

DATE _____
SURVEY PLotted BY _____
PLAN DESIGNED BY _____
NOTED BY _____
QUANTITIES BY _____
CHECKED BY _____
No. _____

HAWAII GEOTECHNICAL GROUP, INC.			BORING LOG B-1		
SOILS AND FOUNDATION ENGINEERS			Sheet 1 of 2 Sheets		
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET			Date: March 3, 1993 Drill: Auger (CME)		
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.
Elevation = 116' ±					
4	(CH)	Stiff, mottled brown, silty CLAY	A	18	39
5	(CH)	Stiff, mottled gray brown CLAY	B	15	52
6			C		83
7			D	5	76
8			E		69
9			F	6	66
10			G		60
11			H		73
12			I	15	68
13			J	24	58
14			K	30	64
End of Boring @ 46.5' 3-4-93					
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991					
1060 1140 1020					
1080 1120 1140					

HAWAII GEOTECHNICAL GROUP, INC.			BORING LOG B-2		
SOILS AND FOUNDATION ENGINEERS			Sheet 1 of 1 Sheets		
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET			Date: March 3, 1993 Drill: Auger (CME)		
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.
Elevation = 119' ±					
4	(CH)	Stiff, mottled brown, silty CLAY w/roots	A	23	32
5	(MH)	Stiff, mottled brown, clayey SILT	B		48
6	(MH)	Medium, brown, clayey SILT	C	7	58
7			D		112
8	CH	Soft, dark gray CLAY	E	2	54
9			F		65
10			G	58	79
11	(MH)	Stiff, mottled brown gray, clayey SILT w/traces of decomposed rock	H	106	55
12			I	55	53
End of Boring @ 36.5' 3-3-93					
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991					
2300 2450 2350					
920 560 640 660					

HAWAII GEOTECHNICAL GROUP, INC.			BORING LOG B-5		
SOILS AND FOUNDATION ENGINEERS			Sheet 1 of 1 Sheets		
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET			Date: March 1, 1993 Drill: Auger (D-25)		
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.
Elevation = 119' ±					
4	(CH/MH)	Hard, mottled brown, silty CLAY w/traces of decomposed rock	A	33	38
5			B		53
6			C	15	58
7			D		77
8	(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock	E	17	64
9			F		42
10			G	35	95 107 56
11			H	25/5 25/0	38 Hammer Bounces
End of Boring @ 30.5' 3-1-93					
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991					
3420 1900 1900 1800					
1140 460 500 540					

HAWAII GEOTECHNICAL GROUP, INC.			BORING LOG B-3										
SOILS AND FOUNDATION ENGINEERS			Sheet 1 of 1 Sheets										
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET			Date: March 30, 1993 Drill: Auger (Concore)										
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Net Density P.C.F.	Dry Density P.C.F.	% Hirus	Unconf. Comp P.S.I.	Peak Shear P.S.I.
Elevation = 123' ±													
4	(CH)	Stiff, mottled brown, silty CLAY w/roots	A	14	39								
5			B	13	44								
6	(MH)	Stiff, mottled brown, clayey SILT w/traces of decomposed rock	C		67				100	60			1440
7		4-1-93											1400
8	(MH)	3-30-93 Stiff, brown gray, clayey SILT w/decomposed rock	D	24	66 19								1360
15	MH	Stiff to medium, mottled brown, clayey SILT w/some decomposed rock	E		60	47	78	106	66				840
20			F	7	67								1140
25	(CH)	Stiff, mottled brown, silty CLAY w/some sand & gravel (Alluvium)	G	12	56								900
30	(MH)	Brown gray DECOMPOSED ROCK Hard, mottled brown, clayey SILT w/some decomposed rock	H	20/5 42/2	19 63								
End of Boring @ 31.2' 3-31-93													
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991													

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-7										
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 1 Sheets										
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET				Date: February 23, 1993 Drill: Auger (D-25)										
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT N	Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Shrinkage P.S.F.	Comp No. 200	Unconf. Comp P.S.F.	Comp No. 200	Unconf. Comp P.S.F.
0	(MH/CH)	Stiff, dark mottled brown, silty CLAY w/traces of roots & decomposed rock	A	19	42									
1			B	19	46									
2	(MH)	Stiff, dark mottled brown, clayey SILT w/traces of decomposed rock	C		57				102	65				
3		3-4-93	D	13	58									
4	(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock	E		60				102	64				
5			F	5	89									
6	(CH)	Medium, mottled gray brown, silty CLAY w/some decomposed rock	G		77	43	88	97	55		820	660	640	660
7	MH	Medium, mottled brown, clayey SILT w/traces of decomposed rock	H		62									
8	(MH)	Stiff, mottled brown, silty CLAY w/decomposed rock		17										
9		End of Boring @ 31.5' 2-23-93												
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991														

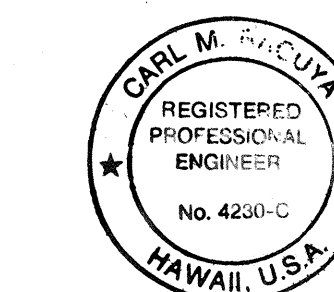
HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-8										
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 1 Sheets										
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET				Date: March 22, 1993 Drill: Auger (D-25)										
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT N Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Shrinkage % C.C.F.	Dry Density pcf C.C.F.	Wet Density pcf C.C.F.	Moisture No. 200	Unconf. Comp p.s.f.	Wave Shear
0		5' A.C.	A	12		50								
1			B			51			108	72				11
2			C	6		67								12
3														13
10	(MH)	Stiff to medium, mottled brown, clayey SILT w/traces of decomposed rock	D			49			108	72				6
15			E	5		63								8
20		3-22-93	F	12		53			98	64				18
25		Mottled brown, DECOMPOSED ROCK (some crushes to clayey silt)	G	10		20								17
30			H	17		55								15
35	(MH)	Stiff, dark mottled brown, clayey SILT w/decomposed rock												
		End of Boring @ 36.5' 3-22-93	I	16		46								
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991														

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-9												
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 1 Sheets												
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET				Date: February 25, 1993 Drill: Auger (D-25)												
Depth (Ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Sample No.	SPT N	Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit %	Liquid Limit %	Shrink. Density P.C.F.	Comp. Density P.C.F.	Moist. Ratio %	Unconf. Comp. P.S.F.	Unconf. Shear. P.S.F.	
0		(CH)	Elevation = 114' ± Stiff, mottled reddish brown, silty CLAY w/traces of roots	A	21	44										
1				B		53				110	72			2100	2100	
2				C	22	57									2100	2100
3		(CH)	Stiff, mottled brown gray CLAY													
4			3-12-93	D		68				99	59			680	440	
5				E	5	77										
6		(MH)	Medium, dark brown, clayey SILT w/decomposed rock													
7				F		76				103	59			1390	400	
8				G	12	56										
9		(MH)	Stiff, mottled reddish brown, clayey SILT w/traces of decomposed rock													
10				H	12	55										
11																
12			End of Boring @ 31.5' 2-25-93													
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991																

FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(26)	1994	198	238

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-10									
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 2 Sheets									
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET				Date: March 23, 1993 Drill: Auger (D-25)									
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Penetration Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Net Density P.C.F.	Dry Density P.C.F.	% Moisture No. 200	Unconf. Comp. No. 200	Comp. No. 200
0		Elevation = 123' ±											
0		4" A.C., 2" Base Course	A	15	47								
1			B		47				111	75			2000
2			C	6	48								1650
3	(MH)	Stiff to medium, mottled brown, clayey SILT w/decomposed rock	D		51				105	69		3350	2300
4		3-23-93	E	11	55								2650
5			F		51				113	75			
6	(CH)	Medium, dark grayish brown, silty CLAY	G	7	69								
7			H		58				120	76			
8		Mottled brown, DECOMPOSED ROCK (some crushes to clayey silt)											
9	(CH)	Medium, mottled reddish brown, silty CLAY	I	11	62								
10		End of Boring @ 41.5' 3-23-93	J	12	68								
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991													

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-11												
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 1 Sheets												
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET				Date: February 22, 1993 Drill: Auger (D-25)												
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit %	Liquid Limit %	Shrinkage %	Comp. No. 200	Unconf. Comp. No. 200	Comp. No. 200	Comp. No. 200	Comp. No. 200	Comp. No. 200	Comp. No. 200
0	(CH/MH)	Stiff, mottled brown, silty CLAY w/traces of roots	A	20	46											
1			B		53								1840			
2	(MH)	Stiff, mottled brown, clayey SILT 3-4-93	C	12	57				99	65						
3			D	6	69											
4	MH	Medium, mottled brown, clayey SILT	E		69	41	83	101	60		770	1000	920	1040		
5			F	4	72	36	69									
6			G													
7	(MH)	Soft, dark grayish brown, silty CLAY	H	29	63											
8			I	30/4	53											
9	(MH)	Stiff to hard, mottled grayish brown, clayey SILT w/decomposed rock														
10		End of Boring @ 30.4' 2-22-93														
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991																



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Carl M. Rucina
HAWAII GEOTECHNICAL GROUP, INC.

7/01/94	ADDED RE. STAMP AND SIGNATURE
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS	
KAHEKILI HIGHWAY WIDENING Likelike Hwy. to Vicinity of Haiku Road F.A. PROJECT NO. NH-083-1(26)	
SCALE: AS NOTED	DATE: APRIL 1994
SHEET No. B2 OF B12 SHEETS	

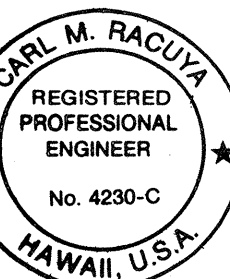
AS-BUILT 198R

DATE	
SURVEY PLANNED BY	
DESIGNED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NO.	

