






















GEOTECHNICAL NOTES:

1. A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Volcano Road Intersection Improvements at Kulani Road, Mountain View, Island of Hawaii" dated December 3, 2010 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 Sheets 12 & 13.
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.

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HS-STP-011-2(38)	2010	9	141

		GEOLABS, INC.		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
		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
			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	
	(3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE		PI	PLASTICITY INDEX	
	SHELBY TUBE SAMPLE		TV	TORVANE SHEAR (tsf)	
	GRAB SAMPLE		PEN	POCKET PENETROMETER (tsf)	
	CORE SAMPLE		UC	UNCONFINED COMPRESSION (psi)	
			W	WATER LEVEL OBSERVED IN BORING	
					Plate A

GEOLABS, INC.		VOLCANO ROAD INTERSECTION IMPROVEMENTS AT KULANI ROAD MOUNTAIN VIEW, ISLAND OF HAWAII		Log of Boring 1	
Geotechnical Engineering					
Laboratory		Field		Approximate Ground Surface Elevation (feet MSL): 1387.5 *	
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)
	7				30
	7				21
	24				45
			100	63	
			100	80	
			100	93	
			100	100	
				Boring terminated at 25 feet	
				* Elevations estimated from Topographic Survey Plan received from M&E Pacific, Inc. on 12/11/07.	
Date Started: October 1, 2007		Water Level: W Not Encountered		Plate	
Date Completed: October 1, 2007				A - 1	
Logged By: S. Latronic		Drill Rig: MOBILE B-53			
Total Depth: 25 feet		Drilling Method: 4" Auger & HQ Coring			
Work Order: 5927-00(B)		Driving Energy: 140 lb. wt., 30 in. drop			

GEOLABS, INC.		VOLCANO ROAD INTERSECTION IMPROVEMENTS AT KULANI ROAD MOUNTAIN VIEW, ISLAND OF HAWAII		Log of Boring 2	
Geotechnical Engineering					
Laboratory		Field		Approximate Ground Surface Elevation (feet MSL): 1376.5 *	
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)
			58	35	
			100	78	
			100	85	
			90	72	
				Boring terminated at 21.5 feet	
Date Started: October 1, 2007		Water Level: W Not Encountered		Plate	
Date Completed: October 1, 2007				A - 2	
Logged By: S. Latronic		Drill Rig: MOBILE B-53			
Total Depth: 21.5 feet		Drilling Method: 4" Auger & HQ Coring			
Work Order: 5927-00(B)		Driving Energy: 140 lb. wt., 30 in. drop			


PLOT DATE: November 30, 2010 @ 12:07:55 pm


LAST UPDATE: November 29, 2010 @ 09:54:51 am

PATH/FILENAME: C:\DOCUMENT~1\cheung\LOCALS~1\Temp\AcPublish_3164\09-11_VRW_Boring_Logs.dwg

BORING LOG 5927-00.GPJ GEOLABS.GDT 8/28/0810

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	HS-STP-011-2(38)	2010	11	141

		GEOLABS, INC. Geotechnical Engineering		VOLCANO ROAD INTERSECTION IMPROVEMENTS AT KULANI ROAD MOUNTAIN VIEW, ISLAND OF HAWAII		Log of Boring 5	
Laboratory		Field		Approximate Ground Surface Elevation (feet MSL): 1359 *			
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)
LL=95 PI=41	28 24 108 36			19 13 2 5			
							Sample Graphic
							USCS
							2-inch ASPHALTIC CONCRETE
							Gray SANDY GRAVEL, dense, moist (fill)
							Brownish gray SILTY GRAVEL, medium dense, moist (fill)
							Brown CLAYEY SILT, very soft, wet (volcanic ash)
							grades to medium stiff
							grades with cobbles
							Grayish brown GRAVEL AND COBBLES (BASALTIC) with sand and silt, medium dense (clinker)
							Gray vugular BASALT, moderately fractured, unweathered to slightly weathered, very hard (basalt formation)
							grades to massive
							Boring terminated at 25 feet
Date Started: October 3, 2007		Date Completed: October 3, 2007		Water Level: 7.7 ft. 10/3/07 1030 HRS		Plate	
Logged By: S. Latronic		Drill Rig: MOBILE B-53		Drilling Method: 4" Auger & HQ Coring		A - 5	
Total Depth: 25 feet		Driving Energy: 140 lb. wt., 30 in. drop					
Work Order: 5927-00(B)							

		GEOLABS, INC. Geotechnical Engineering		VOLCANO ROAD INTERSECTION IMPROVEMENTS AT KULANI ROAD MOUNTAIN VIEW, ISLAND OF HAWAII		Log of Boring 6	
Laboratory		Field		Approximate Ground Surface Elevation (feet MSL): 1352.5 *			
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)
			85 100 100 100	13 90 87 73			
							Sample Graphic
							USCS
							2.5-inch ASPHALTIC CONCRETE
							Gray SANDY GRAVEL, dense, moist (fill)
							Brownish gray GRAVEL AND COBBLES (BASALTIC) with sand and silt, dense, moist (clinker)
							Brownish gray vugular BASALT, closely fractured, moderately weathered, hard (basalt formation)
							Gray dense BASALT, slightly fractured, unweathered, very hard (basalt formation)
							grades with some vugs
							grades to reddish gray
							Boring terminated at 21.5 feet
Date Started: October 2, 2007		Date Completed: October 2, 2007		Water Level: Not Encountered		Plate	
Logged By: S. Latronic		Drill Rig: MOBILE B-53		Drilling Method: 4" Auger & HQ Coring		A - 6	
Total Depth: 21.5 feet		Driving Energy: 140 lb. wt., 30 in. drop					
Work Order: 5927-00(B)							

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

**Volcano Road Intersection and
Drainage Improvements**
Federal-Aid Project No. HS-STP-011-2(38)

Scale: None Date: November 2010

SHEET No. 3 OF 3 SHEETS