

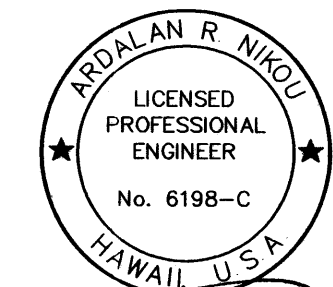
	<b>GEOLABS, INC.</b> Geotechnical Engineering	<b>Log Legend</b>	
<b>UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)</b>			
<b>MAJOR DIVISIONS</b>		<b>USCS</b>	
<b>COARSE-GRAINED SOILS</b>  MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE	<b>GRAVELS</b>  LESS THAN 5% FINES  MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	<b>CLEAN GRAVELS</b>	<b>GW</b> WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		<b>LESS THAN 5% FINES</b>	<b>GP</b> POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		<b>GRAVELS WITH FINES</b>	<b>GM</b> SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
		<b>MORE THAN 12% FINES</b>	<b>GC</b> CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	<b>SANDS</b>  LESS THAN 5% FINES  50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	<b>CLEAN SANDS</b>	<b>SW</b> WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		<b>LESS THAN 5% FINES</b>	<b>SP</b> POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		<b>SANDS WITH FINES</b>	<b>SM</b> SILTY SANDS, SAND-SILT MIXTURES
		<b>MORE THAN 12% FINES</b>	<b>SC</b> CLAYEY SANDS, SAND-CLAY MIXTURES
	<b>FINE-GRAINED SOILS</b>  50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE	<b>SILTS AND CLAYS</b>  LIQUID LIMIT LESS THAN 50	<b>ML</b> INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
			<b>CL</b> INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
<b>OL</b> ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY			
<b>MH</b> INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS			
<b>SILTS AND CLAYS</b>  LIQUID LIMIT 50 OR MORE		<b>CH</b> INORGANIC CLAYS OF HIGH PLASTICITY	
		<b>OH</b> ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS	
<b>HIGHLY ORGANIC SOILS</b>		<b>PT</b> PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS	
<b>NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS</b>			
<b>LEGEND</b>			
	(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 (psf)	
		WATER LEVEL OBSERVED IN BORING	
		Plate 3	

	<b>GEOLABS, INC.</b> Geotechnical Engineering	HAWAII BELT ROAD DRAINAGE IMPROVEMENTS VICINITY OF HAKALAU BRIDGE DISTRICT OF NORTH HILO, ISLAND OF HAWAII	Log of Boring <b>2</b>
<b>Laboratory</b>		<b>Field</b>	<b>Approximate Ground Surface Elevation (feet MSL): 194 *</b>
<b>Other Tests</b>	<b>Moisture Content (%)</b> <b>Dry Density (pcf)</b> <b>Core Recovery (%)</b> <b>RQD (%)</b> <b>Penetration Resistance (blows/foot)</b> <b>Pocket Pen. (tsf)</b>	<b>Depth (feet)</b> <b>Sample Graphic</b> <b>USCS</b>	
	46		<b>Description</b>  Brown <b>CLAYEY SILT</b> with roots and traces of sand, medium stiff, very moist  grades to orangish brown with sand and gravel  grades with more sand and gravel (Hand auger refusal) Boring terminated at 3 feet
	25		
	20		
		5	
		10	
Date Started: March 13, 2007		Water Level: $\nabla$ Not Encountered	
Date Completed: March 13, 2007		Plate 5	
Logged By: D. Gremminger		Drill Rig: Hand Auger	
Total Depth: 3 feet		Drilling Method: Hand Auger	
Work Order: 5751-00		Driving Energy: N/A	

