

FED.ROAD
DIST.NO.STATEFED. AID
PROJ. NO.FISCAL
YEARSHEET
NO.TOTAL
SHEETSHAWAIIHAW.BR-036-1(14)2000570

STATE OF HAWAII

DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

HANA HIGHWAY REPLACEMENT OF UAOA BRIDGE AND APPROACHES DISTRICT OF MAKAWAO Federal—Aid Project No. BR—036—1(14)

Scale: As Noted

Date: May, 1999

TOTAL SHEETS FED.ROAD FISCAL SHEET YEAR NO. STATE DIST.NO. PROJ. NO. BR-036-1(14) 2000 70 HAWAII HAW. 6

ERNEST K. HIRATA & ASSOCIATES, INC.

GROUP SYMBOLS

GRAVELS
(More than 50% of coarse fraction is LARGER than the No. 4 sieve size.)

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(More than 50% of coarse fraction is LARGER than the No. 4 sieve size.)

GRAVELS
(Little or no fines.)

GRAVELS
(Little or no fines.)

GRAVELS
(Appreciable amt. of fines.)

SM Silty sands, sand-silt mixtures.

SC Clayey sands, sand-clay mixtures.

MAJOR DIVISIONS

(More than 50% of coarse

fraction is
SMALLER than
the No. 4
sieve size.)

SANDS
WITH FINES
(Appreciable amt. of fines.)

SILTS AND CLAYS

SILTS AND CLAYS (Liquid limit GREATER

than 50.)

HIGHLY ORGANIC SOILS

2" O.D. Standard Split Spoon Sampler

3" O.D. Split Tube Sampler

Ernest K. Hirata & Associates, Inc.

COARSE GRAINED SOILS

(More than 50% of the material is LARGER than No. 200 sieve size.)

FINE GRAINED SOILS (More than 50% of the material is

SMALLER than No. 200 sieve size.)

TYPICAL NAMES

SW | Well graded sands, gravelly sands, little or no fines.

SP Poorly graded sands or gravelly sands, little or no fines.

ML Inorganic silts and very fine sands, rock flour, silty or clayey fine sands or clayey silts with slight plasticity.

CL Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.

OL Organic silts and organic silty clays of low plasticity.

MH Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.

CH | Inorganic clays of high plasticity, fat clays.

→ PT | Peat and other highly organic soils.

LTLTLTLT

BORING LOG LEGEND

SAMPLE DEFINITION

Shelby Tube

NX / 4" Coring

OH Organic clays of medium to high plasticity, organic silts.

VOLCANIC TUFF / HIGHLY TO COMPLETELY WEATHERED BASALT
CORAL

RQD Rock Quality Designation

Water Level

BORING NO	B1		. 140 lb. DATE OF DRILLING 7-14-98
SURFACE ELEV	434±*	_ DROP	30 in. WATER LEVEL @ 7.9 feet
SAMPLE GRAPH DEPTHO	BLOWS DR' PER DENS FOOT (PCI	ITY CONT.	DESCRIPTION
			Clayey SILT (MH) — Brown, moist, medium stiff, with sand and gravel.
	12 74	34	
		70	Cobbles at 4 feet.
	37 86	36	Mottled orange brown color from 5 feet. Cobbles at 6.5 feet.
<u> </u>			
_10-	25 72	57	
	48 77	43	WEATHERED BASALT (WH-WC) — Mottled gray and red, medium dense to dense, highly to complet weathered.
-15-			
20	78 78	3 44	
20			
_25	30 73	54	Completely weathered at 24 feet.
30	66 No	Recovery	
	39/6"		Dense to medium hard at 33 feet.
35	39/6" 50/2" 86	32	End boring at 35 feet.
			* Elevations based on Topographic Survey Map provided by Engineers Surveyors Hawaii, Inc.
-40 -			

ERNEST	K. HIRATA		&	ASSOCIATES,	INC.	
Geotechnical		gineering				

Geotechnical E	ngine	ering			
				В	ORING LOG W.O. <u>98–3029</u>
BORING NO					. <u>140 lb.</u> DATE OF DRILLING <u>6-9-98</u>
SURFACE ELE		428:	<u>t</u> D	ROP	30 in. WATER LEVEL © 2 feet
D G R A T P H H	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	DESCRIPTION
<u> </u>		6	78	40	Clayey SILT (MH) — Brown, very moist, medium stiff, with sand, gravel, and cobbles.
_ 5 _		16	No Reco	very	
					WEATHERED BASALT (WC) — Mottled gray, medium dense to dense, completely weathered.
-10-		33	65	61	Medium dense from 11 feet.
-15-		16	69	59	Mottled grayish brown color from 14 feet.
-20-		11		63	
25					
		6		59	
30		10		58	
35		32	85	43	Highly to completely weathered, medium dense to dense from 35 to 42 feet.
-40		89	82	43	
-45		20	64	65	
		45 hi	Daniel III		Dense at 47.5 feet.
-50-		15/No	Penetration		Begin NX coring at 49 feet. No recovery from 49 to 54 feet.
-55-		18	88	38	End NX coring at 54 feet.
					Dense to medium hard from 57.5 to 60 feet.