HAWAII GEOTECHNICAL GROUP, INC.		BORING LOG B-12	
SOILS AND FOUNDATION ENGINEERS		Sheet 1 of 2 Sheets	
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET		Date: January 14, 1993 Drill: Auger (Versa)	
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Elevation = 176' ±
5	(CH)	Stiff, reddish brown, silty CLAY w/roots	21
10	(CH)	Stiff, reddish brown, silty CLAY	22
15			40
20			42
25			44
30			47
35			107
40			75
45			73
50			60
55			52
60			99
65			65
70			1100
75			1280
80			1290
85			1140
90			1400
95			1360
100			1500
105			32
110			9
115			19
120			50
125			15
130			51
135			20
140			44
145			69
150			96
155			57
160			11
165			53
170			46
175			102
180			70
185			19
190			44
195			46
200			End of Boring @ 76.5' 1-15-93
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991			

HAWAII GEOTECHNICAL GROUP, INC.		BORING LOG B-13	
SOILS AND FOUNDATION ENGINEERS		Sheet 1 of 3 Sheets	
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET		Date: January 20, 1993 Drill: Auger (B-50)	
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Elevation = 175' ±
5	(MH)	Stiff, reddish brown, silty CLAY w/roots	35
10			35
15			42
20			53
25			101
30			66
35			700
40			700
45			740
50			11
55			56
60			57
65			107
70			68
75			13
80			60
85			58
90			101
95			64
100			11
105			55
110			57
115			105
120			67
125			9
130			55
135			62
140			40
145			64
150			107
155			66
160			1860
165			1300
170			1360
175			1180
180			19
185			60
190			52
195			114
200			75
205			11
210			68
215			14
220			64
225			53
230			53
235			110
240			72
245			16
250			59
255			11
260			66
265			End of Boring @ 81.5' 1-21-93
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991			

HAWAII GEOTECHNICAL GROUP, INC.		BORING LOG B-14	
SOILS AND FOUNDATION ENGINEERS		Sheet 1 of 3 Sheets	
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET		Date: January 11, 1993 Drill: Auger (Versa)	
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Elevation = 194' ±
5	(CH)	Stiff, reddish brown, silty CLAY w/roots	12
10			49
15			53
20			58
25			99
30			63
35			1400
40			1320
45			1220
50			74
55			3/5
60			6/5
65			66
70			99
75			60
80			1360
85			1560
90			1320
95			8
100			64
105			54
110			38
115			87
120			105
125			68
130			1500
135			1400
140			1300
145			14
150			52
155			60
160			107
165			67
170			1200
175			1400
180			1420
185			10
190			61
195			66
200			98
205			59
210			1320
215			1100
220			1020
225			11
230			70
235			60
240			31
245			98
250			109
255			68
260			71
265			1220
270			900
275			1120
280			17
285			55
290			19
295			60
300			23
305			55
310			End of Boring @ 106.5' 1-15-93
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991			



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Carl M. Raciva
HAWAII GEOTECHNICAL GROUP, INC.

FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(26)	1994	199	238

HAWAII GEOTECHNICAL GROUP, INC.		BORING LOG B-14	
SOILS AND FOUNDATION ENGINEERS		Sheet 3 of 3 Sheets	
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET		Date: January 11, 1993 Drill: Auger (Versa)	
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Elevation = 194' ±
5			14
10			64
15			53
20			99
25			65
30			840
35			730
40			780
45			27
50			59
55			61
60			52
65			71
70			106
75			65
80			1300
85			1360
90			1180
95			18/5
100			36/5
105			59
110			End of Boring @ 106.5' 1-15-93
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991			

7/01/94	ADDED P.E. STAMP AND SIGNATURE
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS	
KAHEKILI HIGHWAY WIDENING Likelike Hwy. to Vicinity of Haiku Road F.A. PROJECT NO. NH-083-1(26)	
SCALE: AS NOTED	DATE: APRIL 1994
SHEET No. B3 OF B12 SHEETS	

FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(26)	1994	200	238

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-15										
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 2 Sheets										
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET				Date: December 23, 1992 Drill: Auger (D-25)										
Depth (Ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Wet Density P.C.F.	Dry Density P.C.F.	% Minus No. 200	Unconf. Comp P.S.F.	Vane Shear P.S.F.
		(MH)	Stiff, brown, silty CLAY w/roots	A	18		51							
5		(CH)	Stiff, grayish brown, silty CLAY	B	22		54							
				C			55			109	71		3500	4250
10														
		CH	Stiff, mottled gray brown CLAY w/decomposed rock	D	21		56							
15				E			58	39	119	107	68		2250	2500
20		(MH)	Stiff, reddish brown, clayey SILT	F	21		49							
25		(MH)	Stiff, mottled gray brown DECOMPOSED ROCK (Some crushes to clayey silt)	G			56			107	68	1450		
30				H			65	32	61	104	63	560	2000	2250
35		MH/CH	Soft, dark brownish gray, clayey SILT	I	4		68							
40				J	4		79							
45		(MH)	Stiff, brown gray, clayey SILT w/traces of decomposed rock	K	11	No Recovery	71							
50				L										
				M	16		68							
			End of Boring @ 51.5' 12-29-92											
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991														

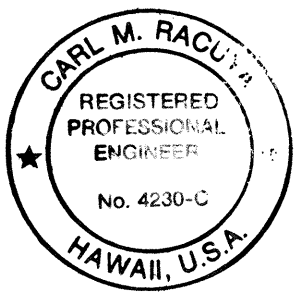
HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-16									
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 2 Sheets									
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIIPA STREET				Date: January 5, 1993 Drill: Auger (Versa)									
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Wet Density P.C.F.	Dry Density P.C.F.	Wet Density P.C.F.	Wet Density P.C.F.	Wet Density P.C.F.
		Elevation = 158' ± *											
0	(CH)	Stiff, dark brown, silty CLAY w/traces of roots	A	13	53								
5			B	20	59								
10			C		59			103	65			2000	2400
15	(MH)	Stiff, reddish brown, clayey SILT	D	23	57								
20		▽ 4-1-93	E		64			101	61			1550	1600
25			F	10	66							1750	
30	(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock	G		64	58		102	62		2660	1200	1200
35			H	11	52								
40			I		75			100	57		1870	940	1020
45			J	7	72								
50			K		65			102	62		1110	1040	1040
55			L	13	72								
58		End of Boring @ 51.5' 1-6-93											
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991													

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-16A										
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 2 Sheets										
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET				Date: March 16, 1993 Drill: Auger (Versa)										
Depth (Ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.	Water Cont.	Plastic Limit	Liquid Limit	Wet Density p.c.f.	Dry Density p.c.f.	% Minus No. 200	Unconf. Comp p.s.f.	Vane Shear p.s.f.
		(CH)	Stiff, brown, silty CLAY w/traces of roots	A	24	50								
5		(MH)	Stiff, mottled brown, clayey SILT	B		46			112	77			3450	3850
10		(CH)	Stiff, mottled brown gray CLAY	C	25	50							3600	
15				D		58			107	68		1460	960	1000
20				E	12	62							890	
25				F		55			108	70		1400	2000	2050
30		MH	Stiff, mottled brown, clayey SILT w/decomposed rock	G	10	71							2400	
35				H		69	43	89	103	61				
40		MH/CH	Soft, mottled reddish brown, silty CLAY	I	8	74								
45				J		73	41	99	121	70				
50			End of Boring @ 42.5' 3-18-93 *Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991	K	4	71								

HAWAII GEOTECHNICAL GROUP, INC.														
SOILS AND FOUNDATION ENGINEERS														
Project: KAHEKILI HIGHWAY WIDENING														
LIKELIKE HIGHWAY TO VICINITY														
OF KAHUHIPA STREET														
BORING LOG B-18														
Sheet 1 of 1 Sheets														
Date: March 18, 1993														
Drill: Auger (Versa)														
Depth (Ft.)	Graphic Scale	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.	Water Cont.	Plastic Limit	Liquid Limit	Wet Density P.C.F.	Dry Density P.C.F.	% Minus No. 200	Unconf. Comp P.S.F.	Vane Shear P.S.F.
		(CH)	Stiff, brown, silty CLAY w/coral & sand	A	23		33							
				B			47			107	72		2600	2500
5		(MH)	Hard, mottled brown, clayey SILT w/decomposed rock	C	10/5 35/5		54							2600
			4-1-93	D	22		51							
10				E	18		66							
15		(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock	F	34		58							
20			End of Boring @ 21.5' 3-18-93											
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991														

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-17									
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 1 Sheets									
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET				Date: December 29, 1992 Drill: Auger (D-25)									
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Wet Density P.C.F.	Dry Density P.C.F.	% Minus No. 200	Unconf. Comp P.S.F.	Vane Shear P.S.F.
	(CH)	Stiff, brown, silty CLAY w/roots	A	16	52								
			B		56				93	60		1500	1750
	(MH)	Stiff, mottled brown, clayey SILT	C	9	60							1500	
		1-4-93											
	(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock	D		51				110	73			
		End of Boring @ 10.7' 1-4-93											
		Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991											

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-19									
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 1 Sheets									
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET				Date: March 15, 1993 Drill: Auger (CME)									
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT N Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Wet Density p.c.f.	Dry Density p.c.f.	% Minus No. 200	Unconf. Comp p.s.f.	Vane Shear p.s.f.
0	(CH)	Medium, mottled brown, silty CLAY w/roots	A	8		47							
5			B	6		46							
10		3-16-93											
15	(MH)	Medium, mottled brown, clayey SILT w/traces of roots & decomposed rock	C		56				107	69			1040
20	(MH)	Stiff, mottled brown, clayey SILT w/traces of decomposed rock	D	31	50								1240
25	(CH)	Gray DECOMPOSED ROCK (Some crushes to silty sand)	E		39				143	103			940
30			F	25/1									
35		Gray BASALT	RUN 1	Core:	5.0'	Rec:	4.0'	RQD:	26%				
40			RUN 2	Core:	4.0'	Rec:	3.4'	RQD:	0%				
45	(GM)	Brown gray, partially cemented SAND & GRAVEL											
50		End of Boring @ 31.0' 3-16-93											
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991													



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION
Carl M. Racine
HAWAII GEOTECHNICAL GROUP, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

KAHEKILI HIGHWAY WIDENING
Likelike Hwy. to Vicinity of Haiku Road
F.A. PROJECT NO. NH-083-1(26)

SCALE: AS NOTED DATE: APRIL 1994

SHEET No. B4 OF B12 SHEETS

AS-BUILT 200R

DATE	
DESIGNED BY	
NOTED BY	
CHECKED BY	
ORIGINAL	
PLAN	
NOTEBOOK	
No.	

