

ATTACHMENTS

Summary of Borings

Kaumualii Highway Widening Island of Kauai, Hawaii

Boring No.	Approx. Station No.	Approx. Offset from Centerline (feet)	Ground Elevation (feet MSL)	Boring Depth (feet)	Approx. Depth to Groundwater (feet)	Structure and Remarks
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B-125	293+85	55L	+336	21.0	N.E.	Puhi Road Intersection
B-126	307+25	75R	+307	51.5	9.5	4'x4' Box Culvert 12-Foot Fill
B-127	310+50	75L	+315	51.0	14.0	8'x6' Box Culvert 12-Foot Fill
B-128	311+05	60R	+302	51.5	9.0	8'x6' Box Culvert 12-Foot Fill
B-129	314+20	25R	+314	21.0	17.8	24-Inch Culvert
B-130	318+90	25R	+319	21.0	N.E.	Nuhoe Street Intersection
B-131	325+60	20R	+311	21.0	N.E.	
B-132	336+65	35R	+293	21.0	N.E.	
B-133	343+80	30R	+276	21.0	N.E.	Kalepa Street Intersection
B-134	351+60	40R	+258	21.0	N.E.	Nawiliwili Road Intersection
B-135	363+05	10L	+228	41.0	31.5	15-Foot Cut
B-136	364+55	10L	+205	26.5	14.5	18-Inch Culvert
B-137	367+50	95L	+223	31.0	N.E.	25-Foot Cut
B-138	371+55	45L	+167	41.5	17.5	24-Inch Culvert 13-Foot Fill
B-139	372+55	5R	+173	85.0	23.5	Lihue Mill Bridge Abutment
B-140	373+70	45L	+147	100.5	8.1	Lihue Mill Bridge Pier
B-141	374+00	15L	+147	101.0	7.5	Lihue Mill Bridge Pier
B-142	374+50	60R	+147	100.5	5.2	Lihue Mill Bridge Sidewalk Structure
B-143	374+75	35L	+145	100.5	13.8	Lihue Mill Bridge Pier
B-144	375+05	15L	+145	102.0	11.6	Lihue Mill Bridge Pier
B-145	376+10	10L	+161	80.0	25.5	Lihue Mill Bridge Abutment
B-146	378+40	40L	+155	51.5	14.0	Lihue Mill Cane Carrier
B-147	Hoomana Rd 3+00	35R	+195	40.5	10.4	Hoomana Road 30-foot cut

- Note: 1) C.L. - centerline
2) 10 Left - Boring offset 10 feet to the left of the centerline
3) 20 Right - Boring offset 20 feet to the right of the centerline
4) The Station Numbers and Centerline Offsets are based on plans provided by ParEn, Inc., dba Park Engineering on February 8, 2005
5) N.E. - Not Encountered

Summary of Bulk Sample Locations

Kaumualii Highway Widening Island of Kauai, Hawaii

Bulk Sample No.	Approximate Station No.	Approximate Centerline Offset	Near Boring No.
101	213+70	30L	B-101
102	232+95	5L	B-105
103	246+40	55L	B-108
104	255+10	15L	B-111
105	271+25	25L	B-116
106	281+65	40L	B-122
107	310+50	75L	B-127
108	325+60	20R	B-131
109	343+80	30R	B-133
110	367+50	95L	B-137
111	375+50	10R	B-140
112	Hoomana Rd 3+00	35R	B-147

Note:

- 1) CL: centerline
- 2) 10 Left: Boring offset 10 feet to the left of the centerline
- 3) 10 Right: Boring offset 10 feet to the right of the centerline

Alignment A of Preliminary Plans provided by ParEn, Inc., dba Park Engineering on February 8, 2005


















GEOLABS, INC.

Geotechnical Engineering

Log Legend

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE	GRAVELS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS LESS THAN 5% FINES	 GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			 GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES MORE THAN 12% FINES	 GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			 GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS 50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	CLEAN SANDS LESS THAN 5% FINES	 SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			 SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		SANDS WITH FINES MORE THAN 12% FINES	 SM	SILTY SANDS, SAND-SILT MIXTURES
			 SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE-GRAINED SOILS 50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE	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
	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

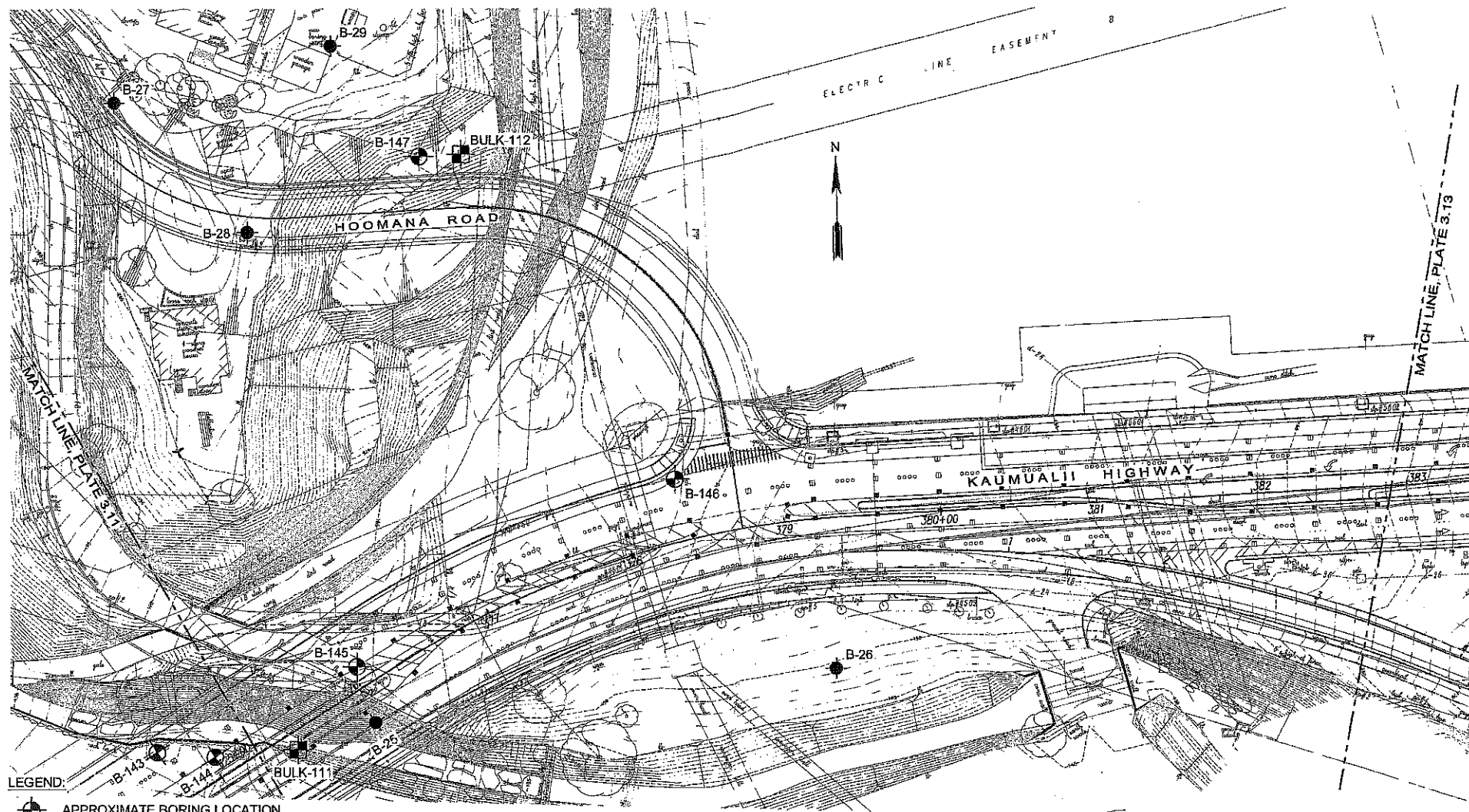
LEGEND



(2-INCH) O.D. STANDARD PENETRATION TEST
(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

Plate
A



- LEGEND:**
- APPROXIMATE BORING LOCATION
 - APPROXIMATE BULK SAMPLE LOCATION
 - APPROXIMATE BORING LOCATION
(GEOLABS REPORT DATED 12/12/00)

