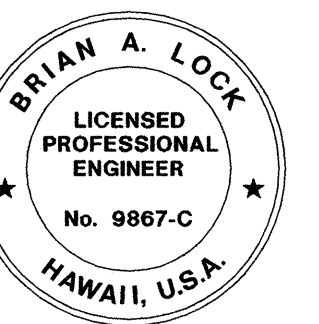
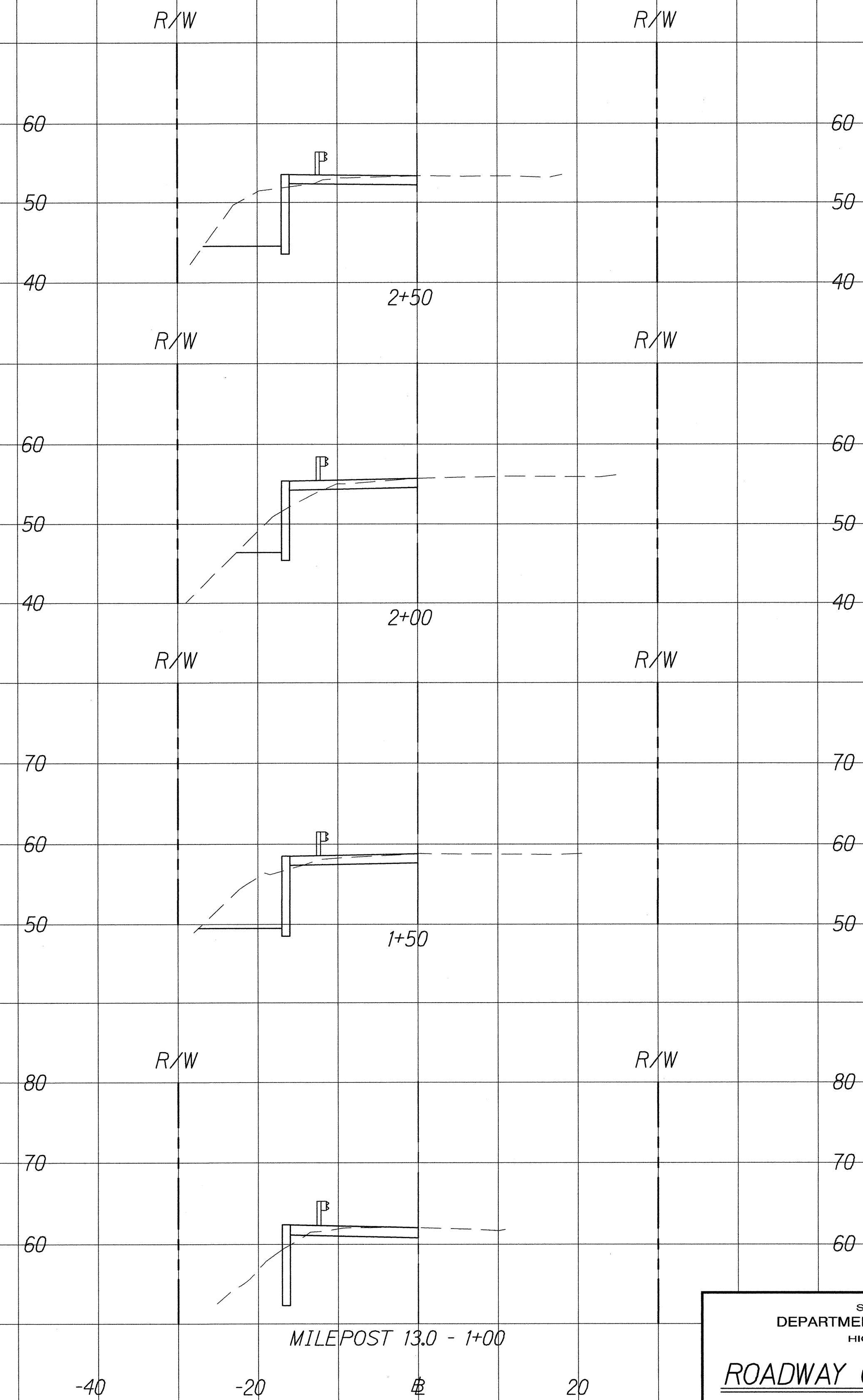



	FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
	HAWAII	HAW.	360AB-01-09	2014	46	47

NOTE:
See Structural
Sheets for Actual
Wall Heights



THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.

