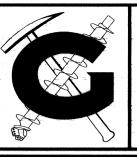


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SHEET No. C-33 OF 43 SHEETS



GEOLABS, INC.

Geotechnical Engineering

Log Legend

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

•	MAJOR DIVISION	S ,	US	CS -	TYPICAL DESCRIPTIONS
	GRAVELS	CLEAN GRAVELS	0000	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
COARSE-	GRAVELS	LESS THAN 5% FINES		_s GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
GRAINED SOILS	MORE THAN 50% OF COARSE FRACTION	GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
	RETAINED ON NO. 4 SIEVE	MORE THAN 12% FINES		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS	CLEAN SANDS	0	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
MORE THAN 50% OF MATERIAL	50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4	LESS THAN 5% FINES		SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
RETAINED ON NO. 200 SIEVE		SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
	SIEVE	MORE THAN 12% TINES		SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE- GRAINED SOILS	SILTS			ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	AND CLAYS	LIQUID LIMIT LESS THAN 50		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	011 — 0			MH 2	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
	SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE		СН	INORGANIC CLAYS OF HIGH PLASTICITY
SIEVE				ОН	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIG	GHLY ORGANIC SO	DILS	7 77 7 77 77	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 (3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE

SHELBY TUBE SAMPLE

GRAB SAMPLE CORE SAMPLE LL LIQUID LIMIT

PI PLASTICITY INDEX

TV TORVANE SHEAR (tsf)

UNCONFINED COMPRESSION (psi)

PEN POCKET PENETROMETER (tsf)

WATER LEVEL OBSERVED IN BORING



GEOLABS, INC.

Geotechnical Engineering

KALANIANAOLE HIGHWAY MEDIAN IMPROVEMENTS VICINITY OF OLOMANA GOLF COURSE WAIMANALO, OAHU, HAWAII

Log of Boring

Labo	oratory				ield						
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)		Penetration Resistance (blows/foot)	et Pen.	Depth (feet)	e)(e	hic	r m	Approximate Ground Surface Elevation (feet MSL): 80 *
Other	Moist Conte	Dry D (pcf)	Core	RQD (%)	Pene Resis (blow	Pocket (tsf)	Dept	Sample	Graphic	SOSO	Description
	37	79	Mari ti		31	K	_			СН	Brown SILTY CLAY with gravel and sand, stiff, moist (fill)
	12				15		-				grades with more gravel
	8	118			30		5-	V o		GM	Brownish gray SILTY GRAVEL (BASALTIC),
							_				dense, damp to moist (fill)
	7				38.		10 -			e de la companya de l	
									7		* Elevations estimated from Topographic Plan received on January 30, 2007 from KN Consulting Services, Inc.
							15 -				
							_				
*		. v					20 -				
							_				
mar e taring							25 –				
Date Start				3, 2006		Water I	evel	• · · · · · · · · · · · · · · · · · · ·	N	lot E	ncountered
Date Com Logged By			ember : atronic			Drill Rig	1 :			ME-	75
Total Dep		11.5		,		Drilling		nod:		" Au	
Work Orde			-00(B)			Driving					o. wt., 30 in. drop