	<b>GEOLABS, INC.</b> Geotechnical Engineering	HAWAII BELT ROAD DRAINAGE IMPROVEMENTS VICINITY OF HAKALAU BRIDGE DISTRICT OF NORTH HILO, ISLAND OF HAWAII	Log of Boring <b>3</b>
<b>Laboratory</b>		<b>Field</b>	<b>Approximate Ground Surface Elevation (feet MSL): 184.5 *</b>
<b>Other Tests</b>	<b>Moisture Content (%)</b> <b>Dry Density (pcf)</b> <b>Core Recovery (%)</b> <b>RQD (%)</b> <b>Penetration Resistance (blows/foot)</b> <b>Pocket Pen. (tsf)</b>	<b>Depth (feet)</b> <b>Sample Graphic</b> <b>USCS</b>	
	41		<b>Description</b>  Brown <b>SANDY SILT</b> with gravel (basaltic), medium stiff, very moist  grades to dark gray with orangish brown mottling  (Hand auger refusal) Boring terminated at 6 feet
	51		
	46		
		5	
	34		
		10	
Date Started: March 13, 2007		Water Level: $\nabla$ Not Encountered	
Date Completed: March 13, 2007		Plate 6	
Logged By: D. Gremminger		Drill Rig: Hand Auger	
Total Depth: 6 feet		Drilling Method: Hand Auger	
Work Order: 5751-00		Driving Energy: N/A	

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

**AECOM**

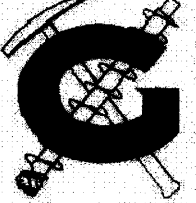


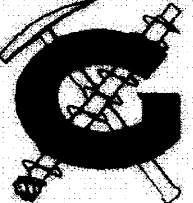
EXPIRATION DATE OF THE LICENSE 4/30/2012  
THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

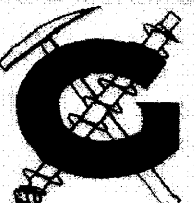
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>BORING LOGS</b>	
HAWAII BELT ROAD DRAINAGE IMPROVEMENTS, HAKALAU BRIDGE FEDERAL-AID PROJECT NO. STP-019-2(60)	
Scale: As Noted	Date: July 2010
SHEET No. 1 OF 3 SHEETS	



FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	STP-019-2(60)	2010	21	36

		<b>GEOLABS, INC.</b> Geotechnical Engineering	HAWAII BELT ROAD DRAINAGE IMPROVEMENTS VICINITY OF HAKALAU BRIDGE DISTRICT OF NORTH HILO, ISLAND OF HAWAII	Log of Boring <b>4</b>							
Laboratory		Field									
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 169 *
	25									CH	Dark brown <b>SANDY CLAY</b> , medium stiff, very moist
	55										grades with brown and orange mottling with less sand and more clay
	26										grades with gravel
											(Hand auger refusal) Boring terminated at 4 feet
							5				
							10				
Date Started: March 13, 2007		Water Level: <input checked="" type="checkbox"/> Not Encountered		Plate							
Date Completed: March 13, 2007											
Logged By: D. Gremminger		Drill Rig: Hand Auger									
Total Depth: 4 feet		Drilling Method: Hand Auger									
Work Order: 5751-00		Driving Energy: N/A		7							

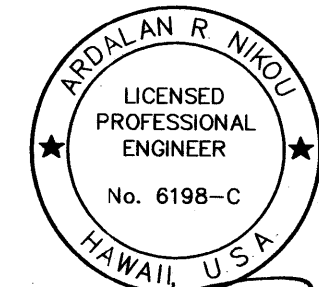
		<b>GEOLABS, INC.</b> Geotechnical Engineering	HAWAII BELT ROAD DRAINAGE IMPROVEMENTS VICINITY OF HAKALAU BRIDGE DISTRICT OF NORTH HILO, ISLAND OF HAWAII	Log of Boring <b>8</b>							
Laboratory		Field									
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 218.5 *
										MH	Brown <b>SANDY SILT</b> with roots and traces of gravel, medium stiff, very moist
											(Hand auger refusal) Boring terminated at 1 feet
							5				
							10				
Date Started: March 14, 2007		Water Level: <input checked="" type="checkbox"/> Not Encountered		Plate							
Date Completed: March 14, 2007											
Logged By: D. Gremminger		Drill Rig: Hand Auger									
Total Depth: 1 feet		Drilling Method: Hand Auger		11							
Work Order: 5751-00		Driving Energy: N/A									

