FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	6IC-~~01-04M~~	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
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	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
MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE	50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	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
50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE	MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			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
	3-INCH O.D. MODIFIED CALIFORNIA SAMPLE	PI	PLASTICITY INDEX
S	SHELBY TUBE SAMPLE	TV	TORVANE SHEAR (tsf)
G	GRAB SAMPLE	PEN	POCKET PENETROMETER (tsf)
	CORE SAMPLE	UC	UNCONFINED COMPRESSION (psi)
		▽	WATER LEVEL OBSERVED IN BORING

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

GEOTECHNICAL NOTES

1. A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Kalanianaole 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.

2. For boring locations, see Sheet G-1.

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.

CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE 4-30-04 EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOG LEGEND AND NOTES

KALANIANAOLE HIGHWAY
EMERGENCY LANDSLIDE REPAIRS AT CASTLE JUNCTION
PROJECT NO. 6IC-~~01-04M~~ 02-04

Scale: NTS Date: Sept. 26, 2003

SHEET No. B-1 OF 3 SHEETS

"AS-BUILT"

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

02-04

GEOLABS, INC.
Geotechnical Engineering

CASTLE JUNCTION SLIDE AREA REPAIRS
KALANIANAOLE HIGHWAY, FAP NO. F-15(9)
KANEOHE, OAHU, HAWAII

Log of Boring 1

Approximate Ground Surface Elevation" "(feet MSL): 414.6 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	45	72			32	4.0				CH	Reddish orange SILTY CLAY, very stiff, damp (residual soil)
	42				12	3.5					grades to reddish brown
										MH	Reddish brown CLAYEY SILT with friable rock fragments, stiff, damp (saprolite)
	62	59			17	2.0	5				grades with multi-color mottling
LL=91 PI=40	53				9	2.0	10				grades without friable rock fragments
	52	64			17	1.5	15				
LL=61 PI=17	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
							55				* 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

BORING LOG DOT 5075-00.GPJ GEOLABS.GDT 8/19/03

GEOLABS, INC.
Geotechnical Engineering

CASTLE JUNCTION SLIDE AREA REPAIRS
KALANIANAOLE HIGHWAY, FAP NO. F-15(9)
KANEOHE, OAHU, HAWAII

Log of Boring 2

Approximate Ground Surface Elevation" "(feet MSL): 405 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	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
										MH	Brown with multi-color mottling CLAYEY SILT, stiff, moist
LL=73 PI=29	55				11	0.5	10				
	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
										ML	Yellowish tan with multi-color mottling SANDY SILT, friable, very hard, damp
	25	94			20/.3' Ref.	>4.5	35				
	29				34/.5' +30/.3' Ref.	>4.5	40				
	24				72		45				grades to tannish gray with multi-color mottling
										SM	Gray with multi-color mottling BASALT (breaks down to silty sand), highly to extremely weathered, dense, damp
	20				35/.5' +30/.3' Ref.		50				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

BORING LOG DOT 5075-00.GPJ GEOLABS.GDT 8/19/03

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

CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE 4-30-04 EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

KALANIANAOLE HIGHWAY
EMERGENCY LANDSLIDE REPAIRS AT CASTLE JUNCTION
PROJECT NO. 61C-~~01-04M~~ 02-04

Scale: NTS Date: Sept. 26, 2003

SHEET No. B-2 OF 3 SHEETS

"AS-BUILT"

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	61C-~~01-04M~~	2004	54	91

02-04

GEOLABS, INC.
Geotechnical Engineering

CASTLE JUNCTION SLIDE AREA REPAIRS
KALANIANAOLE HIGHWAY, FAP NO. F-15(9)
KANEOHE, OAHU, HAWAII

Log of Boring 3

Approximate Ground Surface Elevation" "(feet MSL): 450 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	39	69			14			CH	Reddish orange with multi-color mottling SILTY CLAY, stiff, damp (residual soil)
	42				8	1.0	5		grades to medium stiff
								MH	Reddish brown with multi-color mottling CLAYEY SILT, medium stiff, moist (residual soil)
	51	66			10	1.5	10		
								MH	Yellowish tan with multi-color mottling CLAYEY SILT, medium stiff, moist (saprolite)
LL=60 PI=17	52				5	1.5	15		grades to reddish brown with multi-color mottling with some friable rock fragments
	45	71			17	2.5	20		grades to tannish brown with multi-color mottling, stiff to very stiff
									grades to orange-red with multi-color mottling, stiff
LL=61 PI=19	47				12	1.5	25		
	50	57			19	1.0	30		
	42				21	1.5	35		grades to brown with multi-color mottling with sand
	47	71			20	1.5	40	MH	Dark brown with multi-color mottling CLAYEY SILT with some sand, stiff, moist
	27				34	4.0	45	SM	Grayish brown with multi-color mottling SILTY SAND with some extremely weathered basaltic rock, hard, damp (saprolite)
	33	84			75	4.0	50	MH	Brownish tan CLAYEY SILT, hard, damp (saprolite)
							55		

Date Started:	July 14, 2003	Water Level: ⊽	Not encountered
Date Completed:	July 18, 2003		
Logged By:	Y. Chiba	Drill Rig:	Track Rig
Total Depth:	81.5 feet	Drilling Method:	4" Auger & NX Coring
Work Order:	5075-00	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 4/29/03 GEOLABS.GDT 4/29/03

GEOLABS, INC.
Geotechnical Engineering

CASTLE JUNCTION SLIDE AREA REPAIRS
KALANIANAOLE HIGHWAY, FAP NO. F-15(9)
KANEOHE, OAHU, HAWAII

Log of Boring 3

(Continued from previous plate)

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	31	86			61	4.0	60	MH	grades to grayish brown with multi-color mottling
	30				54	4.0			
							65		Grayish tan BASALT (crushes to clayey silt and sand), severely fractured, highly to extremely weathered, medium dense (basaltic dike rock)
	16		37	0	60/.1' Ref.				
	8		21	0	68		70		
	9		11	0	40/.5' +30/.3' Ref.		75		grades to tannish brown with gray mottling
	6				29		80		Boring terminated at 81.5 feet
							85		
							90		
							95		
							100		
							105		
							110		

Date Started:	July 14, 2003	Water Level: ⊽	Not encountered
Date Completed:	July 18, 2003		
Logged By:	Y. Chiba	Drill Rig:	Track Rig
Total Depth:	81.5 feet	Drilling Method:	4" Auger & NX Coring
Work Order:	5075-00	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 4/29/03 GEOLABS.GDT 4/29/03

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

CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

4-30-04
SIGNATURE EXPIRATION DATE OF THE LICENSE
GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

KALANIANAOLE HIGHWAY
EMERGENCY LANDSLIDE REPAIRS AT CASTLE JUNCTION
PROJECT NO. 61C-~~01-04M~~ 02-04

Scale: NTS Date: Sept. 26, 2003

SHEET No. B-3 OF 3 SHEETS

"AS-BUILT"