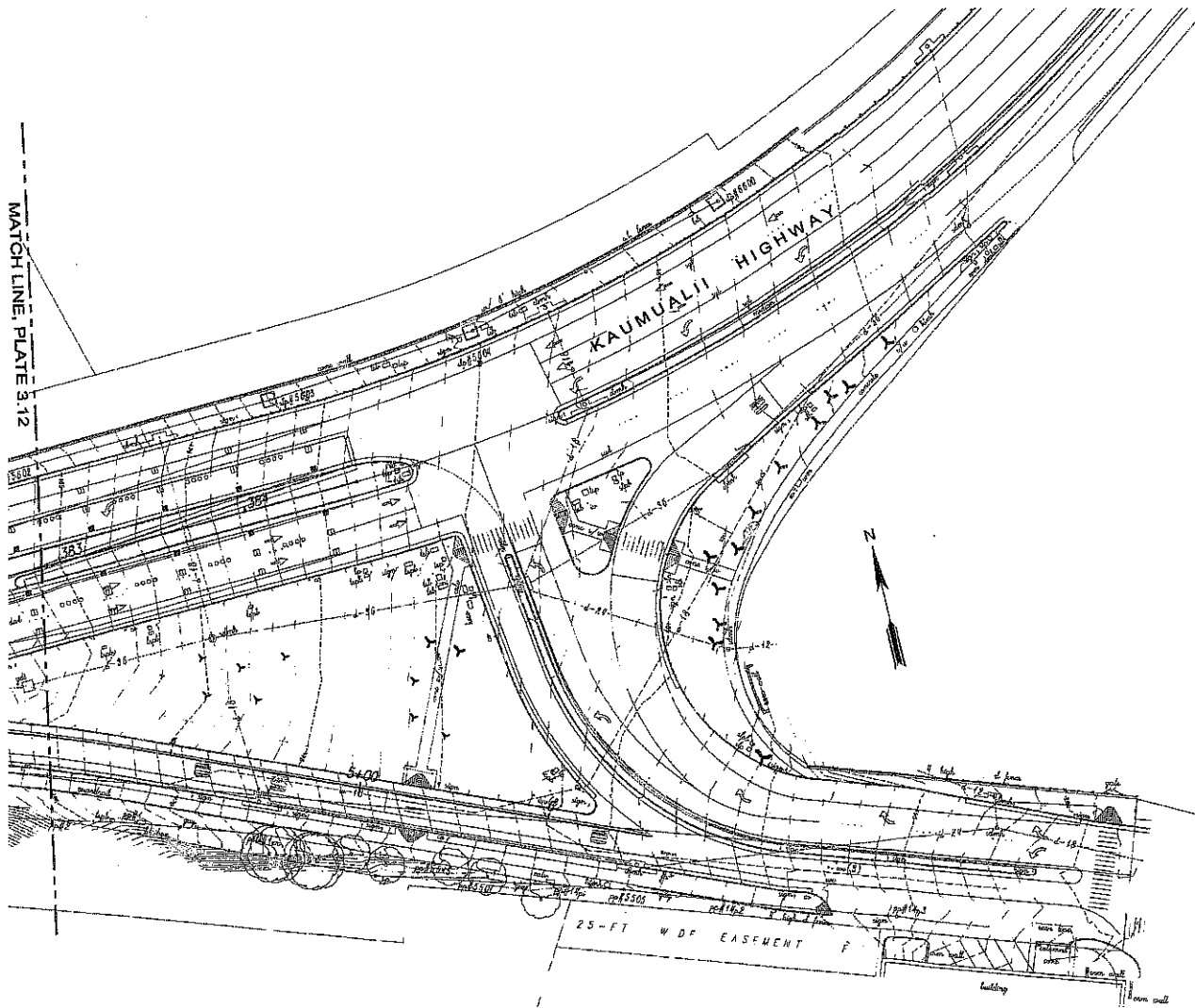
REFERENCE: TOPOGRAPHIC SURVEY MAP TRANSMITTED BY PAREN, INC. ON FEBRUARY 8, 2005. UPDATED BASE MAP TRANSMITTED BY PAREN, INC. ON APRIL 25, 2005.



SITE PLAN
 KAUMUALII HIGHWAY WIDENING, PHASE 1A
 VICINITY OF ANONU STREET TO LIHUE
 ISLAND OF KAUAI, HAWAII

GEOLABS, INC.		
Geotechnical Engineering		
DATE	DRAWN BY	PLATE
JULY 2008	KHN	
SCALE	W.O.	
1" = 60'	3869-20	3.12

MATCH LINE PLATE 3.12



REFERENCE: TOPOGRAPHIC SURVEY MAP TRANSMITTED BY PAREN, INC. ON FEBRUARY 8, 2005. UPDATED BASE MAP TRANSMITTED BY PAREN, INC. ON APRIL 25, 2006.



SITE PLAN
KAUMUALII HIGHWAY WIDENING, PHASE 1A
VICINITY OF ANONUI STREET TO LIHUE
ISLAND OF KAUAI, HAWAII



GEOLABS, INC.
Geotechnical Engineering

DATE	DRAWN BY	PLATE
JULY 2008	KHN	
SCALE	W.O.	
1" = 60'	3889-20	3.13

Approximate Boring Locations

Kaunualii Highway Widening Lihue to West of Maluhia Road Island of Kauai, Hawaii

Boring No.	Approximate Station No.	Approximate Offset from Centerline (feet)	Boring Depth (feet)	Approximate Depth to Groundwater (feet)
B-1	0+40	20 Left	21.5	-
B-2	18+25	60 Right	100.0	9.2
B-3	27+00	200 Left	80.0	4.5
B-4	42+30	70 Left	40.1	12.5
B-5	51+90	10 Left	19.5	-
B-6	58+20	20 Left	99.5	7.2
B-7	70+10	70 Left	21.5	-
B-8	81+10	40 Left	79.5	14.2
B-9	92+10	80 Left	50.8	-
B-10	99+50	80 Left	36.5	-
B-11	112+10	30 Left	21.5	-
B-12	132+20	90 Left	98.0	28.3
B-13	139+10	20 Left	51.5	11.0
B-14	149+30	20 Left	21.5	-
B-15	157+40	20 Left	51.5	-
B-16	163+30	20 Left	39.0	-
B-17	190+50	C.L.	21.5	-
B-18	218+60	10 Left	21.5	-
B-19	246+40	70 Right	82.0	27.3
B-20	272+30	10 Right	51.5	19.5
B-21	299+60	C.L.	21.5	-
B-22	331+20	20 Right	21.5	-
B-23	355+20	20 Right	21.5	-
B-24	373+30	30 Left	102.5	8.2
B-25	376+00	20 Right	100.0	9.2
B-26	379+30	100 Right	45.0	11.5
B-27			51.5	-
B-28			51.5	-
B-29			51.5	-

Note:

- 1) C.L. - Centerline
- 2) 10 Left - Boring offset 10 feet to the left of the centerline
- 3) 20 Right - Boring offset 20 feet to the right of the centerline
- 4) The Station Numbers and Centerline Offsets are based on plans provided by ParEn, Inc. dba Park Engineering on December 11, 2000

(u:\00reports\3869-.st2.boring&bulk....xls)

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**135**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 228 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Sta.363+05 10L
LL=62 PI=22	38	81			24	2.5				MH	Brown CLAYEY SILT with rootlets, stiff, moist (topsoil/fill)
	35				15	2.5				MH	Brown CLAYEY SILT , stiff, moist (residual soil)
	35				62	4.0	5				grades to very stiff
	40				26	3.0	10				
	40	82			31	4.0	15				
	52				13	1.5	20				grades with light gray mottling grades to stiff, very moist
	49	73			38	2.5	25			MH	grades with weathered basaltic gravel Gray CLAYEY SILT with some weathered basaltic gravel, stiff to very stiff, very moist (saprolite) grades with weathered basaltic gravel at 25.5 feet
	44				31	2.5	30				
							35				

Date Started: February 16, 2005

Date Completed: February 16, 2005

Logged By: S. Latronic

Total Depth: 41 feet

Work Order: 3869-20

Water Level: ∇ 31.3 ft. 2/16/05 1125 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 35.1

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/11/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**135**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
	52	73			34	1.5				MH	
	59				10	1.5	40				grades to medium stiff
											Boring terminated at 41 feet
							45				
							50				
							55				
							60				
							65				
							70				

Date Started: February 16, 2005	Water Level: ∇ 31.3 ft. 2/16/05 1125 HRS	Plate A - 35.2	
Date Completed: February 16, 2005			
Logged By: S. Latronic			Drill Rig: CME-55
Total Depth: 41 feet			Drilling Method: 4" Auger
Work Order: 3869-20			Driving Energy: 140 lb. wt., 30 in. drop

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**136**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 205 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Sta.364+55 10L
	35	72			10					MH	Brown CLAYEY SILT with some organics, medium stiff, moist (fill)
	36				31	2.0				MH	Brown CLAYEY SILT , very stiff, moist (residual soil)
	40	78			36	>4.5	5				
	43				11	1.5	10				grades to stiff
											grades to gray
	58	66			16		15			MH	Brown with gray mottling CLAYEY SILT , stiff, very moist (saprolite)
	63				18	1.5	20				
	49				10	2.5	25				
											Boring terminated at 26.5 feet
							30				
							35				

Date Started: February 15, 2005

Date Completed: February 16, 2005

Logged By: S. Latronic

Total Depth: 26.5 feet

Work Order: 3869-20

Water Level: ∇ 14.5 ft. 2/16/05 1440 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 36