7/01/94	ADDED P.E. STAMP AND SIGNATURE
DATE	REVISION

HAWAII GEOTECHNICAL GROUP, INC.																
SOILS AND FOUNDATION ENGINEERS																
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET																
BORING LOG B-20																
Sheet 1 of 1 Sheets																
Date: March 24, 1993																
Drill: Auger (Concore)																
DEPTH (FT.)	GRAPHIC SYMBOL	UNIFIED SOIL CLASSIFICATION	DESCRIPTION	ELEVATION = 138' ±	SAMPLE NO.	SPT N BLOWS PER FT.	PROBING BLOWS PER FT.	WATER CONT. %	PLASTIC LIMIT	LIQUID LIMIT	WET DENSITY P.C.F.	DRY DENSITY P.C.F.	WET DENSITY P.C.F. NO. 200	DRY DENSITY P.C.F. NO. 200	UNCONF. COMP. P.S.F.	VANE SHEAR P.S.F.
3-26-93					A											
		(GH)	Very soft, dark grayish brown CLAY w/fragments & roots		B	1/1.5		68							600	540
					C			84							360	480
					D	PUSH/1.0		86							480	480
		(CH)	Medium, dark gray CLAY w/organics & roots		E			73								
		(MH)	Soft, mottled brown, clayey SILT w/traces of decomposed rock		F	4		77								
					G	20/5		65								
		(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock		H	14		37								
		(MH)	Stiff, brown, clayey SILT w/sand & gravel (Alluvium)		RUN 1	Core: 2.0'	Rec: 1.0'	ROD: 0%								
					RUN 2	Core: 3.0'	Rec: 1.4'	ROD: 0%								
					RUN 3	Core: 5.0'	Rec: 2.9'	ROD: 32%								
			Gray BASALT													
			End of Boring @ 30.0' 3-26-93													
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991																

HAWAII GEOTECHNICAL GROUP, INC.																
SOILS AND FOUNDATION ENGINEERS																
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET																
BORING LOG B-21 Sheet 1 of 1 Sheets																
Date: March 3, 1993 Drill: Auger (CME)																
Depth (Ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Elevation = 145' ±	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Wet Density P.C.F.	Dry Density P.C.F.	Wet Density P.C.F. No. 200	Dry Density P.C.F. No. 200	Unconf. Comp. P.S.F.	Vane Shear P.S.F.
		(SC)	Medium density, mottled brown, clayey SAND		A	27		38								
					B			40								1080
5		(MH)	Stiff, mottled brown, clayey SILT w/traces of roots		C	14		50								960
10				4-1-93	D			63								1060
15			Mottled brown DECOMPOSED ROCK (some crushes to clayey silt)		E	10		65								620
20					F			84								740
25					G	50/2										660
			End of Boring @ 28.0' 3-3-93													800
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991																

HAWAII GEOTECHNICAL GROUP, INC.						BORING LOG B-22										
SOILS AND FOUNDATION ENGINEERS						Sheet 1 of 1 Sheets										
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET						Date: March 12, 1993 Drill: Auger (Versa)										
Depth (ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Elevation = 150' ±	Sample No.	SPT N Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit %	Liquid Limit %	Wet Density P.C.F.	Dry Density P.C.F.	Wet Density P.C.F. No. 200	Dry Density P.C.F. No. 200	Unconf. Comp. P.S.F.	Vane Shear P.S.F.
		(CH)	Stiff, dark brown, silty CLAY w/traces of roots		A	23		50								
					B			48								
5					C	8		55								
		(MH)	Medium, mottled brown, clayey SILT w/decomposed rock		D			75							760	680
10				4-1-93	E			77							680	680
15					F	3										
		(MH)	Soft, mottled brown, clayey SILT		G		No Recovery									
20					H	2		85								
25					I		No Recovery									
			Mottled brown DECOMPOSED ROCK (Some crushes to clayey silt)		J	14		56								
30						45		38								
			End of Boring @ 31.5' 3-12-93													
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991																

FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(26)	1994	201	238

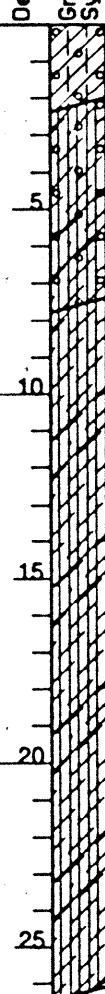
HAWAII GEOTECHNICAL GROUP, INC.										BORING LOG B-26						
SOILS AND FOUNDATION ENGINEERS										Sheet 1 of 2 Sheets						
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET										Date: March 5, 1993 Drill: Auger (D-25)						
Depth (ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Elevation = 155' ±	Sample No.	SPT N Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit %	Liquid Limit %	Wet Density p.c.f.	Dry Density p.c.f.	Wet Density p.c.f. No. 200	Dry Density p.c.f. No. 200	Unconf. Comp p.s.f.	Vane Shear p.s.f.
		(CH)	Stiff, mottled brown, silty CLAY w/sand & gravel		A	15		38								
					B	15		54								
					C			53	44	92	113	74			1580	1640
		(MH)	Stiff, brown, silty CLAY		D	16		50							1640	1680
					E			50			112	74			1680	1440
		(CH)	4-1-93 Soft, dark grayish brown, silty CLAY w/some roots		F	4		54							1440	1640
					G			71			89	52			720	640
		(MH)	Stiff, mottled brown, clayey SILT w/some decomposed rock		H	10		67							560	
					I	4		94								
					J	4		82								
					K	20/5 50/3		57								
			Brown DECOMPOSED ROCK		L	50/0		Hammer Bounces/No Recovery								
			End of Boring @ 48.0' 3-8-93													
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991																

HAWAII GEOTECHNICAL GROUP, INC.						BORING LOG B-23								
SOILS AND FOUNDATION ENGINEERS						Sheet 1 of 1 Sheets								
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPA STREET						Date: March 15, 1993 Drill: Auger (D-25)								
Depth (ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Sample No.	SPT N Blows Per Ft.	Probing Blows Per Ft.	Water Cont.	Plastic Limit	Liquid Limit	Wet Density P.C.F.	Dry Density P.C.F.	X Minus No. 200	Unconf. Comp P.S.F.	Vane Shear P.S.F.
		(CH)	Elevation = 142' ± Stiff to hard, mottled brown, silty CLAY w/roots	A	9/5 33/3									
			3-15-93 BOULDER (?)	B										
5				C	18		35							
10		(GM)	Stiff, gray, sandy GRAVEL w/clayey silt	D	26		31							
15				E			39							
20				F	21		55							
25		(MH)	Stiff, mottled brown, clayey SILT w/some decomposed rock	G	50/5		50							
			End of Boring @ 28.0' 3-15-93											
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991														

HAWAII GEOTECHNICAL GROUP, INC.						BORING LOG B-24									
SOILS AND FOUNDATION ENGINEERS						Sheet 1 of 1 Sheets									
Project: KAHEKILI HIGHWAY WIDENING						Date: March 12, 1993									
LIKELIKE HIGHWAY TO VICINITY						Drill: Auger (Versa)									
OF KAHUHIPA STREET															
Depth (ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Elevation = 147' ±	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit %	Liquid Limit %	Wet Density P.C.F.	Dry Density P.C.F.	% Moisture No. 200	Unconf. Comp. P.S.F.	Vane Shear P.S.F.
		(CH)	Stiff, grayish brown, silty CLAY w/traces of roots		A	29		52							
					B	16		53							
5		MH	Stiff, mottled brown, clayey SILT		C			51	42	94	107	71		2120	1460
			4-1-93												1320
10					D	3		77							1180
15		(MH)	Soft, brown, clayey SILT		E			No Recovery							
					F	1/1.0		70							
20					G	2/5		72							
25					H	24/5		66							
		(MH)	Stiff to hard, mottled brown, clayey SILT w/some decomposed rock		I	50/3		56							
30					J	32									
			End of Boring @ 31.5' 3-12-93												
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991															