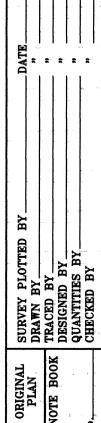
LICENSED PROFESSIONAL ENGINEER

APRIL 30, 2010 EXPIRATION DATE OF LICENSE THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION BORING LOGS -

KALANIANAOLE HIGHWAY MEDIAN IMPROVEMENTS VICINITY OF OLOMANA GOLF COURSE PROJECT NO. 72A-02-06

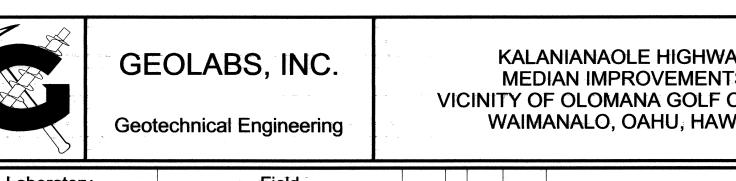
SCALE: N/A

DATE: June 2008



SHEET No. C-34 OF 43 SHEETS 36

FISCAL SHEET NO. TOTAL SHEETS PROJECT: NO. 72A-02-06 2008 37



KALANIANAOLE HIGHWAY MEDIAN IMPROVEMENTS VICINITY OF OLOMANA GOLF COURSE WAIMANALO, OAHU, HAWAII	Boring

								T	1.	
Lab	oratory			· · · · · · · · · · · · · · · · · · ·	ield					Approximate Ground Surface
ests	(%)	sity	ry (%)	<u> </u>	tion nce oot)	Pen.	eet)			Elevation (feet MSL): 54 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	nscs	Description
	- 1	v ·	Ÿ				, , , , .	7///	GW	4-inch ASPHALTIC CONCRETE
LL=62	34	84 -		er e,	23		-		CH	Gray SANDY GRAVEL (fill) Grayish brown SILTY CLAY, very stiff, moist
PI=39							_			(alluvium)
	30				14		_			
#						<u>.</u>				
	26	91			20		5-			
en e							_			
		±.					_			
4 ,				2.						
						7	7			
4 , 57, 5		-							MH	Grayish brown CLAYEY SILT with decomposed gravel, stiff, very moist (residual soil)
Maria de la companya della companya della companya della companya de la companya della companya	34		-		7	-	10-			graver, sum, very moist (residual som)
			·				_			
		4				* *	_	-		Boring terminated at 11.5 feet
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ig w street	- '				- P - P		_			
<u> </u>			1 /	A 185 A			O.F.			· · ·
Date Sta	rted:	Nove	mber	3. 200	6 - IV	Vater I	25 -		9.1 ft	11/3/06 1050 HRS
Date Con								- <u></u>		Plate
_ogged E	By:	S. La	tronic			Drill Riç	g :	. (CME-	75
Total Dep	oth:	11.5	feet	# 1755 v.	N-0.	Drilling	Met	rod: 4	4" Au	ger A - 2
Work Ord	der:	5699	-00(B)			Driving	Ene	rgy: _ ^	140 lk	o. wt., 30 in. drop

Approximate Ground Surface Elevation (feet MSL): 44* Approximate Ground Surface Elevation (feet MSL): 44* Approximat	
9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	
9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9	
9 93 9 9	
12 90 7 SP Tan SAND with traces of wood and chard loose to medium dense, damp (fill) 12 90 7 SP Tan SAND with traces of wood and chard loose to medium dense, damp (fill) 12 grades to loose MH Grayish brown CLAYEY SILT, very stiff, n (residual soil) ML Brownish gray SANDY SILT, hard, damp (saprolite) 16 100 60/.5' Ref. Brownish gray BASALT, highly weathered	oal,
grades to loose MH Grayish brown CLAYEY SILT, very stiff, n (residual soil) MB Brownish gray SANDY SILT, hard, damp (saprolite) 16 100 60/.5' Ref. Brownish gray BASALT, highly weathered	
(residual soil) ML Brownish gray SANDY SILT, hard, damp (saprolite) 16 100 60/.5' Ref. Brownish gray BASALT, highly weathered	
16 100 From ish gray SANDY SILT, hard, damp (saprolite) 18 Brownish gray SANDY SILT, hard, damp (saprolite) 19 Brownish gray BASALT, highly weathered	noist
Ref. Brownish gray BASALT, highly weathered	- -
	d ,
20/.0' Ref. Boring terminated at 20 feet	
Date Started: November 3, 2006 Water Level: Water Level: Note Started: November 3, 2006	D1. 1
Date Completed: November 3, 2006 Logged By: S. Latronic Drill Rig: CME-75	Plate
Total Depth: 20 feet Drilling Method: 4" Auger	

KALANIANAOLE HIGHWAY
MEDIAN IMPROVEMENTS
VICINITY OF OLOMANA GOLF COURSE

WAIMANALO, OAHU, HAWAII

GEOLABS, INC.

LICENSED PROFESSIONAL ENGINEER
No. 5635-C

Boring

3

APRIL 30, 2010 EXPIRATION DATE OF LICENSE THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

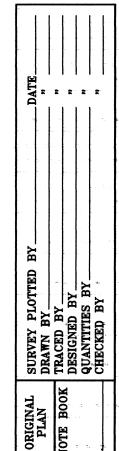
KALANIANAOLE HIGHWAY MEDIAN IMPROVEMENTS VICINITY OF OLOMANA GOLF COURSE PROJECT NO. 72A-02-06

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS - 2

SCALE: N/A

SHEET No. C-35 OF 43 SHEETS



DATE: June 2008