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**137**

Laboratory			Field				Approximate Ground Surface Elevation (feet MSL): 223 *					
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Sta.367+50 95L	
											Description	
LL=66 PI=34	42	65			16	>4.5				MH	Brown CLAYEY SILT , stiff, moist (fill)	
	34				40	>4.5				MH	Brown CLAYEY SILT , very stiff, moist (residual soil)	
	35	88			88	>4.5	5					
											grades with weathered basaltic gravel	
	36				17	2.0	10				grades to stiff to very stiff	
	42	70			24	4.0	15					
											grades with gray mottling	
	51				11	1.5	20				grades to stiff, very moist	
	31	84			81	>4.5	25			MH	Brown with gray mottling CLAYEY SILT , very stiff, moist (saprolite) grades more saprolitic at 24 feet	
	33				45	>4.5	30				Boring terminated at 31 feet	
							35					
Date Started: February 16, 2005						Water Level: ∇ Not Encountered						Plate A - 37
Date Completed: February 16, 2005												
Logged By: S. Latronic						Drill Rig: CME-55						
Total Depth: 31 feet						Drilling Method: 4" Auger						
Work Order: 3869-20						Driving Energy: 140 lb. wt., 30 in. drop						

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**138**

Laboratory			Field								Approximate Ground Surface Elevation (feet MSL): 167 *	
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Sta.371+55 45L	Description
	38				20/0' Ref. 9					MH		Dark brown CLAYEY SILT with roots and organics, medium stiff, moist (fill)
	43	75			18	2.5	5			MH		Brown with reddish brown mottling CLAYEY SILT , very stiff, moist (residual soil)
	47				9	1.5	10					grades to medium stiff to stiff
	46				16	1.0	15					
	60				7	0.8	20			MH		Brown with reddish brown mottling CLAYEY SILT , medium stiff to stiff (residual soil)
					15	0.8	25					
	74				11	1.0	30					grades with weathered basaltic gravel
							35					
Date Started: February 16, 2005						Water Level: ▽ 17.5 ft. 2/16/05 1645 HRS						Plate A - 38.1
Date Completed: February 16, 2005												
Logged By: S. Latronic						Drill Rig: CME-55						
Total Depth: 41.5 feet						Drilling Method: 4" Auger						
Work Order: 3869-20						Driving Energy: 140 lb. wt., 30 in. drop						

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**138**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
	63	64			28	1.5				MH	grades to stiff to very stiff
	68				32	1.0	40				
							41.5				Boring terminated at 41.5 feet
							45				
							50				
							55				
							60				
							65				
							70				

Date Started: February 16, 2005

Date Completed: February 16, 2005

Logged By: S. Latronic

Total Depth: 41.5 feet

Work Order: 3869-20

Water Level: ∇ 17.5 ft, 2/16/05 1645 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 38.2

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**139**

Laboratory			Field								Approximate Ground Surface Elevation (feet MSL): 173 *	
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Sta.372+55 5R	Description
	34				9					MH		Brown CLAYEY SILT with gravel, medium stiff, moist (fill)
					13	2.5	5			MH		Reddish brown CLAYEY SILT , stiff, moist (residual soil)
	43				14	2.0	10					
	43	76			38	>4.5	15					grades to very stiff
	45				11	2.0	20					grades to stiff
	44	75			10		25			MH		Brown with multi-color mottling CLAYEY SILT with weathered basaltic gravel, medium stiff, very moist (saprolite) grades with decomposed basaltic gravel at 23.5 feet
	59		100		12	1.0	30					
							35					
Date Started: February 17, 2005						Water Level: ∇ 23.5 ft. 2/17/05 1050 HRS						Plate A - 39.1
Date Completed: February 17, 2005						24.1 ft. 2/17/05 1525 HRS						
Logged By: S. Latronic						Drill Rig: CME-55						
Total Depth: 85 feet						Drilling Method: 4" Auger & HQ Coring						
Work Order: 3869-20						Driving Energy: 140 lb. wt., 30 in. drop						

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**139**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
	60		100		13	1.0	40			MH	
			100								
			60				45				
	64				17	1.0	50				
			100			1.3					
			35				55				
	49				46	2.5	60			MH	Brown with gray mottling CLAYEY SILT , very stiff (saprolite)
			50								
			100				65				
							70				

Date Started: February 17, 2005

Date Completed: February 17, 2005

Logged By: S. Latronic

Total Depth: 85 feet

Work Order: 3869-20

Water Level: ∇ 23.5 ft. 2/17/05 1050 HRS

24.1 ft. 2/17/05 1525 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 39.2

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**139**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
	50		100	0	34		75				Brown/gray BASALT , severely fractured, extremely weathered, soft (basalt formation)
			50	0			80				grades to soft to medium hard
			50	0			85				Boring terminated at 85 feet
							90				
							95				
							100				
							105				

Date Started: February 17, 2005

Date Completed: February 17, 2005

Logged By: S. Latronic

Total Depth: 85 feet

Work Order: 3869-20

Water Level: ∇ 23.5 ft. 2/17/05 1050 HRS

24.1 ft. 2/17/05 1525 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 39.3

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/06

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**140**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 147 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Sta.373+70 45L
											Description
	27				15	2.0				MH	Brown CLAYEY SILT with gravel, stiff, moist (fill)
	37				8	1.0	5				grades to medium stiff
	61	63			3	0.0	10				grades to soft
	54				2		15			CH-OH	Dark brown to gray ORGANIC CLAY with gravel, very soft (alluvium)
	102	45			4		20			SM	Brownish gray SILTY SAND , loose (alluvium)
	56				12	1.5	25			MH	Grayish brown CLAYEY SILT with sand, stiff to very stiff (saprolite)
	52	75			29	2.0	30				grades with weathered gravel
	50				18	2.3	35				

Date Started: September 21, 2004

Date Completed: September 22, 2004

Logged By: S. Latronic

Total Depth: 100.5 feet

Work Order: 3869-20

Water Level: ∇ 9 ft. 9/21/04 1010 HRS

8.1 ft. 9/22/04 1415 HRS

Drill Rig: CME-55

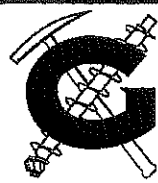
Drilling Method: 4" Auger, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 40.1

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**140**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
	41	79			28		40			MH	
	55				28		45				
	46				50/.5' Ref.		50				Gray vugular BASALT , moderately fractured, slightly weathered, hard to very hard (basalt formation)
			100	58			55				Brownish gray vesicular BASALT , closely fractured, highly weathered, soft to medium hard (basalt formation)
			40	17			60				grades to moderately fractured, moderately weathered, medium hard to hard
			95	48	20/.0' Ref.		65				Gray dense BASALT , slightly fractured, slightly weathered, hard to very hard (basalt formation)
			90	48							
			100	88			70				

Date Started: September 21, 2004	Water Level: ∇ 9 ft. 9/21/04 1010 HRS	Plate A - 40.2
Date Completed: September 22, 2004	8.1 ft. 9/22/04 1415 HRS	
Logged By: S. Latronic	Drill Rig: CME-55	
Total Depth: 100.5 feet	Drilling Method: 4" Auger, 3" Casing & HQ Coring	
Work Order: 3869-20	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**140**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
			83	70							
			85	0		3.5	75				Reddish brown and gray BASALT , severely fractured, highly weathered, soft (basalt formation)
			52	0			80				
			87	7			85				grades to medium hard
			100	45			90				Brownish gray vesicular BASALT , moderately fractured, moderately weathered, medium hard (basalt formation)
			100	100			95				Gray dense BASALT , massive, slightly weathered, very hard (basalt formation)
							100				Boring terminated at 100.5 feet
							105				

Date Started: September 21, 2004

Date Completed: September 22, 2004

Logged By: S. Latronic

Total Depth: 100.5 feet

Work Order: 3869-20

Water Level: ∇ 9 ft. 9/21/04 1010 HRS

8.1 ft. 9/22/04 1415 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 40.3

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**141**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 147 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Sta.374+00 15L
LL=55 PI=17	31	93			45	3.5				MH	Brown CLAYEY SILT with gravel, very stiff, moist (fill)
	30				9		5				grades with sand, medium stiff
	34				4		10				grades to soft
	64	65			4	0.1	15			MH-OH	Dark brown to gray CLAYEY ORGANIC SILT , very soft (alluvium)
	81				2	0.3	20				grades with some gravel
	57	66			13	1.0	25			MH	Reddish brown CLAYEY SILT with sand and gravel, medium stiff to stiff (saprolite)
LL=67 PI=31	64				8	1.0	30				grades with weathered gravel
							35				

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

Date Started: September 22, 2004

Date Completed: September 23, 2004

Logged By: S. Latronic

Total Depth: 101 feet

Work Order: 3869-20

Water Level: ∇ 8.7 ft. 9/22/04 1425 HRS

7.5 ft. 9/23/04 1310 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 41.1

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**141**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
	47	75			35	4.0				MH	grades to stiff to very stiff
	46				17	1.5	40				
	38		53	0	50/.3' Ref.		45				Grayish brown BASALT , severely fractured, highly to extremely weathered, soft (basalt formation) grades to medium hard
			73	7			50				
			67	30			55				Gray vugular BASALT , moderately fractured, slightly to moderately weathered, hard (basalt formation)
			100	88			60				
			100	100			65				Gray dense BASALT , slightly fractured, slightly weathered, very hard (basalt formation) grades to massive
							70				