HAWAII GEOTECHNICAL GROUP, INC.						BORING LOG B-25										
SOILS AND FOUNDATION ENGINEERS						Sheet 1 of 1 Sheets										
Project: KAHEKILI HIGHWAY WIDENING						Date: March 29, 1993										
LIKELIKE HIGHWAY TO VICINITY						Drill: Auger (Concore)										
OF KAHUHIPA STREET																
Depth (ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Elevation = 140' ± *	Sample No.	SPT N Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Wet Density p.c.f.	Dry Density p.c.f.	Wet Density p.c.f.	Dry Density p.c.f.	Wet Density p.c.f.	Dry Density p.c.f.
0						21		38								
5		(CH)	Stiff, mottled brown, silty CLAY w/roots		A											
					B			42			101	71			>5000	>5000
10		(MH)	Stiff, mottled brown clayey SILT w/some decomposed rock	4-1-93	C	12		59								
15		(CH)	Stiff, grayish brown CLAY		D			73			106	62			1660	2450
20															2350	2250
25		(MH)	Soft, mottled brown, clayey SILT w/some sand		E	2/1.5		91								
					F											
					G			89			99	53			400	400
30		(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock		H	8		86							400	400
						4/5		66								
						10/5										

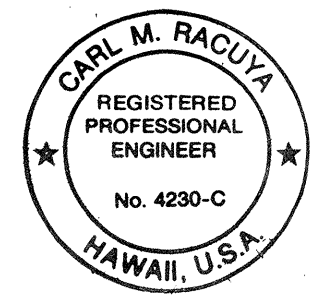
FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(26)	1994	202	238

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-27										
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 1 Sheets										
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPIA STREET				Date: March 1, 1993 Drill: Auger (D-25)										
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT N Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Shrinkage %	Wet Density P.C.F.	Dry Density P.C.F.	% Minus No. 200	Unconf. Comp P.S.F.	Vane Shear P.S.F.
	(CH)	Hard, mottled brown, silty CLAY w/traces of decomposed rock & roots	A	37		40								
			B	22		53								
	(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock	C			42		99	70			1860		
			D	10		63								
	(MH)	Stiff, dark brown, clayey SILT w/traces of decomposed rock	E			66		103	62			2800	900 1080 1220	
			F	8		68								
			G			66								
End of Boring @ 26.5' 3-4-93														
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991														

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-28									
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 1 Sheets									
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPIA STREET				Date: March 9, 1993 Drill: Auger (D-25)									
Depth (Ft.)	Unified Soil Classification	DESCRIPTION	Sample No.	SPT Blows Per Ft.	Probing Blows Per Ft.	Water Cont.	Plastic Limit	Liquid Limit	Wet Density p.c.f.	Dry Density p.c.f.	% Fines No. 200	Unconf. Comp. p.s.f.	Vane Shear p.s.f.
0 5 10 15 20 25 30	(CH)	Stiff, mottled brown, silty CLAY w/traces of roots & decomposed rock	A B C	17 13		49 52							
	(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock	D		45			151	104				680 600 580
			E	20	48								
			F		63		99	61					
G			11	67									
			H	15	65								
End of Boring @ 31.5' 3-10-93													
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991													

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-29										
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 1 Sheets										
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPIA STREET				Date: March 5, 1993 Drill: Auger (D-25)										
Depth (Ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Sample No.	SPT N Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit %	Liquid Limit %	Wet Density P.C.F.	Dry Density P.C.F.	Shrinkage %, 200	Unconf. Comp P.S.F.	Vane Shear P.S.F.
0		(CH)	Elevation = 163' ± Stiff, dark brown, silty CLAY w/roots, gravel & coral	A	20		26							
5		MH	Stiff, mottled brown DECOMPOSED ROCK w/roots (Some crushes to clayey silt)	B			49	37	66	102	69			
10			C	16		46								
15			Stiff, mottled brown DECOMPOSED ROCK	D			52		92	60				
20		(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock	E	15		58							
25				F	12		65							
End of Boring @ 21.5' 3-5-93														
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991														

HAWAII GEOTECHNICAL GROUP, INC.				BORING LOG B-30											
SOILS AND FOUNDATION ENGINEERS				Sheet 1 of 1 Sheets											
Project: KAHEKILI HIGHWAY WIDENING LIKELIKE HIGHWAY TO VICINITY OF KAHUHIPIA STREET				Date: March 19, 1993 Drill: Auger (Versa)											
DEPTH (Ft.)	Graphic Symbol	Unified Soil Classification	DESCRIPTION	Sample No.	SPT N Blows Per Ft.	Probing Blows Per Ft.	Water Cont. %	Plastic Limit	Liquid Limit	Wet Density P.C.F.	Dry Density P.C.F.	% Minus No. 200	Unconf. Comp P.S.F.	Vane Shear P.S.F.	
0		(CH)	Stiff, dark brown, silty CLAY w/traces of roots	A	15		41								
5				B	23		47								
10				C		49		102	69				2900	3200	3800
15		(MH)	Stiff, mottled brown, clayey SILT w/traces of decomposed rock	D	9		57								
20				E		52		82	54				1200	1400	940
25					Mottled brown DECOMPOSED ROCK (Some crushes to clayey silt)	F	18		53						
30	G		48				104	70							
35	(MH)	Stiff, mottled brown, clayey SILT w/decomposed rock	H	18		61									
End of Boring @ 31.5' 3-19-93															
*Elevation Estimated From Topographic Survey Map by ParEn Inc., Dated July 16, 1991															



THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION
Carl M. Racuta
HAWAII GEOTECHNICAL GROUP, INC.

7/01/94	ADDED P.E. STAMP AND SIGNATURE
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS	
KAHEKILI HIGHWAY WIDENING Likelike Hwy. to Vicinity of Haiku Road F.A. PROJECT NO. NH-083-1(26)	
SCALE: AS NOTED	DATE: APRIL 1994
SHEET No. B6 OF B12 SHEETS	

BORING NO. 31

Date Started: 7/23/93		Drill Rig: CME-55	
Date Completed: 7/23/93		Drilling Method: Auger	
Logged By: H.B. Xue		Driving Energy: 140 lb. wt., 30 in. drop	
Total Depth: 31.5 feet			

FIELD		LABORATORY						DESCRIPTION	
Depth, ft.	Sample Penetration Feet	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength tsf	Other	Data	Pen. tsf	
		82							Approximate Surface Elevation (ft): 169.0
5		16	74	47	2.6			2.5	8-inch ASPHALT CONCRETE 10-inch gray SANDY GRAVEL (GM) (Base course) Reddish brown SILTY CLAY (CH) with traces of gravel, very stiff, moist (fill)
10		39							grades with more gravel
15		14	74	50				1.5	Brown-orange mottled CLAYEY SILT (MH) with gravel, stiff, moist (fill)
20		50							grades to very stiff boulder from 21.5 to 23 feet
25		20	66	52				1.8	boulder from 25 to 26.5 feet
30		27						1.5	Brown-orange-gray mottled CLAYEY SILT (MH) with decomposed rock, very stiff, moist
									Boring terminated at 31.5 feet
35									Groundwater not encountered

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering				LOG OF BORING 31 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII				PLATE A-1.1	
WORK ORDER NO. 3087-00 JST July 93									

NOTE: * Elevations estimated from Topographic Survey Maps by ParEn, Inc. dated March 1993.

BORING NO. 32

Date Started: 5/19/93		Drill Rig: Mobile B-53	
Date Completed: 5/20/93		Drilling Method: Auger, Rotary Core	
Logged By: S. Carr		Driving Energy: 140 lb. wt., 30 in. drop	
Total Depth: 77.0 feet			

Depth, ft	FIELD				LABORATORY				Pen, ft	DESCRIPTION
	Sample Number	Pen. Resist.	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other	Date		
5		16	71	41						Approximate Surface Elevation (ft): 169.5
10		24	67	42			LL = 94 PI = 57		3.8	8-inch ASPHALT CONCRETE 10-inch gray SANDY GRAVEL (SM) (base course) Reddish brown SILTY CLAY (CH), stiff, damp (fill) grades with traces of gravel, very stiff
15		23	71	33						grades with basalt gravel
20		17	75	40					3.3	Light brown mottled CLAYEY SILT (MH) with some basalt gravel, stiff, damp (fill)
25		15	78	40	2.2				2.5	grades to reddish brown mottled
30		51	99	18						Reddish brown CLAYEY SILT and BASALT GRAVEL (MH/GM), very stiff/medium dense, damp (fill)
35		20	58	66					1.8	Brown mottled CLAYEY SILT (MH) with traces of gravel, stiff, damp
40		23	57	58					2.8	Brown mottled CLAYEY SILT (MH) with some sand, stiff to very stiff, moist (alluvium)
45		9	57	64			TV = 0.2		<0.3	grades to medium stiff
50		12	53	86			TV = 0.3		0.5	grades to stiff
55		16	57	65						Brown mottled partially cemented SILTY SAND (SM), medium dense (alluvium)
60	21/5' +25/3' REF	83	33							grades to dense
65							RUN 1 REC = 75% RQD = 57% RQD = 5			

BORING NO. 33

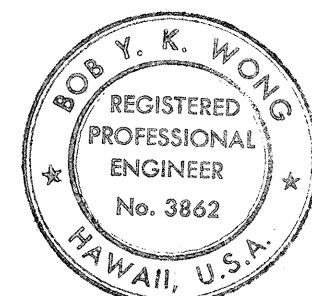
Date Started: 6/17/93		Drill Rig: Diedrich D-25								
Date Completed: 6/17/93		Drilling Method: Auger, Rotary Core								
Logged By: S. Wang		Driving Energy: 140 lb. wt., 30 in. drop								
Total Depth: 31.0 feet										
FIELD		LABORATORY		DESCRIPTION						
Depth, ft	Sample	Penetration, Blow/ft	Dry Density, pcf	Moisture Content, %	Compressive Strength, lbf	Other	Data	Pen. lbf		
									Approximate Surface Elevation (ft): 135.0	
4									Dark gray SILTY CLAY (CH) with traces of decomposed gravel and organics, soft, moist	
5		200 psi	36	137					grades to wet	
10		300 psi	55	70						
15		500 psi							grades to medium stiff, with traces of sand	
20		800 psi							Gray BASALT, severely jointed, moderately weathered, medium hard	
25									grades to slightly jointed, slightly weathered	
30										
35									Boring terminated at 31 feet	
									Groundwater level at 3 feet on 6/17/93	
CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering								LOG OF BORING 33 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII		PLATE A-3.1
WORK ORDER NO. 3087-00 JST June 93										