		<b>GEOLABS, INC.</b> Geotechnical Engineering	HAWAII BELT ROAD DRAINAGE IMPROVEMENTS VICINITY OF HAKALAU BRIDGE DISTRICT OF NORTH HILO, ISLAND OF HAWAII	Log of Boring <b>9</b>							
Laboratory		Field									
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 217 *
										MH	Brown <b>SANDY SILT</b> with roots and traces of gravel, medium stiff, very moist
											(Hand auger refusal) Boring terminated at 1 feet
							5				
							10				
Date Started: March 14, 2007		Water Level: <input checked="" type="checkbox"/> Not Encountered		Plate							
Date Completed: March 14, 2007											
Logged By: D. Gremminger		Drill Rig: Hand Auger									
Total Depth: 1 feet		Drilling Method: Hand Auger		12							
Work Order: 5751-00		Driving Energy: N/A									

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

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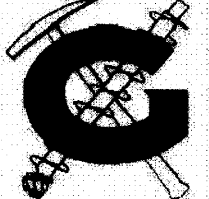


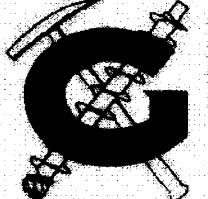
EXPIRATION DATE OF THE LICENSE 4/30/2012  
THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>BORING LOGS</b>	
HAWAII BELT ROAD DRAINAGE IMPROVEMENTS, HAKALAU BRIDGE FEDERAL-AID PROJECT NO. STP-019-2(60)	
Scale: As Noted	Date: July 2010
SHEET No. 2 OF 3 SHEETS	



FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJECT NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAWAII	STP-019-2(60)	2010	22	36

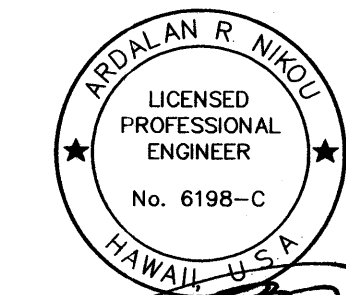
		<b>GEOLABS, INC.</b> Geotechnical Engineering	HAWAII BELT ROAD DRAINAGE IMPROVEMENTS VICINITY OF HAKALAU BRIDGE DISTRICT OF NORTH HILO, ISLAND OF HAWAII	Log of Boring <b>10</b>							
Laboratory		Field									
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	ROD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 217 *
Description											
Brown <b>SANDY SILT</b> with roots and traces of gravel, medium stiff, very moist											
(Hand auger refusal)											
Boring terminated at 1 foot											
5											
10											
Date Started: March 14, 2007		Water Level: <input checked="" type="checkbox"/> Not Encountered		Plate							
Date Completed: March 14, 2007		Drill Rig: Hand Auger		13							
Logged By: D. Gremminger		Drilling Method: Hand Auger									
Total Depth: 1 feet		Driving Energy: N/A									
Work Order: 5751-00											

		<b>GEOLABS, INC.</b> Geotechnical Engineering	HAWAII BELT ROAD DRAINAGE IMPROVEMENTS VICINITY OF HAKALAU BRIDGE DISTRICT OF NORTH HILO, ISLAND OF HAWAII	Log of Boring <b>11</b>							
Laboratory		Field									
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	ROD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 215 *
Description											
Brown <b>SANDY SILT</b> with roots and traces of gravel, medium stiff, very moist											
(Hand auger refusal)											
Boring terminated at 1 foot											
5											
10											
Date Started: March 14, 2007		Water Level: <input checked="" type="checkbox"/> Not Encountered		Plate							
Date Completed: March 14, 2007		Drill Rig: Hand Auger		14							
Logged By: D. Gremminger		Drilling Method: Hand Auger									
Total Depth: 1 feet		Driving Energy: N/A									
Work Order: 5751-00											

DATE	_____
DESIGNED BY	_____
DRAWN BY	_____
CHECKED BY	_____
ORIGINAL PLAN	_____
NOTE BOOK	_____
No.	_____

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**AECOM**



EXPIRATION DATE OF THE LICENSE 4/30/2012  
THIS WORK WAS PREPARED BY  
ME OR UNDER MY SUPERVISION.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<b>BORING LOGS</b>	
HAWAII BELT ROAD DRAINAGE IMPROVEMENTS, HAKALAU BRIDGE FEDERAL-AID PROJECT NO. STP-019-2(60)	
Scale: As Noted	Date: July 2010
SHEET No. 3 OF 3 SHEETS	