Date Started: September 22, 2004

Date Completed: September 23, 2004

Logged By: S. Latronic

Total Depth: 101 feet

Work Order: 3869-20

Water Level: ∇ 8.7 ft. 9/22/04 1425 HRS

7.5 ft. 9/23/04 1310 HRS

Drill Rig: CME-55

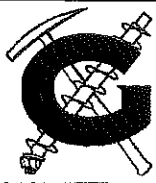
Drilling Method: 4" Auger, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 41.2

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/04

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**141**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
			58	22							
			50	0			75				Reddish brown and gray BASALT , severely fractured, highly to extremely weathered, soft (basalt formation)
			85	7			80				grades to medium hard
			92	58			85				
			100	97			90				Brownish gray vugular BASALT , moderately to slightly fractured, slightly to moderately weathered, medium hard to hard (basalt formation)
			100	100			95				Gray dense BASALT , massive, slightly weathered, very hard (basalt formation)
							100				
							105				Boring terminated at 101 feet

Date Started: September 22, 2004

Date Completed: September 23, 2004

Logged By: S. Latronic

Total Depth: 101 feet

Work Order: 3869-20

Water Level: ∇ 8.7 ft. 9/22/04 1425 HRS

7.5 ft. 9/23/04 1310 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 41.3

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**142**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 147 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Sta.374+50 60R
LL=65 PI=28	17				27	2.5				MH	Brown CLAYEY SILT with sand and gravel, very stiff, damp (fill)
	62	62			6	0.5	5			MH	Brown CLAYEY SILT , soft (alluvium)
	59				2		10				
	61	62			9	2.0	15			MH	Brown CLAYEY SILT , medium stiff (residual soil)
	69				5	0.8	20				grades with weathered gravel
	65				9	1.3	25				grades to grayish brown
	56				10	1.3	30				
							35				

Date Started: November 3, 2004

Date Completed: November 4, 2004

Logged By: S. Latronic

Total Depth: 100.5 feet

Work Order: 3869-20

Water Level: 5.2 ft. 11/3/04 1330 HRS

5.5 ft. 11/4/04 1335 HRS

Drill Rig: CME-55

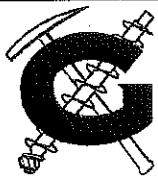
Drilling Method: 4" Auger & Casing, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 42.1

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**142**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
	59				18	1.5				MH	
	66				6		40			MH	Brownish gray CLAYEY SILT with sand and weathered basalt, medium stiff (saprolite)
			30	0	15/0' Ref.		45				Grayish brown BASALT , severely fractured, highly to extremely weathered, soft (basalt formation)
	52		19	0	12	1.0	50				
	41		100	53	50/4' Ref.		55				Gray dense BASALT , moderately fractured, slightly weathered, hard to very hard (basalt formation)
			100	75			60				grades to slightly fractured
			100	60			65				
							70				

Date Started: November 3, 2004

Date Completed: November 4, 2004

Logged By: S. Latronic

Total Depth: 100.5 feet

Work Order: 3869-20

Water Level: ∇ 5.2 ft. 11/3/04 1330 HRS

5.5 ft. 11/4/04 1335 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger & Casing, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 42.2

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**142**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
			60	20							
			50	0			75				Grayish brown BASALT , severely fractured, highly to extremely weathered, soft (basalt formation) grades to medium hard
			75	13			80				
			100	87			85				Grayish dense BASALT , slightly fractured, slightly weathered, hard to very hard (basalt formation)
			100	100			90				grades to vugular, massive
			100	87			95				grades to vesicular
							100				Boring terminated at 100.5 feet
							105				

Date Started: November 3, 2004

Date Completed: November 4, 2004

Logged By: S. Latronic

Total Depth: 100.5 feet

Work Order: 3869-20

Water Level: ∇ 5.2 ft. 11/3/04 1330 HRS

5.5 ft. 11/4/04 1335 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger & Casing, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 42.3

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08



GEOLABS, INC.

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAII

Log of
Boring

143

Laboratory			Field				Approximate Ground Surface Elevation (feet MSL): 145 * Sta.374+75 35L				Description
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	
TV=0.05 LL=86 PI=49	44	79			10/.5' +20/.3' Ref.	1.0	0	✖		MH	Reddish brown with multi-color mottling CLAYEY SILT with sand and gravel, stiff, moist (fill)
	43				4	<0.5	5	▲		MH	Reddish brown with multi-color mottling CLAYEY SILT , soft, moist (fill)
	57	69			6		10	✖			
	129				2		15	▲		CH-OH	Grayish brown SILTY ORGANIC CLAY with sand, very soft, very moist (alluvium)
	67	57			4		20	✖			
	53				5		25	▲		ML	Greenish gray with multi-color mottling SANDY SILT with clay and weathered gravel, soft (saprolite)
	49		34	0	18/.5' +20/.1' Ref.		30	▲		MH	Tan with multi-color mottling CLAYEY SILT with sand, stiff (saprolite)
							35				grades to reddish brown

Date Started: November 8, 2004

Date Completed: November 8, 2004

Logged By: Y. Chiba

Total Depth: 100.5 feet

Work Order: 3869-20

Water Level: ∇ 13.8 ft. 11/8/04 1012 HRS

14.6 ft. 11/9/04 0834 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger, 4" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 43.1

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

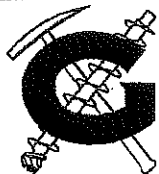
Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**143**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
	55		36	0	15		35	✓		MH	
	56		7	0	10		40	✓			
	45		62	0	33		45	✓			grades to brown, very stiff
			53	0			50				
			87	42			55				Gray vesicular BASALT , moderately fractured, highly weathered, medium hard (basalt formation)
			100	90			60				grades to slightly fractured, moderately weathered, very hard
			60	27			65				
							70				Brownish tan with multi-color mottling BASALT , severely fractured, highly to extremely weathered, soft (basalt formation)

Date Started: November 8, 2004	Water Level: ∇ 13.8 ft. 11/8/04 1012 HRS	Plate A - 43.2
Date Completed: November 8, 2004	14.6 ft. 11/9/04 0834 HRS	
Logged By: Y. Chiba	Drill Rig: CME-55	
Total Depth: 100.5 feet	Drilling Method: 4" Auger, 4" Casing & HQ Coring	
Work Order: 3869-20	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**143**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
			50	0							grades to orangish brown
			100	0			75				grades to reddish brown
			97	13			80				grades to closely fractured, medium hard
			65	50			85				Dark gray with multi-color mottling BASALT , moderately fractured, moderately weathered, hard (basalt formation)
			100	100			90				grades to slightly fractured
			100	93			95				grades to slightly weathered, very hard
							100				Boring terminated at 100.5 feet
							105				

Date Started: November 8, 2004

Date Completed: November 8, 2004

Logged By: Y. Chiba

Total Depth: 100.5 feet

Work Order: 3869-20

Water Level: ∇ 13.8 ft. 11/8/04 1012 HRS

14.6 ft. 11/9/04 0834 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger, 4" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 43.3

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08



GEOLABS, INC.

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAII

Log of
Boring

144

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 145 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Sta.375+05 15L
LL=189 PI=96	31				24	2.5				MH	Brown CLAYEY SILT with gravel, very stiff, moist (fill)
	31	89			25	2.0	5				grades with sand
	72				3		10				grades to soft, very moist
					6	0.1	15			CH-OH	Dark brown to gray SILTY ORGANIC CLAY , soft, very moist (alluvium)
	69				3	0.3	20				
	64	62			6		25			MH	Brown CLAYEY SILT with gravel, soft to medium stiff (alluvium)
	47		50	0	50/5' Ref.		30				grades with boulder and cobbles
			57	7			35			MH	Grayish brown CLAYEY SILT with sand and gravel, very stiff to hard (saprolite)

Date Started: September 29, 2004

Date Completed: September 30, 2004

Logged By: S. Latronic

Total Depth: 102 feet

Work Order: 3869-20

Water Level: ∇ 11.6 ft. 9/29/04 1035 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 44.1

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**144**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
	40		68	0			40			MH	
			33	0			45				
					92		50				Gray vugular BASALT , moderately fractured, slightly to moderately weathered, medium hard to hard (basalt formation)
			100	33			55				grades to very hard
			85	45			60				
			95	65			65				grades to slightly fractured, slightly weathered
			100	93							
			65	13			70				Grayish brown BASALT , severely fractured, moderately to highly weathered, soft to medium hard (basalt formation)

Date Started: September 29, 2004

Date Completed: September 30, 2004

Logged By: S. Latronic

Total Depth: 102 feet

Work Order: 3869-20

Water Level: ∇ 11.6 ft. 9/29/04 1035 HRS

Drill Rig: CME-55

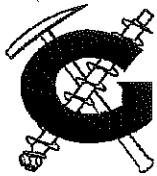
Drilling Method: 4" Auger, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 44.2

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**144**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
			70	7			75				grades to extremely weathered, soft
			80	15			80				grades to highly weathered, soft to medium hard
			100	42			85				Brownish gray BASALT , moderately fractured, slightly to moderately weathered, hard (basalt formation)
			100	73			90				
			100	100			95				grades to slightly fractured, very hard
			100	82			100				
							105				Boring terminated at 102 feet