BORING NO. 34

Date Started:		6/22/93		Drill Rig:		Diedrich D-25		
Date Completed:		6/23/93		Drilling Method:		Auger, Rotary Core		
Logged By:		S. Wang		Driving Energy:		140 lb. wt., 30 in. drop		
Total Depth:		35.0 feet						
Depth, ft	FIELD				LABORATORY			DESCRIPTION
	Sample Number	Pen. Ref.	Blows/ ft	Dry Density pcf	Moisture Content %	Compress. Strength psi	Other	
								Approximate Surface Elevation (ft): 149.0
		17	64	35				2.5 Brown CLAYEY SILT (MH) with gravel, stiff, damp (fill)
5		13						Reddish brown SANDY SILT (ML) with gravel, medium stiff, damp (fill)
10		32	73	43	4.1			3.0 Dark brown CLAYEY SILT (MH) with gravel, very stiff, damp
15	400 psi 600 psi	58	72			TV=0.45 LL=73 PI=36		grades to medium stiff, moist
20		54						Dark gray SANDY GRAVEL (GM) with silt, dense, moist
25	31/3" REF.					RUN 1 REC=67% RQD=0%		Brownish gray BASALT, severely jointed, moderately weathered, hard
30						RUN 2 REC=100% RQD=85%		grades to slightly jointed, slightly weathered, very hard
35								Boring terminated at 35 feet
40								Groundwater not measured due to rotary wash drilling method
CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering								LOG OF BORING 34 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII
WORK ORDER NO. 3087-00 JST June 93								PLATE A-4.1 A-4.2

BORING NO. 35

Date Started: 5/19/93		Drill Rig: CME-55						
Date Completed: 5/19/93		Drilling Method: Auger						
Logged By: H.B. Xue		Driving Energy: 140 lb. wt., 30 in. drop						
Total Depth: 61.0 feet								
FIELD		LABORATORY				DESCRIPTION		
Depth, ft	Sample Penetration Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength psi	Other	Data	Pen. Ref.	
Approximate Surface Elevation (ft): 171.0								
5	18	76	33				1.5	
	24	72	48					
10	35	74	41	1.2				
15	40/3" REF.	83	43					
						encountered boulder at 15.5 feet		
20	22						2.0	
						Brown CLAYEY SILT (MH) with moderately weathered gravel, very stiff, moist (fill)		
						encountered 6-inch boulder at 23 feet		
25	46	114	15					
						Gray SANDY GRAVEL (GM) with silt, dense, moist (fill)		
30	40/0' REF.							
						encountered boulder from 30 to 33 feet		
35	53						>4.5	
						Dark gray CLAYEY SILT (MH) with gravel, very stiff, moist		
40	24						1.0	
						Dark gray SILTY CLAY (CH), stiff, moist		
45	21			1.7	TV=0.5			
						grades to medium stiff		
50	45	68	59					
						Dark gray SILTY SAND (SM) with gravel, dense		
55								
						encountered boulder at 55 feet		
						hard augering from 55 to 60 feet		
60	40/3" REF.	74	54					
						Brown SANDY SILT (ML) with gravel, stiff		
						Boring terminated at 61 feet		
						Groundwater level at 46 feet on 5/19/93		
65								
CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering						LOG OF BORING 35 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII		PLATE A-5.1 A-5.2
WORK ORDER NO. 3087-00 JST JUNE 93								



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature: Bob Y. K. Wong 7/1/94
DATE

7/01/94	ADDED RE. STAMP & SIGNATURE AND NOTE OF BORING LOG ELEV.
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS	
KAHEKILI HIGHWAY WIDENING Likelike Hwy. to Vicinity of Haiku Road F.A. PROJECT NO. NH-083-1(26)	
SCALE: AS NOTED	DATE: APRIL 1994
SHEET No. B7 OF B12 SHEETS	

AS-BUILT 203R

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
PACKED BY	_____
QUANTITIES BY	_____
CHECKED BY	_____
ORIGINAL	_____
PLAN	_____
NOTEBOOK	_____
No.	_____

ROTATED:
BASE PT.UP: STATE DOT, KAHAKULU, HI 96741
LOGS: 5/20/94 FMS

BORING NO. 36

Date Started: 6/24/93	Drill Rig: Diedrich D-25
Date Completed: 6/24/93	Drilling Method: Auger, Rotary Core
Logged By: S. Wang	Driving Energy: 140 lb. wt., 30 in. drop
Total Depth: 35.0 feet	

FIELD		LABORATORY		DESCRIPTION
Depth, ft	Pen. test	Pen. test	Pen. test	
16	70	45		Dark brown SILTY CLAY (CH) with traces of weathered gravel and roots, stiff, damp
35	69	51		grades to very stiff
11	58	61	1.4	grades to stiff
13	61	66	1.0	Dark brown SANDY SILT (ML) with traces of gravel, very stiff
37/5' REF.				Brown BASALT, severely jointed, highly weathered, soft
				Gray vesicular BASALT, severely jointed, moderately weathered, hard
				grades to moderately jointed, slightly weathered, very hard
				Boring terminated at 35 feet
				Groundwater level at 15 feet on 6/24/93

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering	LOG OF BORING 36 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII	PLATE A-6.1 A-6.2
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WORK ORDER NO. 3087-00 JST JUNE 93

BORING NO. 37

Date Started: 5/17/93	Drill Rig: Minuteman
Date Completed: 5/17/93	Drilling Method: Auger
Logged By: S. Wang	Driving Energy: 140 lb. wt., 30 in. drop
Total Depth: 28.0 feet	

FIELD		LABORATORY		DESCRIPTION
Depth, ft	Pen. test	Pen. test	Pen. test	
5	89	68	43	Brown CLAYEY SILT (MH) with traces of gravel and roots, very stiff, moist
10	48	63	41	grades to hard
15	58	67	31	Brown mottled CLAYEY SILT (MH) with decomposed rock, very stiff, damp
20	106			grades to hard
25	60	69	34	grades to very stiff
30	33			Boring terminated at 28 feet
				Groundwater not encountered

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering	LOG OF BORING 37 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII	PLATE A-7.1
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WORK ORDER NO. 3087-00 JST JUNE 93

BORING NO. 38

Date Started: 5/27/93	Drill Rig: Mobile B-53
Date Completed: 5/27/93	Drilling Method: Auger
Logged By: H.B. Xue	Driving Energy: 140 lb. wt., 30 in. drop
Total Depth: 61.5 feet	

FIELD		LABORATORY		DESCRIPTION
Depth, ft	Pen. test	Pen. test	Pen. test	
35	67	37	1.5	Brown CLAYEY SILT (MH) with traces of gravel, very stiff, damp
5	85			Brown SILTY CLAY (CH) with traces of gravel, very stiff to hard, damp
10	41	70	48	grades to very stiff
15	22			Brown CLAYEY SILT (MH) with decomposed rock, stiff, moist
20	23	60	65	grades to medium stiff to stiff
25	24			Light gray SILTY CLAY (CH) with gravel, medium stiff, wet
30	9	50	89	TV = 0.9
35	10	53	80	TV = 0.4
40	9			Light gray SILTY CLAY (CH) with gravel, medium stiff, wet
45	8		0.2	Brown mottled SANDY GRAVEL (GM/GP) with silt, medium dense, wet
50	31/3' REF.			grades to loose to medium dense
55				encountered boulder at 50.7 feet
60				hard augering from 53.0 to 56.0 ft
65				Brown SILTY CLAY (CH), stiff, wet
				Boring terminated at 61.5 feet
				Groundwater level at 22 feet on 5/28/93

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering	LOG OF BORING 38 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII	PLATE A-8.1 A-8.2
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WORK ORDER NO. 3087-00 JST JUNE 93

BORING NO. 39

Date Started: 5/20/93	Drill Rig: CME-55
Date Completed: 5/21/93	Drilling Method: Auger
Logged By: H.B. Xue	Driving Energy: 140 lb. wt., 30 in. drop
Total Depth: 71.5 feet	

FIELD		LABORATORY		DESCRIPTION
Depth, ft	Pen. test	Pen. test	Pen. test	
30/3' REF.				4-inch ASPHALT CONCRETE
5	48	85	19	6-inch gray SANDY GRAVEL (GM) (base course)
10	82	103	16	Reddish brown SILTY CLAY (CH) with gravel, very stiff, damp (fill)
15	92			encountered boulder at 2 feet
20	80	106	9	grades to very stiff to hard at 5 feet
25	21	77	40	grades to hard
30	34	76	46	encountered boulder at 11 feet
35	38			grades to very stiff, moist
40	31	65	69	grades to very stiff, moist
45				Gray basalt GRAVEL (GM/GP) with clayey silt, dense, moist
50	23	52	93	Brown SILTY CLAY (CH) with gravel, stiff, moist
55				Dark gray SILTY CLAY (CH) with gravel, stiff, moist
60				grades to very stiff
65				grades to very stiff
70				Brown CLAYEY SILT (MH) with traces of gravel, stiff, moist
75				grades with sand, wet
				Boring terminated at 71.5 feet
				Groundwater level at 45 feet on 5/20/93