 APRIL 30, 2016
SON OKAMOTO CORPORATION LIC. EXP. DATE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

ROADWAY CROSS SECTIONS

HANA HIGHWAY
IMPROVEMENTS, PHASE 2A
Huelo to Hana
Project No. 360AB-01-09

Scale: 1" = 10' Date: April 2014

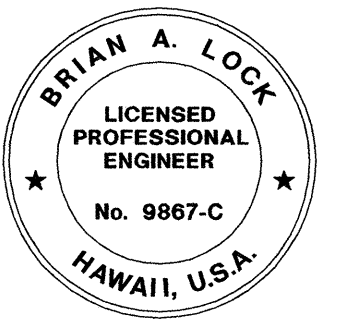
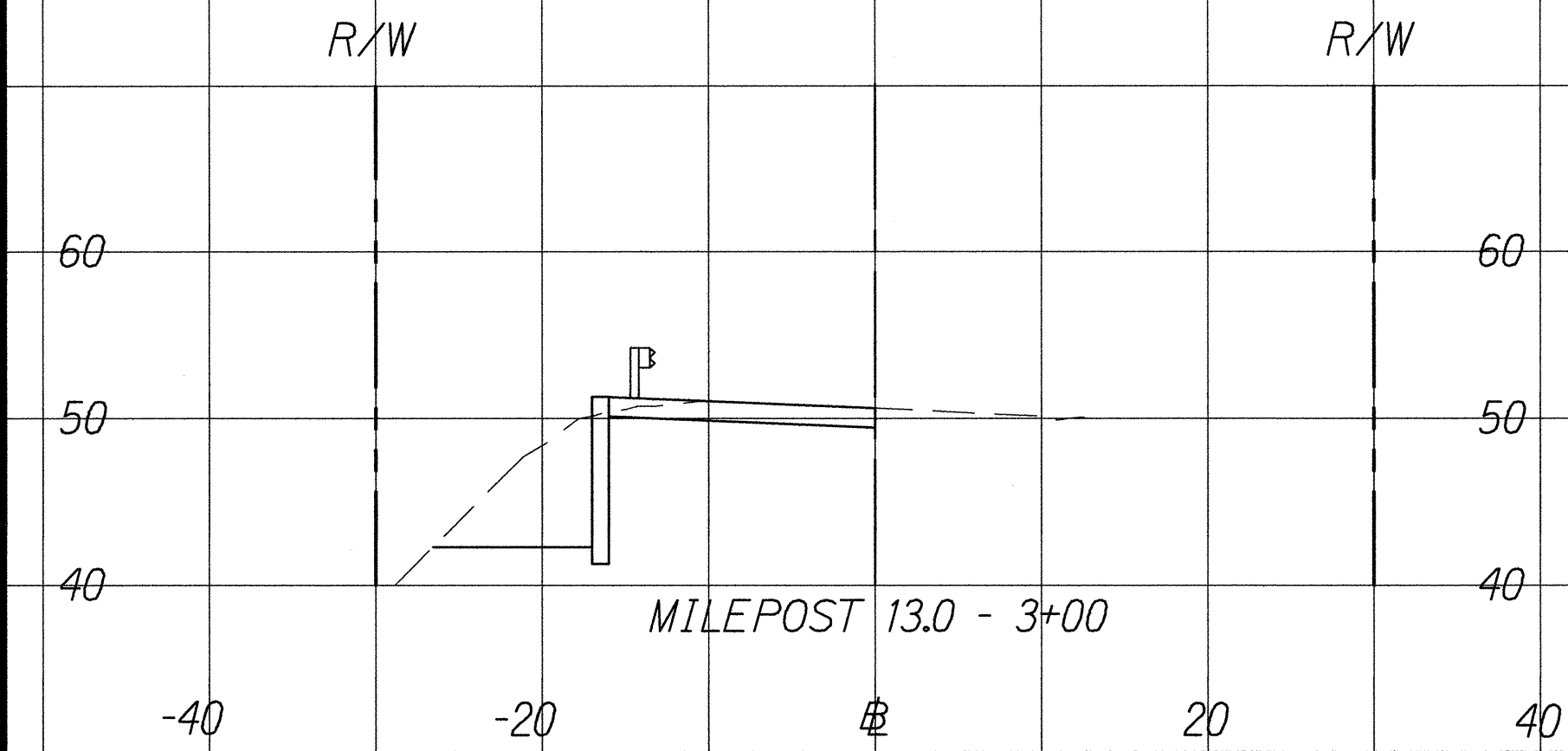
SHEET No. XS-1 OF 2 SHEETS