Date Started: September 29, 2004

Date Completed: September 30, 2004

Logged By: S. Latronic

Total Depth: 102 feet

Work Order: 3869-20

Water Level: ∇ 11.6 ft. 9/29/04 1035 HRS

Drill Rig: CME-55

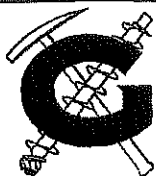
Drilling Method: 4" Auger, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 44.3

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**145**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 161 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Sta.376+10 10L
Description											
	23				48	2.0				MH	Brown CLAYEY SILT with gravel, very stiff, moist (fill)
	41	75			11	1.5	5				grades to stiff, very moist
	39				11		10				
	50	62			22	1.0	15			MH	Brown with gray mottling CLAYEY SILT , stiff, moist (residual soil)
	57				10	0.8	20				grades to medium stiff, very moist
	64	60			15	1.0	25				grades more saprolitic
	62				16	0.8	30			MH	Brown CLAYEY SILT with sand and weathered basaltic gravel, medium stiff (saprolite)
							35				

Date Started: February 10, 2005

Date Completed: February 10, 2005

Logged By: S. Latronic

Total Depth: 80 feet

Work Order: 3869-20

Water Level: ∇ 26.5 ft. 2/10/05 1045 HRS

25.5 ft. 2/11/05 1200 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 45.1

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**145**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
	50	74	50		31	0.5	30	✓		MH	Brown CLAYEY SILT , stiff (saprolite)
	49		44		23	2.5	40	✓			
	47		5		92	3.0	45	✓			grades to very stiff
	55		50		30	2.0	50	✓			
			63	13			55				
			75	27			60				Brownish gray vesicular BASALT , closely fractured, slightly to moderately weathered, medium hard to hard (basalt formation)
			62	20			65				
							70				Grayish brown BASALT , severely fractured, extremely weathered, soft (basalt formation)

Date Started: February 10, 2005

Date Completed: February 10, 2005

Logged By: S. Latronic

Total Depth: 80 feet

Work Order: 3869-20

Water Level: ∇ 26.5 ft. 2/10/05 1045 HRS

25.5 ft. 2/11/05 1200 HRS

Drill Rig: CME-55

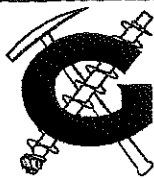
Drilling Method: 4" Auger, 3" Casing & HQ Coring

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 45.2

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**145**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
			67	0							
			100	45			75				Gray dense BASALT , moderately fractured, slightly weathered, hard to very hard (basalt formation)
							80				Boring terminated at 80 feet
							85				
							90				
							95				
							100				
							105				

Date Started: February 10, 2005	Water Level: ∇ 26.5 ft. 2/10/05 1045 HRS	Plate A - 45.3
Date Completed: February 10, 2005	25.5 ft. 2/11/05 1200 HRS	
Logged By: S. Latronic	Drill Rig: CME-55	
Total Depth: 80 feet	Drilling Method: 4" Auger, 3" Casing & HQ Coring	
Work Order: 3869-20	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**146**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 155 *
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Sta. 378+40 40L
LL=60 PI=29	15	104			24	1.5				MH	Brown CLAYEY SILT with gravel, stiff to very stiff, moist (fill)
	18				38	4.0					
	42	78			18	2.5	5				
	49				2	0.3	10			MH/ OH	Dark gray CLAYEY ORGANIC SILT , soft, very moist (alluvium)
	47	77			12	0.0	15				
	45				19	3.0	20			MH	Brown CLAYEY SILT , stiff (residual soil)
	63	66			18	2.0	25				grades with weathered basaltic gravel
	58				13	1.0	30				
							35				

Date Started: February 18, 2005

Date Completed: February 18, 2005

Logged By: S. Latronic

Total Depth: 51.5 feet

Work Order: 3869-20

Water Level: ∇ 14 ft. 2/18/05 0920 HRS

Drill Rig: CME-55

Drilling Method: 4" Auger & 3" Casing

Driving Energy: 140 lb. wt., 30 in. drop

Plate

A - 46.1

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**146**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	Description
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					
	56	60			26					MH	(Continued from previous plate)
	56				19	2.5	40				grades with gray mottling, very stiff
	50	76			39	2.5	45				
	55				25	2.0	50				Boring terminated at 51.5 feet
							55				
							60				
							65				
							70				

Date Started: February 18, 2005	Water Level: ∇ 14 ft. 2/18/05 0920 HRS	Plate A - 46.2
Date Completed: February 18, 2005		
Logged By: S. Latronic	Drill Rig: CME-55	
Total Depth: 51.5 feet	Drilling Method: 4" Auger & 3" Casing	
Work Order: 3869-20	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

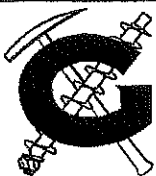
**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**147**


Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 195 *	
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Sta.3+00 35R (Hoomana Road)	
											Description	
	29	72			25	2.5				MH	Brown CLAYEY SILT with rootlets, very stiff, moist (fill)	
	35				33	>4.5	5			MH	Brown CLAYEY SILT , very stiff to hard, moist (residual soil)	
	32	83			82	>4.5	10				grades with gray mottling perched groundwater ?	
	57				32	2.0	15			MH	Reddish brown CLAYEY SILT , very stiff to hard (residual soil)	
	38	79			50/.3' Ref.	>4.5	20					
	42				62	2.5	25					
	67				11	1.0	30			MH	Grayish brown CLAYEY SILT , stiff (residual soil)	
LL=73	51	69			26	2.0	35				grades to very stiff	
Date Started: September 1, 2004						Water Level: ∇ 10.4 ft. 9/2/04 1120 HRS						Plate A - 47.1
Date Completed: September 2, 2004						Dry ft. 9/10/04 1110 HRS						
Logged By: S. Latronic						Drill Rig: CONCORE						
Total Depth: 40.5 feet						Drilling Method: 3" Casing, 3" Drag Bit						
Work Order: 3869-20						Driving Energy: 140 lb. wt., 30 in. drop						

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08

**GEOLABS, INC.**

Geotechnical Engineering

KAUMUALII HIGHWAY WIDENING
ISLAND OF KAUAI, HAWAIILog of
Boring**147**

Laboratory			Field				Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)
Other Tests	Moisture Content (%)	Dry Density (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)					Description
PI=32	53				13	1.0	40		MH		grades to stiff
							40.5				Boring terminated at 40.5 feet
							45				
							50				
							55				
							60				
							65				
							70				

Date Started: September 1, 2004	Water Level: ∇ 10.4 ft. 9/2/04 1120 HRS	Plate A - 47.2
Date Completed: September 2, 2004	Dry ft. 9/10/04 1110 HRS	
Logged By: S. Latronic	Drill Rig: CONCORE	
Total Depth: 40.5 feet	Drilling Method: 3" Casing, 3" Drag Bit	
Work Order: 3869-20	Driving Energy: 140 lb. wt., 30 in. drop	

BORING LOG 3869-20.GPJ GEOLABS.GDT 7/17/08









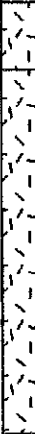
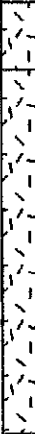
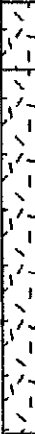
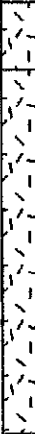
APPENDIX B

Logs of Borings from Previous Exploration

Date Started: 4/10/98		Drill Rig: Mobile B-80	
Date Completed: 4/13/98		Drilling Method: 4" Auger, HQ Coring	
Logged By: J. Chen		Driving Energy: 140 lb. wt., 30 in. drop	
Total Depth: 102.5 feet			

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			
								Approximate Surface Elevation (ft): 148*
5	X	49	74	24			1.5	Brown and yellow CLAYEY SILT (ML) with sand and gravel, very stiff, damp (fill)
	X	15	76	35				Tannish brown SANDY SILT (ML), very stiff, damp
	X	11	79	29			0.8	Reddish brown CLAYEY SILT (MH), soft to medium stiff, moist to very moist
10	X	7	68	52				Dark gray ORGANIC SILTY CLAY (CH/OH), soft
15	X	3	46	115				
20	X	10	72	52				Gray and brown CLAYEY SILT (MH) with gravel, soft to medium stiff
25	X	57	71	54			1.5	Yellowish brown SANDY SILT (ML) with gravel, stiff
30	X	17	68	53			2.2	grades to grayish brown with clay
35								

GEOLABS, INC. <i>Geotechnical Engineering</i>	LOG OF BORING 24 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII	PLATE A-24.1
WORK ORDER NO. 3869-00 KHN Dec 00		