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering	LOG OF BORING 39 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII	PLATE A-9.1 A-9.2
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WORK ORDER NO. 3087-00 JST JUNE 93

BORING NO. 40

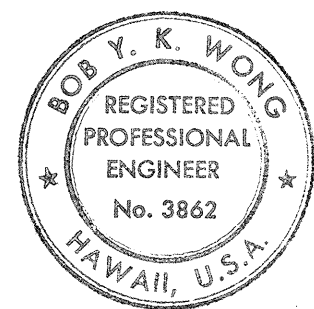
Date Started: 7/23/93	Drill Rig: CME-55
Date Completed: 7/23/93	Drilling Method: Auger
Logged By: H.B. Xue	Driving Energy: 140 lb. wt., 30 in. drop
Total Depth: 21.5 feet	

FIELD		LABORATORY		DESCRIPTION
Depth, ft	Pen. test	Pen. test	Pen. test	
5	91	121	9	4-inch ASPHALT CONCRETE
10	18	79	50	6-inch SANDY GRAVEL (GM) (base course)
15	40/5' REF.			Reddish brown SILTY CLAY (CH) with lots of gravel and sand, very stiff, damp (fill)
20	21	103	10	grades to stiff
25				encountered boulder at 15.5 feet
30				grades to stiff
35				Boring terminated at 21.5 feet
				Groundwater not encountered

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering	LOG OF BORING 40 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII	PLATE A-10.1
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WORK ORDER NO. 3087-00 JST JULY 93

7/01/94	ADDED RE. STAMP AND SIGNATURE
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS	
KAHEKILI HIGHWAY WIDENING Likelike Hwy. to Vicinity of Haiku Road F.A. PROJECT NO. NH-083-1(26)	
SCALE: AS NOTED	DATE: APRIL 1994
SHEET No. B8 OF B12 SHEETS	
AS-BUILT 204R	



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature: Robert K. Wong, Date: 7/1/94

BORING NO. 41

Date Started:	5/28/93	Drill Rig:	Mobile B-53
Date Completed:	5/28/93	Drilling Method:	Auger
Logged By:	H.B. Xue	Driving Energy:	140 lb. wt., 30 in. drop
Total Depth:	61.5 feet		

FIELD		LABORATORY				Pen. test	DESCRIPTION
Depth, ft	Sample No.	Penetration, Blow/ft	Dry Density, pcf	Moisture Content, %	Other Data		
21						Approximate Surface Elevation (ft): 152.0	
5	36					Brown CLAYEY SILT (MH) with traces of gravel, very stiff, damp	
10	17	65	53			Brown CLAYEY SILT (MH) with decomposed rock, stiff, damp	
15	18	62	60			grades to very stiff	
20	36					grades to very stiff to hard	
25	8					Brown SANDY SILT (ML) with weathered gravel, medium stiff, wet	
30	8	58	68			Brown mottled SANDY GRAVEL (GP/GM) with silt, medium dense, wet	
35	9				TV = 0.4	Light gray SILTY CLAY (CH), soft to medium stiff	
40	9	40	123		TV = 0.2	grades to soft	
45	44					Brown mottled SANDY GRAVEL (GP/GM) with traces of silt, dense	
50	23	57	74			grades to medium dense	
55							
60	23					Light gray CLAYEY SILT (MH) with gravel, stiff	
65						Boring terminated at 61.5 feet Groundwater level at 26 feet on 5/28/93	

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering	LOG OF BORING 41 KAHEKILI HIGHWAY WIDENING, PHASE 2	PLATE A-11.1 A-11.2
WORK ORDER NO. 3087-00 JST JUNE 93	KOOLAUPOKO, OAHU, HAWAII	

BORING NO. 42

Date Started:	7/21/93	Drill Rig:	Concore 1218
Date Completed:	7/21/93	Drilling Method:	Auger
Logged By:	H.B. Xue	Driving Energy:	140 lb. wt., 30 in. drop
Total Depth:	27.5 feet		

FIELD		LABORATORY				Pen. test	DESCRIPTION
Depth, ft	Sample No.	Penetration, Blow/ft	Dry Density, pcf	Moisture Content, %	Other Data		
28						Approximate Surface Elevation (ft): 160.0	
5	69	114	14			Brown-gray mottled CLAYEY SILT (MH) with gravel and cobbles, very stiff, damp (fill)	
10	41					grades to very stiff to hard	
15	44	79	39			boulder from 9 to 10 feet	
20	29	66	53	2.6		Dark gray SILTY CLAY (CH) with traces of gravel, very stiff, moist	
25	19	61	63			grades with a little sand, stiff	
30						Boring terminated at 27.5 feet Groundwater not encountered	
35							

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering	LOG OF BORING 42 KAHEKILI HIGHWAY WIDENING, PHASE 2	PLATE A-12.1
WORK ORDER NO. 3087-00 JST July 93	KOOLAUPOKO, OAHU, HAWAII	

BORING NO. 43

Date Started:	5/18/93	Drill Rig:	CME-55
Date Completed:	5/19/93	Drilling Method:	Auger
Logged By:	H.B. Xue	Driving Energy:	140 lb. wt., 30 in. drop
Total Depth:	80.1 feet		

FIELD		LABORATORY				Pen. test	DESCRIPTION
Depth, ft	Sample No.	Penetration, Blow/ft	Dry Density, pcf	Moisture Content, %	Other Data		
26	78	42				Approximate Surface Elevation (ft): 176.5	
5	27	90	27	3.4		4-inch ASPHALT CONCRETE 6-inch SANDY GRAVEL (GM) (base course) Reddish brown CLAYEY SILT (MH) with gravel, very stiff, damp (fill)	
10	55					grades to hard	
15	80	90	13			Brown CLAYEY SILT (MH) with basalt gravel, hard, damp (fill)	
20	78					encountered cobbles or boulder at 17 feet	
25	39	76	46			grades to very stiff to hard, damp	
30	25	69	49			Brown CLAYEY SILT (MH) with decomposed rock, very stiff, damp	
35	20	67	51		LL = 70 PI = 23	Brown CLAYEY SILT (MH) with decomposed rock, stiff, damp	
40	14						
45	27	57	63			Brown CLAYEY SILT (MH) with highly weathered rock, very stiff, moist	
50	11		73			Brown mottled SILT (MH) with weathered gravel, medium stiff, moist	
55	6	58	75			Dark brown CLAYEY SILT (MH) with traces of gravel, medium stiff, wet	
60	9					Dark brown SILTY CLAY (CH), medium stiff, wet	
65							
70	23	47	95			Dark brown SANDY SILT (MH) with clay, stiff, wet	
75						Dark brown SANDY SILT (MH) with clay, stiff hard augering at 77 feet	
80	40/0' REF.					Boring terminated at 80 feet Groundwater level at: 55 feet on 05/18/93	
85							

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering	LOG OF BORING 43 KAHEKILI HIGHWAY WIDENING, PHASE 2	PLATE A-13.1 A-13.2 A-13.3
WORK ORDER NO. 3087-00 JST June 93	KOOLAUPOKO, OAHU, HAWAII	

FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(26)	1994	205	238

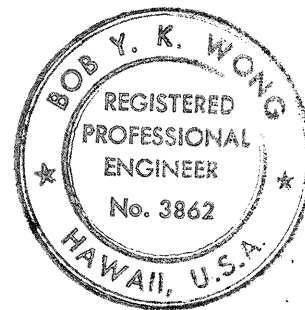
BORING NO. 44

Date Started:	5/17/93	Drill Rig:	Mobile B-53
Date Completed:	5/17/93	Drilling Method:	Auger
Logged By:	H.B. Xue	Driving Energy:	140 lb. wt., 30 in. drop
Total Depth:	21.5 feet		

FIELD		LABORATORY				Pen. test	DESCRIPTION
Depth, ft	Sample No.	Penetration, Blow/ft	Dry Density, pcf	Moisture Content, %	Other Data		
54	66	41				Approximate Surface Elevation (ft): 175.0	
5	25	78	51			Brown CLAYEY SILT (MH), very stiff, damp	
10	38	75	49	6.6		grades to stiff	
15	40	66	55			grades to very stiff	
20	22	65	57			Brown CLAYEY SILT (MH) with sand and decomposed rock, very stiff, moist	
25						Boring terminated at 21.5 feet Groundwater not encountered	
30							
35							

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering	LOG OF BORING 44 KAHEKILI HIGHWAY WIDENING, PHASE 2	PLATE A-14.1
WORK ORDER NO. 3087-00 JST June 93	KOOLAUPOKO, OAHU, HAWAII	

SURVEY PLOTTED BY	DATE
DRAWN BY	
TRACED BY	
NOTED BY	
CHECKED BY	
ORIGINAL PLAN	
NO.	