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

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-09	2014	47	47

NOTE:
See Structural
Sheets for Actual
Wall Heights

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

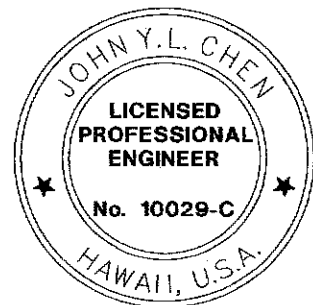


THIS WORK WAS PREPARED BY ME
OR UNDER MY SUPERVISION.
Wilson Okamoto
WILSON OKAMOTO CORPORATION LIC. EXP. DATE

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
ROADWAY CROSS SECTIONS	
HANA HIGHWAY IMPROVEMENTS, PHASE 2A Huelo to Hana Project No. 360AB-01-09	
Scale: 1" = 10'	Date: April 2014
SHEET No. XS-2 OF 2 SHEETS	

GEOTECHNICAL NOTES:

- 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.
- For boring locations, see Civil Sheet DP-2.
- 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.
- 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.
- The data given is for general information only. Bidders shall examine the site and the boring data and draw their own conclusions therefrom as to the character of materials to be encountered. The Engineer will not assume responsibility for variations of subsoil quality or conditions other than at the boring locations shown and at the time the borings were taken.



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
John Chen
GEOLABS, INC.
LICENSE EXPIRES 4-30-16

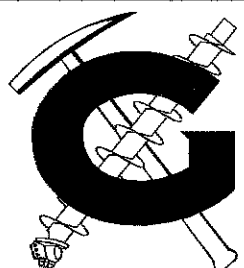

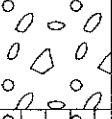



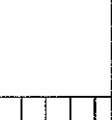
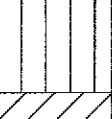
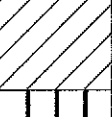
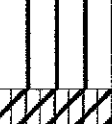

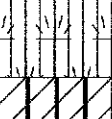
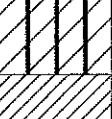

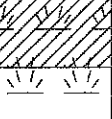
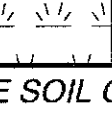
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

HANA HIGHWAY
IMPROVEMENTS, PHASE 2A
Huelo to Hana
Project No. 360AB-01-09









Scale: Date: April 2014

SHEET No. GBL-1 OF 11 SHEETS

		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	
	SANDS	MORE THAN 12% FINES		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES	
		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	
FINE-GRAINED SOILS	SANDS	SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES	
		MORE THAN 12% FINES		SC	CLAYEY SANDS, SAND-CLAY MIXTURES	
		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
	SILTS AND CLAYS		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	
HIGHLY ORGANIC 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	