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION	
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			(Continued from previous plate)	
		40	73	50			2.6		Gray to reddish brown SANDY SILT (ML) with clay and gravel, very stiff
40		37		47			1.6		
45		50		49			3.5		
50						RUN 1 REC=67% RQD=0%			Brown vugular BASALT, severely fractured, highly to extremely weathered, soft with seams of clay (weathered basalt formation)
55						RUN 2 REC=47% RQD=0%			
60						RUN 3 REC=72% RQD=25%			Gray vesicular BASALT, moderately fractured, moderately weathered, medium hard (basalt formation)
65						RUN 4 REC=98% RQD=85%			Gray dense BASALT, slightly fractured, slightly weathered, hard (basalt formation)
70						RUN 5 REC=100% RQD=100%			
75						RUN 6 REC=97% RQD=60%			
<div><div><div>GEOLABS, INC.</div><div>Geotechnical Engineering</div></div><div><div>LOG OF BORING 24</div><div>KAUMUALII HIGHWAY WIDENING</div><div>LIHUE TO WEST OF MALUHIA ROAD</div><div>ISLAND OF KAUAI, HAWAII</div></div><div><div>PLATE</div><div>A-24.2</div></div></div> <div>WORK ORDER NO. 3869-00 KHN Dec 00</div>									

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION	
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			(Continued from previous plate)	
80						RUN 7 REC=98% RQD=48%		Gray and tan vugular BASALT, closely to severely fractured, highly weathered, soft to medium hard (basalt formation) grades to moderately fractured	
85						RUN 8 REC=100% RQD=50%		Gray vesicular BASALT, slightly fractured, moderately to slightly weathered, medium hard (basalt formation) grades to dark gray	
90						RUN 9 REC=100% RQD=92%			
95						RUN 10 REC=100% RQD=100%			
100						RUN 11 REC=100% RQD=93%		Gray vesicular BASALT, slightly fractured to massive, moderately weathered, hard grades to slightly weathered	
105								Boring terminated at 102.5 feet Groundwater level at: Depth Hours Date 8.2 ft. 0800 4/13/98	
110									
115									

GEOLABS, INC. Geotechnical Engineering			LOG OF BORING 24 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII		PLATE A-24.3
WORK ORDER NO. 3869-00 KHN Dec 00					

Date Started: <u>4/8/98</u>		Drill Rig: <u>Mobile B-80</u>	
Date Completed: <u>4/9/98</u>		Drilling Method: <u>4" Auger, HQ Coring</u>	
Logged By: <u>J. Chen</u>		Driving Energy: <u>140 lb. wt., 30 in. drop</u>	
Total Depth: <u>100.0 feet</u>			

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			
Approximate Surface Elevation (ft): 146*								
5		34	76	43			4.0	Reddish brown and gray CLAYEY SILT (MH), very stiff, very moist
		19	76	42			1.5	grades to stiff
		12	67	48			1.2	grades with gravel
10		6	59	56				Dark gray ORGANIC SILTY CLAY (CH/OH), soft
15		3	48	90				Greenish gray SILTY CLAY (CH), soft
20	S	**	56	77		TV=0.13 tsf LL=86 PI=49		
25		8	61	61			1.0	Dark gray SILTY CLAY (CH) with sand and gravel, soft to medium stiff
30		14	83	46				Brown vugular BASALT, severely fractured, highly weathered, soft with pockets of clay (weathered basalt formation)
35								

GEOLABS, INC. <i>Geotechnical Engineering</i>		LOG OF BORING 25 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII	PLATE A-25.1
WORK ORDER NO. 3869-00 KHN Dec 00			

Depth, ft	FIELD		LABORATORY				Other Data	Pen, tsf	DESCRIPTION	
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf				(Continued from previous plate)	
40	56	77	46				RUN 1 REC=75% RQD=0%			Brown vugular BASALT, severely fractured, highly weathered, soft with pockets of clay (weathered basalt formation)
45							RUN 2 REC=85% RQD=18%			Dark gray vesicular BASALT, closely fractured, moderately weathered, medium hard (basalt formation)
50							RUN 3 REC=60% RQD=8%			Brown vesicular BASALT, severely fractured, highly weathered, medium hard with a pocket of clay (weathered basalt formation)
55							RUN 4 REC=93% RQD=93% RUN 5 REC=100% RQD=77% RUN 6 REC=100% RQD=93%			Gray vesicular to dense BASALT, moderately fractured, moderately weathered, medium hard (basalt formation) grades to slightly weathered
60							RUN 7 REC=100% RQD=93%			grades to dense, massive, slightly fractured, hard
65							RUN 8 REC=80% RQD=0%			
70							RUN 9 REC=90% RQD=0%			Brown vesicular BASALT, severely fractured, highly weathered, soft to medium hard (weathered basalt formation)
75										
GEOLABS, INC. <i>Geotechnical Engineering</i>									LOG OF BORING 25 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII	
WORK ORDER NO. 3869-00 KHN Dec 00									PLATE A-25.2	

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			
80						RUN 10 REC=90% RQD=0%		Brown vesicular BASALT, severely fractured, highly weathered, soft to medium hard (weathered basalt formation)
85						RUN 11 REC=100% RQD=0%		
90						RUN 12 REC=77% RQD=20%		
95						RUN 13 REC=100% RQD=93%		Gray vugular BASALT, moderately to closely fractured, moderately weathered, medium hard (basalt formation) grades to vesicular, slightly fractured, slightly weathered, medium hard
100						RUN 14 REC=89% RQD=63%		
105								Boring terminated at 100 feet Groundwater level at: <div style="display: flex; justify-content: space-around;"> <div>Depth 9.2 ft.</div> <div>Hours 1000</div> <div>Date 4/10/98</div> </div>
110								
115								

GEOLABS, INC. <i>Geotechnical Engineering</i>	LOG OF BORING 25 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII	PLATE A-25.3
WORK ORDER NO. 3869-00 KHN Dec 00		

Date Started: <u>5/12/98</u>		Drill Rig: <u>Mobile B-80</u>	
Date Completed: <u>5/12/98</u>		Drilling Method: <u>4" Auger</u>	
Logged By: <u>J. Chen</u>		Driving Energy: <u>140 lb. wt., 30 in. drop</u>	
Total Depth: <u>45.0 feet</u>			

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			
								Approximate Surface Elevation (ft): 147*
								2-inch GRASS LAWN
		76	89	12			3.9	Brown CLAYEY SILT (MH-ML) with gravel, very stiff, damp grades to reddish brown, moist
		42	75	44			>4.5	
5		47	69	39			>4.5	
10		22	67	45			3.2	grades to very moist
15		22	62	54			2.0	
20		16	63	54			1.5	Brown CLAYEY SILT (MH-ML) with fine sand, stiff
25		17	66	53			0.8	
30		14	66	57			1.5	grades to tannish brown
35								





GEOLABS, INC. <i>Geotechnical Engineering</i>		LOG OF BORING 26 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII		PLATE A-26.1
WORK ORDER NO. 3869-00 KHN Dec 00				

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			
								(Continued from previous plate)
	X	25	64	58			1.0	Brown CLAYEY SILT (MH-ML) with fine sand and basalt fragments, stiff
40	X	86	80	42				Brown and gray BASALT, hard
45		40/.0' Ref.						Boring terminated at 45 feet
50								Groundwater level at: Depth Hours Date 11.5 ft 1130 5/13/98
55								
60								
65								
70								
75								
GEOLABS, INC. <i>Geotechnical Engineering</i>							LOG OF BORING 26 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII	
WORK ORDER NO. 3869-00 KHN Dec 00							PLATE A-26.2	

Date Started: <u>7/26/99</u>		Drill Rig: <u>Mobile B-53</u>	
Date Completed: <u>7/26/99</u>		Drilling Method: <u>4" Auger</u>	
Logged By: <u>Y. Chiba</u>		Driving Energy: <u>140 lb. wt., 30 in. drop</u>	
Total Depth: <u>51.5 feet</u>			

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			
								Approximate Surface Elevation (ft): 208.2*
		41	99	31			4.0	Reddish brown mottled with brown CLAYEY SILT (MH), very stiff, damp (fill)
5		52/.5' +45/.3' Ref.	79	37		LL=80 PI=41	>4.5	grades to brown mottled with brownish orange, very hard (residual)
10		39	105	32			4.0	Brownish orange mottled with brown CLAYEY SILT (MH), very stiff, damp
15		32	72	39		LL=68 PI=30	4.0	grades to grayish brown with multi-color mottling
20		52	78	44			3.5	grades to moist
25		58	77	48			>4.5	grades to reddish brown, very hard
30		66	68	69			3.0	Bright reddish brown SILTY CLAY (CH), very hard, damp to moist
35								grades to brownish orange, damp

GEOLABS, INC. <i>Geotechnical Engineering</i>		LOG OF BORING 27 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII		PLATE A-27.1
WORK ORDER NO. 3869-00 KHN Dec 00				

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION	
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			(Continued from previous plate)	
	64	76	43				4.0		Brownish orange SILTY CLAY (CH), very hard, damp
40	18	87	62				1.0		Reddish brown with multi-color mottling CLAYEY SILT (MH), stiff, moist to very moist
45	31	64	58				1.0		
50	29	81	64				3.0		grades to dark grayish brown with multi-color mottling with friable sand that breaks down to clayey silt (MH) by fingers, wet
									Boring terminated at 51.5 feet Groundwater not encountered
55									
60									
65									
70									
75									
GEOLABS, INC. <i>Geotechnical Engineering</i>							LOG OF BORING 27 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII		
WORK ORDER NO. 3869-00 KHN Dec 00							PLATE A-27.2		