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE: *Bobby K. Wong* 7/1/94
DATE

7/01/94	ADDED RE. STAMP AND SIGNATURE
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS	
KAHEKILI HIGHWAY WIDENING Likelike Hwy. to Vicinity of Haiku Road F.A. PROJECT NO. NH-083-1(26)	
SCALE: AS NOTED	DATE: APRIL 1994
SHEET No. B9 OF B12 SHEETS	

AS-BUILT 205R

BORING NO. 45

Date Started: 5/26/93		Drill Rig: Mobile B-53	
Date Completed: 5/26/93		Drilling Method: Auger	
Logged By: H.B. Xue		Driving Energy: 140 lb. wt., 30 in. drop	
Total Depth: 51.5 feet			

FIELD		LABORATORY				DESCRIPTION	
Depth, ft	Pen. Test	Sample	Penetration, Blow/ft	Dry Density,pcf	Moisture Content, %	Pen. Test	Approximate Surface Elevation (ft): 153.0
17	74	50	1.5			1.8	4-inch CONCRETE
35						3.0	Brown SILTY CLAY (CH) with weathered gravel, stiff, damp
5							grades to very stiff
10	68					4.0	grades to very stiff to hard
15	18	63	54				Brown CLAYEY SILT (MH) with decomposed rock, stiff, moist
20	24					3.5	grades to very stiff
25	13	56	73				Brown SILTY CLAY (CH) with traces of gravel, stiff, moist
30	15						Brown mottled GRAVELLY SAND (SM) with silt, medium dense, moist
35	7	50	90				Brown SILTY CLAY (CH), medium stiff, wet
40	18						Brown GRAVELLY SAND (SM) with silt, medium dense, wet
45	22	98	31				grades to loose
50	6						Boring terminated at 51.5 feet
55							Groundwater level at 35 feet on 5/26/93

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering WORK ORDER NO. 3087-00 JST June 93	LOG OF BORING 45 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII	PLATE A-15.1 A-15.2
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BORING NO. 46

Date Started: 7/26/93		Drill Rig: CME-55	
Date Completed: 7/26/93		Drilling Method: Auger	
Logged By: H.B. Xue		Driving Energy: 140 lb. wt., 30 in. drop	
Total Depth: 21.5 feet			

FIELD		LABORATORY				DESCRIPTION	
Depth, ft	Pen. Test	Sample	Penetration, Blow/ft	Dry Density,pcf	Moisture Content, %	Pen. Test	Approximate Surface Elevation (ft):
30	78	41				3.0	8-inch ASPHALT CONCRETE
32						2.3	8-inch gray SANDY GRAVEL (GM) (base course)
5							Reddish brown SILTY CLAY (CH) with traces of gravel, very stiff, damp (fill)
10	25	79	40	1.6		1.5	grades with some gravel
15	45						grades with more of gravel encountered boulder at 16.5 feet
20	28	91	32			2.3	Boring terminated at 21.5 feet
25							Groundwater not encountered
30							
35							

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering WORK ORDER NO. 3087-00 JST July 93	LOG OF BORING 46 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII	PLATE A-16.1
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BORING NO. 47

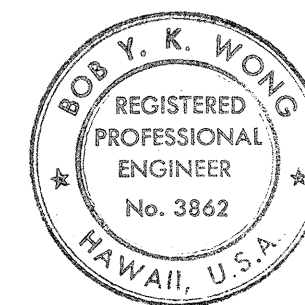
Date Started: 6/19/93		Drill Rig: Diedrich D-25	
Date Completed: 6/22/93		Drilling Method: Auger, Rotary Core	
Logged By: H.B. Xue		Driving Energy: 140 lb. wt., 30 in. drop	
Total Depth: 53.0 feet			

FIELD		LABORATORY				DESCRIPTION	
Depth, ft	Pen. Test	Sample	Penetration, Blow/ft	Dry Density,pcf	Moisture Content, %	Pen. Test	Approximate Surface Elevation (ft): 142.0
18	66	38				3.0	Reddish brown CLAYEY SILT (MH) with gravel, stiff, slightly dry (fill)
19	78	44				3.8	grades to very stiff and damp
5							encountered boulder at 5 feet
10							SILTY CLAY (CH)
15	33					2.3	moist
20	32						Black-brown-gray mottled SILTY SAND (SM) with weathered rock, dense, moist
25	15	64	61				grades to medium dense
30	10	58	63				Brownish gray CLAYEY SILT (MH) with decomposed rock, medium stiff, moist
40	43/3						Brownish gray SANDY SILT (ML) with decomposed rock, medium stiff, moist
45							Gray vesicular to vugular BASALT, severely to moderately jointed, moderately weathered, hard
50							Boring terminated at 53.0 feet
55							Groundwater not encountered
60							

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering WORK ORDER NO. 3087-00 JST June 93	LOG OF BORING 47 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII	PLATE A-17.1 A-17.2
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FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(26)	1994	206	238

DATE	
SURVEY PLOTTED BY	
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL PLAN	
NOTEBOOK	
No.	



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

Signature: Bob Y. K. Wong
Date: 7/1/94

7/01/94	ADDED RE. STAMP AND SIGNATURE
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

KAHEKILI HIGHWAY WIDENING
Likelike Hwy. to Vicinity of Haiku Road
F.A. PROJECT NO. NH-083-1(26)

SCALE: AS NOTED DATE: APRIL 1994

SHEET No. B10 OF B12 SHEETS

BORING NO. 48

Date Started: 5/21/93		Drill Rig: CME-55							
Date Completed: 5/24/93		Drilling Method: Auger							
Logged By: H.B. Xue		Driving Energy: 140 lb. wt., 30 in. drop							
Total Depth: 91.0 feet									
Depth, ft	FIELD				LABORATORY		Pen. test	DESCRIPTION	
	Sample Number Test.	Blows/ft	Dry Density pcf	Mixture Percent %	Compress. Strength ksf	Other			Date
37		94		19		LL=65 PI=37		4-inch ASPHALT CONCRETE	
5		15	74	37	0.4			6-inch gray SANDY GRAVEL (GM) (base course) Reddish brown SILTY CLAY (CH) with gravel, very stiff, damp (fill) grades to medium stiff	
10		47							
15	35/4' REF.							encountered boulder at 15 feet	
20		67	99	26			2.0	Brown mottled CLAYEY SILT (MH) with gravel, very stiff, moist (fill)	
25		34	67	51	2.2		3.0	grades to very stiff	
30		33	103	24				Gray basalt GRAVEL (GP) with clayey silt, medium dense, moist (fill)	
35		28					2.3	Gray CLAYEY SILT (MH), very stiff, moist (fill) Gray CLAYEY SILT (MH), very stiff, moist (fill)	
40		78	75	44		LL=53 PI=10	4.5	Yellowish brown SANDY SILT (MH) with decomposed rock, very stiff to hard, moist (fill) encountered boulder at 45 feet	
45	40/2' REF.								
50		51						Brown CLAYEY SILT (MH) with decomposed rock, very stiff, moist	
55		27	58	64			4.0	grades to stiff	
60		68						Gray SANDY GRAVEL (GW) dense, wet	
65	70/3' REF.							hard augering from 65 to 66 feet	
70	60/4' REF.	49	50					grades to medium dense to dense hard augering from 73 to 75 feet	
75									
80		85					3.5	Light gray CLAYEY SILT (MH) with sand and gravel, very stiff to hard, wet	
85									
90	80/5' REF.	77	46					Brown mottled SANDY SILT (MH) with gravel, very stiff, wet Boring terminated at 91 feet Groundwater level at 33 feet on 5/24/93	
95									
CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering WORK ORDER NO. 3087-00 JST June 93							LOG OF BORING 48 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII		PLATE A-18.1 A-18.2 A-18.3

BORING NO. 49

Date Started: 6/22/93		Drill Rig: Diedrich D-25						
Date Completed: 6/23/93		Drilling Method: Auger, Rotary Core						
Logged By: H.B. Xue		Driving Energy: 140 lb. wt., 30 in. drop						
Total Depth: 47.0 feet								
Depth, ft	FIELD						Pen. test	DESCRIPTION
	Sample	Penetration	Blow/ft	Moisture Content %	Compress. Strength test	Other		
		22						Approximate Surface Elevation (ft): 143.0
5		19	70	47				Brown-orange mottled CLAYEY SILT (MH) with gravel, very stiff, damp (fill)
10		24	72	46	3.1			Brown SILTY CLAY (CH) with gravel, very stiff, damp (fill)
15		21						
20		19	74	61				Reddish brown SILTY CLAY (CH) with decomposed rock, very stiff, moist (fill)
25		22	67	56				grades with decomposed rock, moist at 16 feet
30		21						Dark grayish brown SILTY CLAY (CH), stiff to very stiff, moist (fill)
35								grades to very stiff
40								Gray SANDY SILT (MH) with basalt gravel, stiff to very stiff, moist
45								Gray BASALT BOULDER
50								Gray-brown vesicular to vugular BASALT, moderately jointed, slightly to moderately weathered, hard
								grades to moderately to severely jointed, slightly weathered, hard to very hard
								Boring terminated at 47 feet
								Groundwater not encountered
CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering WORK ORDER NO. 3087-00 JST June 93								LOG OF BORING 49 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII
								PLATE A-19.1 A-19.2

