

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	61C-01-04#	2004	52	91

02-04

Boring Log Legend

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
		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
		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
				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
			HIGHLY ORGANIC SOILS		

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

LEGEND



2-INCH O.D. STANDARD PENETRATION TEST
3-INCH O.D. MODIFIED CALIFORNIA SAMPLE
SHELBY TUBE SAMPLE
GRAB SAMPLE
CORE SAMPLE

LL LIQUID LIMIT
PI PLASTICITY INDEX
TV TORVANE SHEAR (tsf)
PEN POCKET PENETROMETER (tsf)
UC UNCONFINED COMPRESSION (psi)
▽ WATER LEVEL OBSERVED IN BORING

GEOTECHNICAL NOTES

- A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Kalaniana'ole Highway, Emergency Landslide Repairs at Castle Junction, FAP No. F-15(9), Kaneohe, Oahu, Hawaii" dated August 22, 2003 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 Sheet G-1.
- 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.

DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
NOTED BY	_____
QUANTITIES BY	_____
ORIGINAL PLAN	_____

CLAYTON S. M. MURA

LICENSED PROFESSIONAL ENGINEER

No. 4176-C

HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE

EXPIRATION DATE OF THE LICENSE

4-30-04

GEOLABS, INC.

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION

HIGHWAYS DIVISION

BORING LOG LEGEND AND NOTES

KALANIANA'OLE HIGHWAY

EMERGENCY LANDSLIDE REPAIRS AT CASTLE JUNCTION

PROJECT NO. 61C-01-04#

02-04

Scale: NTS

Date: Sept. 26, 2003

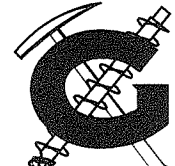












SHEET No. B-1 OF 3 SHEETS













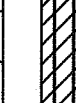
"AS-BUILT"

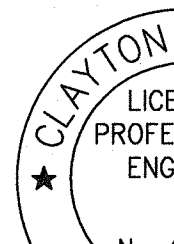
52

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	61C-01-04#	2004	53	91

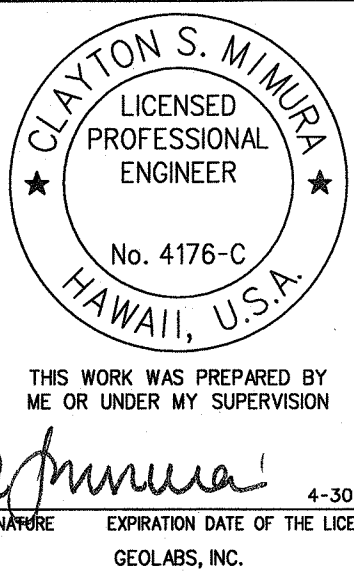
02-04

 GEOLABS, INC. Geotechnical Engineering		CASTLE JUNCTION SLIDE AREA REPAIRS KALANIANA'OLE HIGHWAY, FAP NO. F-15(9) KANE'OE, OAHU, HAWAII							Log of Boring 1		
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 MSL): 414.6 *	
										Description	
	45	72			32	4.0			CH	Reddish orange SILTY CLAY, very stiff, damp (residual soil)	
	42				12	3.5				grades to reddish brown	
	62	59			17	2.0	5		MH	Reddish brown CLAYEY SILT with friable rock fragments, stiff, damp (saprolite)	
LL = 91 PI = 40										grades with multi-color mottling	
	53				9	2.0	10			grades without friable rock fragments	
LL = 61 PI = 17	52	64			17	1.5	15				
	54				11	2.5	20			grades to dark brown with multi-color mottling with friable rock fragments, moist	
	55	61			25	2.5	25			grades to reddish brown with multi-color mottling, very stiff	
	63				10	1.5	30			grades to reddish orange with multi-color mottling, stiff	
	59	63			33	1.0	35				
	61				19	2.5	40			grades to very stiff	
	69	65			60	2.5	45			grades to hard, moist to wet (seepage water encountered)	
	51				47	4.0	50			Boring terminated at 51.5 feet	
										* Elevations estimated from Grading Plan transmitted by Parsons Brinckerhoff Quade & Douglas, Inc. on August 11, 2003.	
Date Started: July 9, 2003										Water Level: ∇ Not encountered	
Date Completed: July 9, 2003											
Logged By: Y. Chiba										Drill Rig: CME-75	
Total Depth: 51.5 feet										Drilling Method: 4" Auger	
Work Order: 5075-00										Driving Energy: 140 lb. wt., 30 in. drop	

 GEOLABS, INC. Geotechnical Engineering		CASTLE JUNCTION SLIDE AREA REPAIRS KALANIANA'OLE HIGHWAY, FAP NO. F-15(9) KANE'OE, OAHU, HAWAII							Log of Boring 2			
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 MSL): 405 *		
										Description		
LL = 73 PI = 29	51	64			15	2.0			CH	Reddish brown with multi-color mottling SILTY CLAY, very stiff, damp (saprolite)		
	54				8	2.5						
	58	59			22	2.5	5			grades to moist		
	55				11	0.5	10		MH	Brown with multi-color mottling CLAYEY SILT, stiff, moist		
	46	70			36	2.5	15			grades to very stiff		
	44				34	1.0	20			grades to grayish tan with multi-color mottling, stiff		
	43	68			41	4.0	25			grades to friable, hard		
	42				19	3.0	30			grades to very stiff		
	25	94			20/.3' Ref.	> 4.5	35		ML	Yellowish tan with multi-color mottling SANDY SILT, friable, very hard, damp		
	29				34/.5' + 30/.3' Ref.	> 4.5	40					
24				72		45		grades to tannish gray with multi-color mottling				
20				35/.5' + 30/.3' Ref.		50		SM	Gray with multi-color mottling BASALT (breaks down to silty sand), highly to extremely weathered, dense, damp			
										Boring terminated at 51.3 feet		
											55	
Date Started: July 10, 2003							Water Level: ∇ Not encountered					
Date Completed: July 11, 2003												
Logged By: Y. Chiba							Drill Rig: Track Rig					
Total Depth: 51.3 feet							Drilling Method: 4" Auger					
Work Order: 5075-00							Driving Energy: 140 lb. wt., 30 in. drop					



SURVEY PLOTTED BY	DATE
DRAWN BY	
DESIGNED BY	
CHECKED BY	
NOTE BOOK	
NA	



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

KALANIANA'OLE HIGHWAY
EMERGENCY LANDSLIDE REPAIRS AT CASTLE JUNCTION

PROJECT NO. 61C-01-04# 02-04

Scale: NTS Date: Sept. 26, 2003

SHEET No. B-2 OF 3 SHEETS

"AS-BUILT"

02-04

SHEET No. *B-3* OF *3* SHEETS