Date Started: <u>7/27/99</u>		Drill Rig: <u>Mobile B-53</u>	
Date Completed: <u>7/27/99</u>		Drilling Method: <u>4" Auger</u>	
Logged By: <u>Y. Chiba</u>		Driving Energy: <u>140 lb. wt., 30 in. drop</u>	
Total Depth: <u>51.5 feet</u>			

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			
								Approximate Surface Elevation (ft): 208.8*
	X	15	57	34			>4.5	Brown CLAYEY SILT (MH) with roots/ rootlets, stiff, damp grades to very hard
5	X	40/.3' Ref.	101	34			>4.5	
10	X	78	82	34		LL=80 PI=37	>4.5	grades to orangish brown mottled with tan
15	X	74	104	40			>4.5	
20	X	32					2.5	Brownish gray with multi-color mottling CLAYEY SILT (MH), very hard, moist grades to very stiff
25	X	88	100	42			>4.5	grades to very hard
30	X	51/.5' +30/.3' Ref.	85	40			>4.5	Reddish brown SILTY CLAY (CH), very hard, moist grades to brownish orange
35								

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GEOLABS, INC. <i>Geotechnical Engineering</i>	LOG OF BORING 28 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII	PLATE A-28.1
WORK ORDER NO. 3869-00 KHN Dec 00		

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION	
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			(Continued from previous plate)	
		80	105	41			4.0		Brownish orange SILTY CLAY (CH), very hard, moist
40		18	59	64			0.5		Brownish gray with multi-color mottling CLAYEY SILT (MH), stiff, moist
45		20	89	56			1.5		grades to reddish brown with multi-color mottling
50		29	70	49			1.5		
55									Boring terminated at 51.5 feet
60									Groundwater not encountered
65									
70									
75									

<div><div>GEOLABS, INC. <i>Geotechnical Engineering</i></div><div>WORK ORDER NO. 3869-00 KHN Dec 00</div></div>	<div>LOG OF BORING 28 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII</div>	<div>PLATE A-28.2</div>
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Date Started: <u>7/27/99</u>		Drill Rig: <u>Mobile B-53</u>	
Date Completed: <u>7/28/99</u>		Drilling Method: <u>4" Auger</u>	
Logged By: <u>Y. Chiba</u>		Driving Energy: <u>140 lb. wt., 30 in. drop</u>	
Total Depth: <u>51.5 feet</u>			

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			
								Approximate Surface Elevation (ft): 212*
								2-inch ASPHALT CONCRETE
							3.5	Dark brown SILTY SAND (SM), medium dense, damp
								Brown SILTY CLAY (CH), stiff, damp
5		41	101	40			4.0	grades to mottled with orange
10		28	81	37			>4.5	
15		22	76	38			4.0	Tannish brown mottled with grayish brown and orange CLAYEY SILT (MH), very stiff, damp
20		35	75	42			2.5	grades to tannish gray with multi-color mottling, damp to moist
25		43	89	43		LL=69 PI=30	3.5	
30		31	77	45			4.0	grades to dark brown with multi-color mottling
35								Reddish brown SILTY CLAY (CH), very hard, moist

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GEOLABS, INC.

Geotechnical Engineering

WORK ORDER NO. 3869-00 KHN Dec 00

LOG OF BORING 29



KAUMUALII HIGHWAY WIDENING

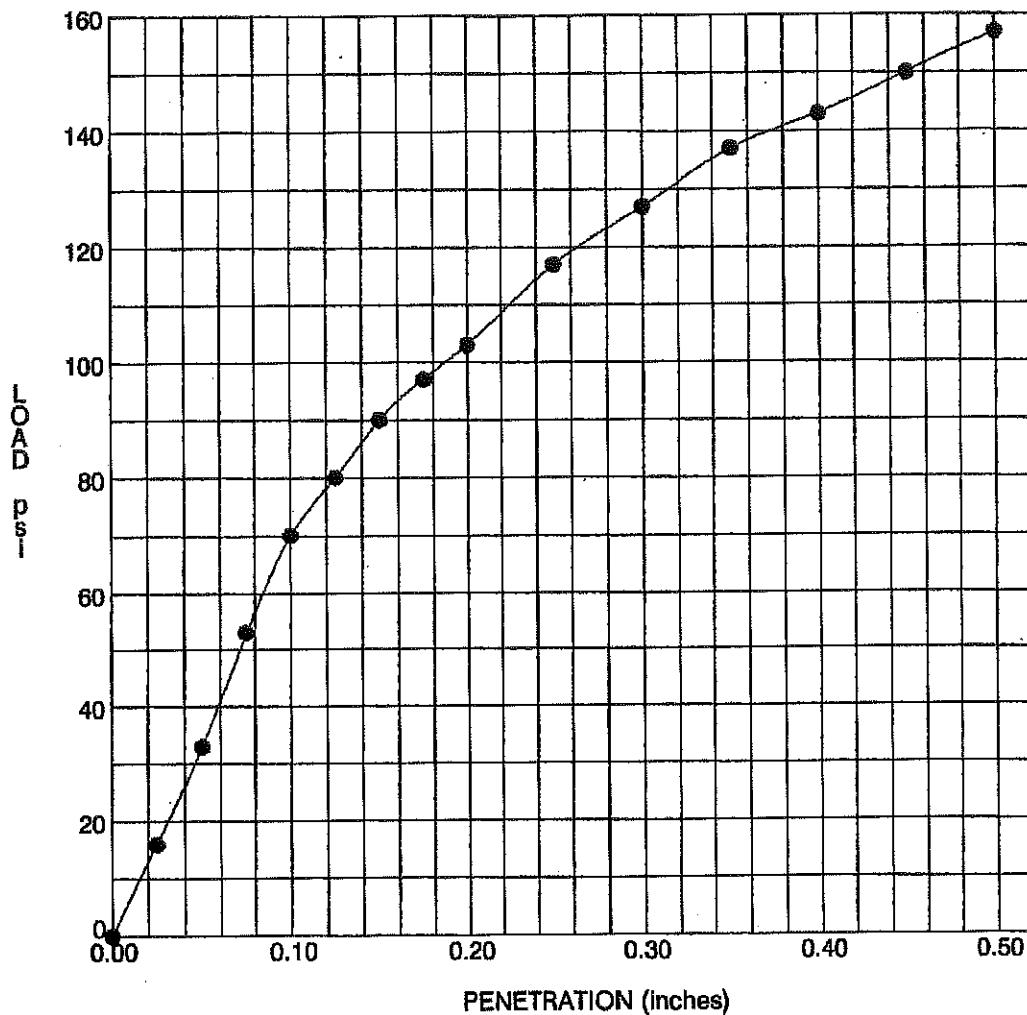
LIHUE TO WEST OF MALUHIA ROAD

ISLAND OF KAUAI, HAWAII

PLATE

A-29.1

Depth, ft	FIELD		LABORATORY			Other Data	Pen, tsf	DESCRIPTION	
	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf			(Continued from previous plate)	
		78	84	41			> 4.5		Reddish brown SILTY CLAY (CH), very hard, moist
40		48	69	47			3.0		
45		30	91	56			2.0		Gray with multi-color mottling CLAYEY SILT (MH), very stiff, moist
50		40	66	55			0.5		
51.5									Boring terminated at 51.5 feet
55									Groundwater not encountered
60									
65									
70									
75									
GEOLABS, INC. <i>Geotechnical Engineering</i>							LOG OF BORING 29 KAUMUALII HIGHWAY WIDENING LIHUE TO WEST OF MALUHIA ROAD ISLAND OF KAUAI, HAWAII		
WORK ORDER NO. 3869-00 KHN Dec 00							PLATE A-29.2		



LOCATION: Bulk 10
 DEPTH (FEET): Surface
 DESCRIPTION: Tannish brown CLAYEY SILT (MH)
 with some gravel

AGGREGATE 3/4 inch minus
 HAMMER WT. 10 lbs.
 HAMMER DROP 18 inches
 NO. OF BLOWS 10
 NO. OF LAYERS 5

MOLDING MOISTURE (%): 27.3
 MOLDING DRY DENSITY (p.c.f.): 90.2
 CBR @ 0.1" PENETRATION: 7.0
 DAYS SOAKED: 3.0
 SWELL (%): 0.86

CORRECTED CBR @ 0.1 "
 PENETRATION: $70 \times 100/1000 = 7.0$

PROJECT:
 KAUMUALII HIGHWAY WIDENING
 LIHUE TO WEST OF MALUHIA ROAD
 ISLAND OF KAUAI, HAWAII

CBR TEST	
GEOLABS, INC. <i>Geotechnical Engineering</i>	
DATE Dec 00	W.O. 3869-00

