
Slightly Weathered:	Slight discoloration inwards from open fractures.			
Moderately Weathered:	Discoloration throughout and noticeably weakened though not able to break by hand.			
Highly Weathered:	Most minerals decomposed with some corestones present in residual soil mass. Can be broken by hand.			
Extremely Weathered:	Saprolite. Mineral residue completely decomposed to soil but fabric and structure preserved.			
HARDNESS				
The following terms describe the resistance of a rock to indentation or scratching:				
Very Hard:	Specimen breaks with difficulty after several "pinging" hammer blows. Example: Dense, fine grain volcanic rock			
Hard:	Specimen breaks with some difficulty after several hammer blows. Example: Vesicular, vugular, coarse-grained rock			
Medium Hard:	Specimen can be 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

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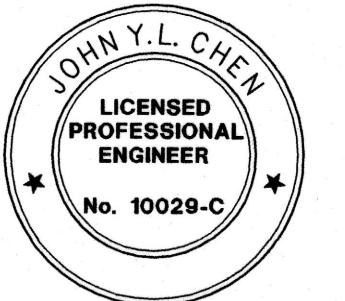
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION
BORING NOTES, SOIL LEGEND & ROCK LEGEND
HANA HIGHWAY IMPROVEMENTS, PHASE 2C Huelo to Hana Project No. 360AB-01-18
Scale: Date: March 2018
SHEET No. GT-1 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-18	2018	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		0	0	32		20			grades with gravel	
	76		0	0	22		25				
										grades to very hard	
	60		0	0	70		30			Brownish gray BASALT, severely fractured, highly weathered, medium soft	
			40	0			35				
			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	
							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	

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ORIGINAL PLAN	
NOTE BOOK	
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION


BORING LOGS 1


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

Scale: Date: March 2018

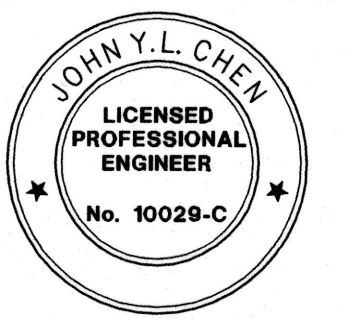
SHEET No. GT-2 OF 6 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-18	2018	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	SURVEY PLANNED BY	DATE
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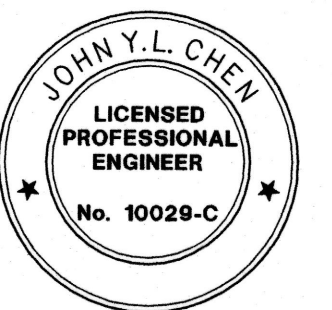
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<u>BORING LOGS 2</u>	
HANA HIGHWAY IMPROVEMENTS, PHASE 2C Huelo to Hana Project No. 360AB-01-18	
Scale:	Date: March 2018
SHEET No. GT-3 OF 6 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-18	2018	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 MH	4-inch ASPHALTIC CONCRETE	
	56				10	1.5	8-inch AGGREGATE BASE COURSE				
	62	60			18	2.0	Brown CLAYEY SILT with a little gravel (basaltic), very stiff, moist (residual soil) grades to very stiff				
LL=56 PI=17			33	0			10		CH	Dark gray COBBLES AND BOULDERS (BASALTIC), hard	
			22	0			Brown CLAY, stiff, moist (residual soil)				
	60				31	1.0	15		MH	Dark gray COBBLES AND BOULDERS (BASALTIC), hard	
			0	0			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	grades to slightly fractured, unweathered, very hard			
			100	72			35				
			97	38			40				
			100	75			45				
						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	Brown CLAYEY SILT with traces of gravel, very stiff, moist (residual soil) grades to medium stiff grades to very stiff					
	60				18	1.5	grades with a little gravel					
LL=46 PI=9	52	70	50	0	Ref/0" Ref.		15		CH	Gray COBBLES AND BOULDERS (BASALTIC) with sand, very hard		
			23	10			20			Reddish brown CLAY, very stiff, moist (residual soil)		
	56		19	0	14	1.5	25			Gray COBBLES AND BOULDERS (BASALTIC) with sand, very hard		
	39		17	0	32	2.0	30	ML		Brownish gray COBBLES AND BOULDERS (BASALTIC) in a sand and silt matrix, hard		
56		54	0	55/6" +Ref/0" Ref.	2.0	35	Greenish gray SILT with traces of coarse sand and gravel, very stiff					
			40	40			40			Dark gray BASALT, severely fractured, moderately weathered, hard		
			82	37	Ref/0" Ref.		45			Dark gray BASALT, moderately fractured, unweathered, very hard		
			100	46			50			grades to severely fractured, moderately weathered, medium hard		
							51			grades to slightly to moderately fractured, unweathered, very hard		
							55			Boring terminated at 51 feet		
							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
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QUANTITIES BY	
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ORIGINAL PLAN	
NOTE BOOK	
No.	