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

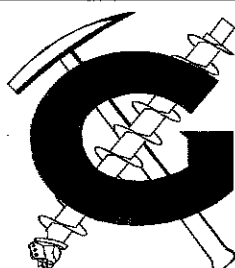


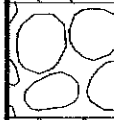

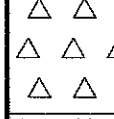



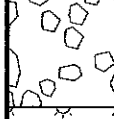
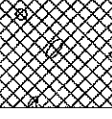
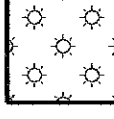

LEGEND

	(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

LOG LEGEND FOR ROCK 6193-00.GPJ, GEOLABS.GDT 6/6/14




		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				
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 broke 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

6/10/14 ADDED SHEET PER ADDENDUM 1

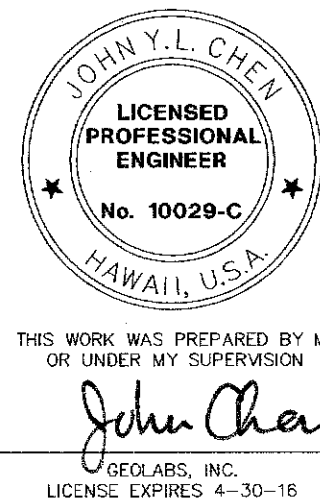
DATE REVISION

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

GEOLABS, INC.		HANA HIGHWAY IMPROVEMENTS								Log of Boring	
Geotechnical Engineering		DISTRICT OF HANA, MAUI, HAWAII								201	
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	
TXUU	40	73			10				GC??	8-inch ASPHALTIC CONCRETE	
	51				11		CH		4-inch AGGREGATE BASE COURSE		
	45	69			25	2.5	5			Brown CLAY with traces of fine sand and gravel, stiff to very stiff, moist (residual soil)	
	44				10	0.8	10				
Sieve #200 = 23.6%	51	74			28	>4.5	15		SM	Brown angular SILTY SAND with gravel, dense, moist (saprolite)	
	26		7	0	30/0" Ref. 14		20			grades to with cobbles	
	56		40	0	36		25			grades to with some gravel (basaltic) grades to dense	
					Ref/0" Ref.		30			Gray BASALT, severely fractured, slightly weathered, hard	
			35	7			35				
			90	18			40		SC	Brown CLAYEY SAND, medium dense, moist (clinker)	
							45			Gray BASALT, severely fractured, slightly weathered, hard	
			100	38			45			Brownish red BASALT, severely fractured, highly weathered, soft (clinker)	
							50			Gray vugular BASALT, closely to moderately fractured, slightly weathered, hard	
							50			Boring terminated at 51.5 feet	
							55				
							60				
							65				
							70				
							75				
Date Started: June 29, 2012								Water Level: ▽ 22.1 ft. 06/29/2012 1230 HRS			
Date Completed: June 29, 2012											
Logged By: Marcus Gruver								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 202		
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): 55.5 *	
										Description	
Sieve #200 = 16.4%	50	70			34	3.5			GC?? CH	5-inch ASPHALTIC CONCRETE	
	51				11	2.0	7-inch AGGREGATE BASE COURSE				
	49	67			37	0.5	5		SM	Dark brown CLAY with traces of gravel (basaltic), hard, moist (residual soil) grades to stiff grades to hard, wet	
	48				26		10			Brown SILTY SAND with some gravel, medium dense, moist to wet (saprolite) grades to very hard, moist	
	48	72			50/6" +Ref/0" Ref.		15			grades to dense, moist to wet	
	52				35		20			Boring terminated at 21.5 feet	
							25				
							30				
							35				
							40				
							45				
							50				
							55				
							60				
							65				
							70				
							75				
Date Started: July 9, 2012								Water Level:  Not Encountered			
Date Completed: July 9, 2012											
Logged By: Greg Young								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			

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	360AB-01-09	2014	ADD. 47 5-2	47



STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS	
HANA HIGHWAY IMPROVEMENTS, PHASE 2A Huelo to Hana Project No. 360AB-01-09	
Scale:	Date: April 2014
SHEET No. GBL-2 OF 11 SHEETS	

6/10/14	ADDED SHEET PER ADDENDUM 1
DATE	REVISION