PLATE B - 47

PERMANENT BMP CHECKLIST AND PROJECT RECORD	
Project Name: _____	
Project Number: _____	Project Route/Milepost: _____
Advertise Date: _____	
Exemptions (check all that apply)	
<input type="checkbox"/>	Projects that do not generate 1 acre or more of new permanent impervious surface
<input type="checkbox"/>	Project returns the area to pre-development runoff conditions.
<input type="checkbox"/>	Project is a utility project (check applicable type)
<input type="checkbox"/>	<input type="checkbox"/> Pipeline <input type="checkbox"/> Conduit <input type="checkbox"/> Traffic Sign/Signal
<input type="checkbox"/>	Projects that are not continuous or involve several locations which may collectively generate 1 acre or more of new permanent impervious surface.
<input type="checkbox"/>	Projects that do not discharge runoff into any waters of the United States.
If none of the above is checked, the project must provide permanent BMPs	
Water Quality Control:	
Water quality volume required: _____ cubic feet Water quality volume provided: _____ cubic feet Type of BMP used: _____	
Attach on a separate sheet a detailed description of the Permanent BMPs to be incorporated into the design and the appropriate maintenance requirements.	
Water Quality Control: (Where applicable)	
Existing Site Runoff:	
10-year:	_____ cubic feet per second
25-year:	_____ cubic feet per second
50-year:	_____ cubic feet per second
100-year:	_____ cubic feet per second
Proposed Site Runoff:	
10-year:	_____ cubic feet per second
25-year:	_____ cubic feet per second
50-year:	_____ cubic feet per second
100-year:	_____ cubic feet per second
Type of BMP used: _____ Description: _____	

Figure 1-1

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAY DESIGN SECTION

DOT 4-802 (HWY-DD 4/98)

RELEASE FORM FOR HIGHWAY PLANS, DATA & CADD FILES

(CADD Files are ONLY in Microstation Format)

INSTRUCTIONS : Complete Part I ONLY.

I. TITLE/AGENCY/COMPANY : _____

ADDRESS : _____

PHONE NO. : _____

REQUESTED BY (NAME) : _____ DATE : _____

DATA REQUESTED (Name of Highway & Location) : _____

PURPOSE (STATEMENT ON USE OF PLANS AND/OR CADD FILES) : _____

II. CLEARANCE : (To BE Filled In By Highway Design Section)

APPROVED/DISAPPROVED : _____

TITLE : _____

REFERRED TO : DP UNIT A : _____ DP UNIT B : _____

A.G.'s OFFICE : _____ DESIGN PROJ. MGR. : _____ CADD OFC. : _____

III. PROCESSING OF REQUEST :

HWY-DD FILE NO. : _____

PROJECT NO. : _____

PROJECT TITLE & DESCRIPTION : _____

DATA FURNISHED (Including No. of Copies) : _____

SPECIAL INSTRUCTIONS FOR PRINTING AND/OR DELIVERY : _____

COMPLETED BY : _____ DATE : _____

TITLE : _____ PHONE NO. : _____

CONFLICT OF INTEREST (COI) DISCLOSURE FORM

Potential organizational conflict must be disclosed by proposers to the project owner as stated in 23 CFR 636.116. This form is to be completed by the General Contractor and all of its engineering, environmental, or architectural consultants hired for this project.

The Federal Highway Administration has defined "organizational conflict of interest" in 23 CFR Section 636.116 as follows:

Organizational COI means that because of other activities or relationships with other persons, a person is unable to render impartial assistance or advice to the owner, or the person's objectivity in performing the contract work is or might be otherwise impaired, or a person has an unfair competitive advantage.

These regulations also apply to "improper business practices and personal conflicts of interest" of the project owner's selection team members. 23 CFR Section 636.117 indicates that Federal Acquisition Regulations will apply to the state's selection team members in absence of relevant state laws and procedures. These regulations require government business to be "above reproach," conducted "with complete impartiality and with preferential treatment for none" and with "the highest degree of public trust and an impeccable standard of conduct" to avoid "even the appearance of a conflict of interest."

The identification, assessment, and management of real or potential COI is a joint task between HDOT and the private sector. It requires both parties to work together in an atmosphere of candor and accountability.

HDOT's determination will be based on a number of factors including;

1. Situational facts – description of the situation and all known facts specific to the actual or potential COI;
2. Type of work – specific product or service involved;
3. Relationship to Management – specific interactions with HDOT's decision managers;
and
4. Timing and availability of project or service.

It is important to understand that specific facts disclosed in any COI situation will be unique to that situation. Therefore, the decisions and conclusions reached in one situation may or may not be directly applicable to another.

If an organizational COI is determined to exist, The State of Hawaii, Department of Transportation, Highways Division may, at its sole discretion, disqualify the proposer from further participation in the procurement, cancel this procurement, or if award has already occurred, canceled the contract. If the proposer was aware of an organizational COI prior to

award of the contract and did not disclose the conflict or potential conflict to HDOT, HDOT may terminate the contract for default.

Some examples of conflict of interest as seen by HDOT are:

<u>Conflict Category</u>	<u>Description</u>
1.	An employee of the Contractor, who has a spouse or immediate relative that is a key Department personnel working on the project;
2.	Any employee of the Contractor's engineering or environmental consultant who has a spouse or immediate relative that is a key Department personnel working on the project;
3.	Any firm who assisted HDOT or HDOT's agent in preparing various Requests for Proposal (RFP) documents, and where that same firm is also partnering on the Proposer's team for the project. Applicable RFP documents includes but is not limited to: A. Technical Provisions; B. Plan Sheets; C. Special Provisions; D. Geotechnical Borings; and E. Any environmental document where specific recommendations or mitigation items are required as part of the project scope.
4.	Any firm who is currently defending HDOT against a lawsuit, claim, informal claim, or notice of claim, by a contractor or subcontractor, and where that same firm is also partnering with the same contractor for this project. Also, any firm who is currently providing post design or construction management services to HDOT on a project where his Design-Build partner is the contractor.

HDOT Key Project Personnel List:

Michael Hinazumi, Kauai District, Assistant District Engineer
Jamie Ho, Construction & Maintenance Branch, Engineering Program Manager
Stanford Iwamoto, Kauai District, Project Manager
Raymond McCormick, Kauai District, District Engineer

Failure to submit a complete Conflict of Interest Disclosure Form by the contractor and all of its engineering, environmental, or architectural consultants will automatically designate the proposer as non-responsive to this solicitation.

Failure to disclose conflict of interest information and any unsatisfactory performance of the contract as a result of the conflict, as perceived by HDOT, may result in commencement of debarment or suspension action defined in Section 103D-702, Hawaii Revised Statutes and Section 3-126, Hawaii Administrative Rules.

PART I

Date:	
Contractor, Engineering, Environmental, or Architectural firm name:	
<p>Would any of the four conflict categories shown on page 2 be applicable to your business or any employee or employees of your firm?</p> <p><input type="checkbox"/> – NO If your answer is "no", endorse this form in the signature line provided below and skip Part II of this form.</p> <p><input type="checkbox"/> – YES If your answer is "yes", continue to Part II of this form.</p>	
<p>My signature certifies that this firm has no business or personal relationships with any other companies, agencies or persons that could be considered as a conflict of interest or potential conflict of interest to HDOT, and that no principals, officers, agents, employees, or representatives of this firm that may have business or personal relationships with any other companies, agencies or persons that could be considered as a conflict of interest or potential conflict of interest to HDOT, pertaining to any and all work or services to be performed as a result of this request and any resulting contract with HDOT.</p> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 45%; text-align: center;"> <p>_____</p> <p>Date</p> </div> <div style="width: 45%; text-align: center;"> <p>_____</p> <p>Name and Title (please print)</p> </div> </div> <div style="display: flex; justify-content: center; margin-top: 20px;"> <p>_____</p> <p>Signature</p> </div>	

PART II

Applicable Conflict Category (1 to 5):
--

Name(s) of Employee (if applicable and/or specific to one individual or individuals):

Provide details of the potential conflict. Include project name, project owner and current applicable contract(s), litigation or claim amount, employee or business relationship with respect to conflict, and other information as applicable (attach other sheets as necessary):

Proposed action by Contractor or its Engineering, Environmental, or Architectural firm to mitigate conflict or potential conflict (attach other sheets as necessary). If HDOT has determined that a conflict exists and HDOT accepts the proposed mitigative action by the Contractor in this block, the Qualifications proposal will be scored using the information contained in the mitigation proposal.

I certify that information provided in Part II is true and correct and to the best of my knowledge.

_____ Date	_____ Name and Title (Please Print)
_____ Signature	
FOR HDOT's REVIEW COMMITTEE'S USE:	
1. ____ A conflict does not exist 2. ____ A conflict does exist 3. ____ The proposed mitigative action by the Contractor or its professional service consultant(s) is/are adequate to mitigate the conflict. 4. ____ The proposed mitigative action by the Contractor or its professional service consultant(s) is/are <u>not</u> adequate to mitigate the conflict.	
_____ Date	_____ _____ _____
_____ Department's Review Committee Member Signatures	

Attach this completed form as a tabbed Appendix to the QUALIFICATIONS PROPOSAL. This will not count against the QUALIFICATIONS PROPOSAL 100 page limitation.