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John Chen
GEOLABS, INC.
LICENSE EXPIRES 4-30-20

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS 4

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







Scale: Date: March 2018



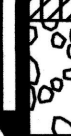

SHEET No. GT-4 OF 6 SHEETS

ORIGINAL PLAN	DATE	_____

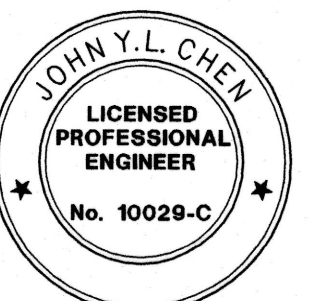
NOTE BOOK	DESIGNED BY	_____

No.	CHECKED BY	_____

GEOLABS, INC. Geotechnical Engineering							HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII				Log of Boring 503										
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		37	13	40		5		GC CH 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											
	36		24	0	15		10			Brown CLAY, stiff to very stiff, moist (residual soil)											
										grades to very hard											
										48	0	53	15	MH	Reddish brown CLAYEY SILT with traces of sand, moist, very hard (saprolite)						
	46		40	0	118	50/0" Ref.	20														
										63	0	50/0" Ref.	25			Grayish brown BASALT, moderately to closely fractured, extremely weathered, soft					
																67	30	30			grades to brownish gray, severely fractured, completely weathered, soft
										80	37	40	0	40	0						50/0" Ref.
																40	0	55/6" +Ref/0" Ref.	50		
										grades to gray											
										grades to brownish gray											
	Boring terminated at 51.5 feet																				

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	6-inch ASPHALTIC CONCRETE		
							GP		12-inch AGGREGATE BASE COURSE			
	46		0	0	52/6" +50/3"	2.0	10		MH	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			Grayish brown COBBLES AND BOULDERS in a sand and silt matrix, hard		
							CL		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)					
							Grayish brown BASALT, severely fractured, moderately to highly weathered, medium hard					
	Boring terminated at 23 feet											
							25					
							30					
							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		

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



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LICENSE EXPIRES 4-30-20

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION


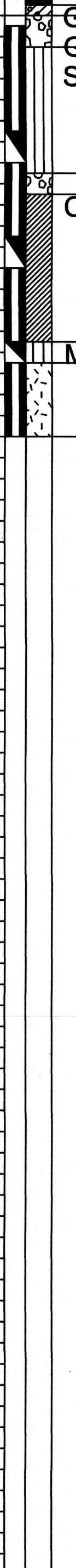
BORING LOGS 4


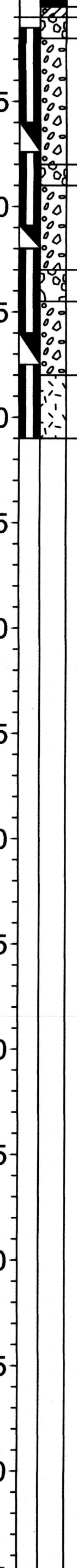
HANA HIGHWAY
IMPROVEMENTS, PHASE 2C
Huelo to Hana
Project No. 360AB-01-18

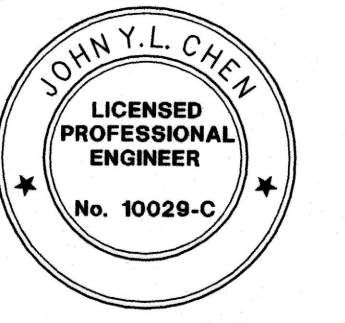
Scale: Date: March 2018

SHEET No. GT-5 OF 6 SHEETS

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

		GEOLABS, INC.		Geotechnical Engineering		HANA HIGHWAY IMPROVEMENTS DISTRICT OF HANA, MAUI, HAWAII		Log of Boring 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		47	0	50/0" Ref.		5		GC	6-inch ASPHALTIC CONCRETE	
									GP	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		29	0	12	1.3	10	CH		Brown CLAY, stiff, moist (residual soil)	
			0	0	14	1.3	15				
	33		57	0	10/6" +50/0" Ref.	2.0	20	ML		Greenish gray SILT, stiff, moist (residual soil)	
							25			Gray BASALT, severely fractured, moderately weathered, medium hard to hard	
							30			Boring terminated at 21 feet	
							35				
							40				
							45				
							50				
							55				
							60				
							65				
							70				
							75				
Date Started: July 16, 2012		Date Completed: July 16, 2012		Water Level:							
Logged By: Greg Young		Drill Rig: MOBILE B-53.1									
Total Depth: 21 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 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	48	6	0	50/0" Ref.	16/6" +50/5"	5		GC	6-inch ASPHALTIC CONCRETE
									GP	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
	17	17	50/6" +Ref/1"	10	37	10	GP		Brownish gray SANDY GRAVEL, moist, soft (saprolite)	
										Dark gray COBBLES AND BOULDERS in sand and silt matrix, moist, hard
										Brownish gray SANDY GRAVEL, moist, medium soft (saprolite)
										Dark gray BASALT, moist, closely fractured, moderately weathered, hard
										Boring terminated at 21 feet
							25			
							30			
							35			
							40			
							45			
							50			
							55			
							60			
							65			
							70			
							75			
Date Started: July 13, 2012		Date Completed: July 13, 2012		Water Level:						
Logged By: Greg Young		Drill Rig: MOBILE B-53.1								
Total Depth: 21 feet		Drilling Method: 4" Auger & HQ Coring								
Work Order: 6193-00		Driving Energy: 140 lb. wt., 30 in. drop								



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LICENSE EXPIRES 4-30-20

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS 5	
HANA HIGHWAY IMPROVEMENTS, PHASE 2C	
Huelo to Hana	
Project No. 360AB-01-18	
Scale:	Date: March 2018
SHEET No. GT-6 OF 6 SHEETS	