BORING NO. 50

Date Started: 5/21/93		Drill Rig: CME-55							
Date Completed: 5/25/93		Drilling Method: Auger, Rotary Core							
Logged By: S. Wang		Driving Energy: 140 lb. wt., 30 in. drop							
Total Depth: 92.0 feet									
Depth, ft	FIELD				LABORATORY		Pen. test	DESCRIPTION	
	Sample Remarks	Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data			
5	16	95	18	1.3			1.2	4-inch ASPHALT CONCRETE	
	26	80	33		LL=91 PI=56		1.5	6-inch SANDY GRAVEL (GM) (base course) Reddish brown SILTY CLAY (CH) with gravel, stiff, moist (fill)	
10	15	79	39				1.3	Reddish brown mottled CLAYEY SILT (MH) with gravel, stiff, moist (fill)	
15	45	109	19				2.0	grades to very stiff	
20	18						1.2	grades to stiff	
25	13	74	47				2.0		
30	18						1.8		
35	20	72	53				1.7	Reddish brown CLAYEY SILT (MH) with gravel, stiff, moist (fill)	
40	22	71	52				1.3	Dark brown CLAYEY SILT (MH) with sand and traces of gravel, stiff, moist (fill)	
45	28	63	59	3.8			1.7	grades to very stiff	
50	51						2.0	Dark gray CLAYEY SILT (MH) with traces of gravel, very stiff to hard, moist	
55	59							Dark gray SANDY GRAVEL (GW) with traces of silt, very dense, wet	
60	43/3' REF.		45					Brown SILTY SAND (SM) with traces of gravel, dense	
65					RUN 1 REC=50% RQD=0% RUN 2 REC=25% RQD=0% RUN 3 REC=100% RQD=0% RUN 4 REC=78% RQD=31%			BASALT BOULDER with gray silty clay, moderately weathered, hard	
70								Gray vugular BASALT FRAGMENTS (boulder), severely jointed, slightly weathered, hard	
75	19		73		RUN 4		2.1	Brown SILTY CLAY (CH), very stiff, wet	
80					RUN 5 REC=100% RQD=0%			Light gray SANDY SILT (ML) with weathered basalt gravel, stiff, wet	
85					RUN 6 REC=77% RQD=0%			Gray vugular BASALT FRAGMENTS, moderately weathered, severely jointed, hard	
90	15		60		RUN 7 REC=56% RQD=0%			Brown CLAYEY SILT (MH) with weathered gravel, medium stiff, wet	
95								Boring terminated at 92 feet Groundwater level at 51 feet on 5/25/93	
CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering WORK ORDER NO. 3087-00 JST June 93							LOG OF BORING 50 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII		PLATE A-20.1 A-20.2 A-20.3

FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(26)	1994	207	238

DATE	_____
SURVEY PLOTTED BY	_____
DRAWN BY	_____
TRACED BY	_____
CHECKED BY	_____
QUANTITIES BY	_____
NO.	_____



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
SIGNATURE: *Bob Y. K. Wong* DATE: 7/1/94

7/01/94	ADDED RE. STAMP AND SIGNATURE
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS	
KAHEKILI HIGHWAY WIDENING Likelike Hwy. to Vicinity of Haiku Road F.A. PROJECT NO. NH-083-1(26)	
SCALE: AS NOTED	DATE: APRIL 1994
SHEET No. B11 OF B12 SHEETS	

AS-BUILT 207R

FED. ROAD DIS. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	NH-083-1(26)	1994	208	238

BORING NO. 51

Date Started: 6/3/93		Drill Rig: Mobile B-53						
Date Completed: 6/4/93		Drilling Method: Auger						
Logged By: H.B. Xue		Driving Energy: 140 lb. wt., 30 in. drop						
Total Depth: 68.0 feet								
Depth, ft	FIELD		LABORATORY		Pen. tsf	DESCRIPTION		
	Sample Penetration, Blows/ft	Density, pcf	Moisture Content, %	Compressive Strength, tsf			Other Data	
0	26					4-inch ASPHALT CONCRETE		
5	32	83	34			6-inch SANDY GRAVEL (GM) (base course)		
10	21					Reddish brown SILTY CLAY (CH) with basalt gravel, very stiff, moist (fill)		
15	16/5' +30/2' REF.	75	52			encountered boulder at 16 feet		
20	17					grades to stiff		
25	25	71	50			Reddish brown mottled SILTY CLAY (Ch) with traces of gravel, very stiff, moist (fill)		
30	20					grades to stiff		
35	26					Reddish brown mottled SILTY CLAY (Ch) with traces of gravel, stiff, moist (fill)		
40	31	70	47			grades to very stiff at 36 ft		
45	17					Brown SILTY CLAY (Ch) with gravel and glass, very stiff (fill)		
50	34	57	53			grades to stiff		
55	46/5' REF.					grades to very stiff		
60	32/3' REF.					Dark gray SANDY GRAVEL (GM) with silt, dense, wet encountered boulder at 56 feet		
65						hard augering from 61 to 64 feet		
70	35/0' REF.					Boring terminated at 64 feet		
75						Groundwater level at 24 feet on 6/04/93		
CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering WORK ORDER NO. 3087-00 JST June 93					LOG OF BORING 51 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII		PLATE A-21.1 A-21.2	

BORING NO. 52

Date Started: 5/26/93		Drill Rig: Mobile B-53	
Date Completed: 5/26/93		Drilling Method: Auger	
Logged By: H.B. Xue		Driving Energy: 140 lb. wt., 30 in. drop	
Total Depth: 21.5 feet			

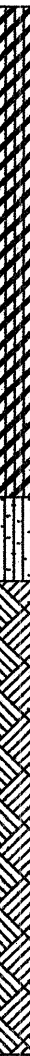
Depth, ft	FIELD			LABORATORY			Other Data	Pen. test	DESCRIPTION
	Sample	Penetrate, Resist. Blow/ft	Density, lb/cu ft	Moisture Content, %	Compressive Strength, lbf				
0									
5		40	104	12			LL=63 Pl=31	3.0	2-inch ASPHALT CONCRETE
								3.0	6-inch SANDY GRAVEL (GM) (base course)
		25	74	40				3.0	Reddish brown SILTY CLAY (CH) with gravel, very stiff, damp (fill)
10								2.6	Reddish brown CLAYEY SILT (MH) with traces of gravel, very stiff, damp
		25						2.6	
15		26	69	52			2.8		
20		34	71	50					grades to moist
25									Boring terminated at 21.5 feet
30									Groundwater not encountered
35									

CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering WORK ORDER NO. 3087-00 JST June 93		LOG OF BORING 52 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII		PLATE A-22.1	
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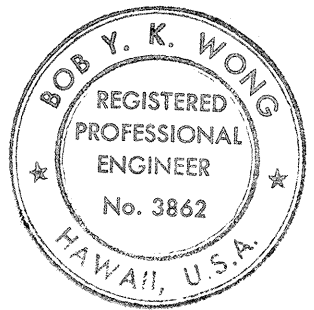
BORING NO. 53

Date Started: 12/10/93		Drill Rig: Diedrich D-25								
Date Completed: 12/10/93		Drilling Method: Auger, Rotary Core								
Logged By: H. Xue		Driving Energy: 140 lb. wt., 30 in. drop								
Total Depth: 31.0 feet										
FIELD						LABORATORY				
Depth, ft	Sample	Penetration, Blows/ft	Dry Density, pcf	Moisture Content, %	Compressive Strength, lbf	Other	Date	Pen, tsf	DESCRIPTION	
Approximate Surface Elevation (ft): 135.0+										
5		100 psi	44	102					Dark brown SILTY CLAY (CH) with organics, soft, wet	
10		200 psi	50	83					grades with traces of sand	
15		400-700 psi	60	67					grades to medium stiff	
20	20/2'					RUN 1 REC=100% RQD=35%			Dark gray vesicular BASALT, moderately to severely fractured, slightly weathered, hard to very hard	
25						RUN 2 REC=97% RQD=95%			grades to slightly fractured, very hard	
30						RUN 3 REC=100% RQD=100%			grades to vesicular to vugular	
35									Boring terminated at 31 feet	
40									Groundwater level at: Depth: 3 ft. 0900 Date: 12/10/93 2.4 ft. 0900 12/16/93	
CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering						LOG OF BORING 53 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII				PLATE A-23.2
WORK ORDER NO. 3087-10 EGA Dec 93										

BORING NO. 54

Date Started: 12/8/93		Drill Rig: Diedrich D-25					
Date Completed: 12/8/93		Drilling Method: Auger, Rotary Core					
Logged By: H. Xue		Driving Energy: 140 lb. wt., 30 in. drop					
Total Depth: 31.0 feet							
FIELD		LABORATORY					
Depth, ft	Sample	Penetrate, Resist, Blows/ft	Density, lb/cu ft	Moisture Content, %	Compressive Strength, lbf	Other	Date
5		Push	68	75			
10		Push	40	113			
15			12	68	59		
20						RUN 1 REC=75% RQD=20%	
25						RUN 2 REC=100% RQD=40%	
30						RUN 3 REC=97% RQD=33%	
35							
40							
DESCRIPTION							
Approximate Surface Elevation (ft):						136.0+	
							
Dark gray SILTY CLAY (CH) with traces of organics, soft, very moist							
grades with traces of sand							
Brown-orange mottled SANDANISIL (ML) with decomposed rock, medium dense							
Gray vesicular BASALT, moderately to severely fractured, slightly weathered, hard							
grades to brown-orange mottled basalt, severely fractured, moderately to highly weathered, soft to medium hard							
grades to gray vesicular, moderately fractured, slightly to moderately weathered, medium hard to hard							
Boring terminated at 31 feet							
Groundwater level at:							
Depth:		Feet		Date:			
4.7 ft.		1410		12/08/93			
4.3 ft.		0750		12/10/93			
4.2 ft.		1430		12/10/93			
4.8 ft.		0900		12/16/93			
CW ASSOCIATES, INC. dba GEOLABS - HAWAII Geology Soils and Foundation Engineering				LOG OF BORING 54 KAHEKILI HIGHWAY WIDENING, PHASE 2 KOOLAUPOKO, OAHU, HAWAII			
WORK ORDER NO. 3087-10 EGA Dec 93				PLATE A-24.2			

DATE	
SURVEY PLATTED BY	
DRAWN BY	
TRACED BY	
QUANTITIES BY	
CHECKED BY	
ORIGINAL	
PLAN	
NOTES	
NO.	



THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature: Bob Y. K. Wong 7/1/94
DATE

7/01/94	ADDED RE. STAMP AND SIGNATURE
DATE	REVISION
STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
BORING LOGS	
KAHEKILI HIGHWAY WIDENING Likelike Hwy. to Vicinity of Haiku Road F.A. PROJECT NO. NH-083-1(26)	
SCALE: AS NOTED	DATE: APRIL 1994
SHEET No. B12 OF B12 SHEETS	