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Geotechnical Engineering

BORING LOG

W.O. <u>98-3029</u>

BORING NO. B2 (continued) DRIVING WT. 140 lb. _ DATE OF DRILLING 6-9-98 SURFACE ELEV. 428± DROP 30 in.

D E P T H	G R A P H	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	DESCRIPTION
-60-						Dense, highly to completely weathered from 60 feet.
-65-			77	119	40	Dense to medium hard from 66 to 68 feet.
-70-			33	68	56	
—75—			10/No F	Penetration		BASALT (WS-WM) — Gray, hard, slightly to moderately weathered. Begin NX coring at 74.5 feet. 100% Recovery from 74.5 to 79.5 feet. RQD = 70% Highly fractured from 74.5 to 78 feet.
80-			74 (0)			36% Recovery from 79.5 to 84.5 feet. RQD = 26% Moderately weathered at 80 feet. Completely weathered from 81.5 to 85.5 feet, medium dense to dense.
-85-			31/6" 35/2" 5/No P	87 enetration	37	100% Recovery from 86 to 91 feet. RQD = 72%
—90 -						80% Recovery from 91 to 96 feet. RQD = 20% Highly to moderately weathered from 93 to 96 feet, dense.
100-		+ + + + + + HITELET				100% Recovery from 96 to 101 feet. RQD = 30% Moderately weathered from 96 feet, dense to medium hard.
		+				End boring at 101 feet.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

BORING LOGS

HANA HIGHWAY REPLACEMENT OF UAOA BRIDGE AND APPROACHES DISTRICT OF MAKAWAO Federal—Aid Project No. BR—036—1(14)

Scale: As Noted

Date: May, 1999

SHEET No. C-4 OF 42 SHEETS

6

FISCAL SHEET FED.ROAD DIST.NO. FED. AID PROJ. NO. TOTAL SHEETS BR-036-1(14) 2000 70 HAWAII HAW.

ERNEST K. HIRATA & ASSOCIATES, INC. Geotechnical Engineering

> BORING LOG W.O. <u>98-3029</u>

	E ELEV	B3 426:			. 140 lb. DATE OF DRILLING 7-1-98 30 in. WATER LEVEL Not Recorded
DEPTH0	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	DESCRIPTION
0		25/2° 5/No Pa	No Reco enetration	very	Clayey SILT (MH) — Brown, very moist to wet, medium stiff, with sand, cobbles, and boulders.
5 —	$ a _{L^{\infty}}$	10 /No F	Penetration		
		38	79	43	WEATHERED BASALT (WH-WM) - Mottled gray, dense,
		100	111	11	highly to moderately weathered.
10					Begin NX coring at 10 feet. 26% Recovery from 10 to 15 feet. RQD = 0%
-15-		56	75	42	
20	7	10/No I	Penetration		BASALT (WS) — Gray, medium hard to hard, slightly weathered. 100% Recovery from 20 to 25 feet. RQD = 84%
25 - 1 - 25 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	7				94% Recovery from 25 to 30 feet. RQD = 60%
70 +	.; <u>*</u> 1;**1;**				Highly fractured at 29 feet.
35		37		74	WEATHERED BASALT (WH-WM) — Grayish brown, dense to medium hard, highly to moderately weathered. 86% Recovery from 30 to 35 feet. RQD = 8% Mottled red and gray color, dense from 33 feet
40	7 57 57 7 57 57 7 57 57 7 57 57				66% recovery from 37 to 42 feet. RQD = 14% Moderately weathered from 37 to 39 feet, medium hard.
-45-		23		71	Completely weathered, reddish brown color from 42 feet.
-50-	×	17		62	
-55-4		35/3° 10/No	Penetration	30	70% Recovery from 53 to 58 feet. RQD = 20% Moderately weathered from 53 to 55 feet, dense to medium hard.
		38		67	

ERNEST K. HIRATA & ASSOCIATES, INC.

			В	ORING LOG	W .O. <u>98–3029</u>
BORING NOB SURFACE ELEV			RIVING WT.	140 lb. 30 in.	DATE OF DRILLING <u>7-1-98</u> WATER LEVEL <u>Not Recorde</u>
DEPTH60		DRY DENSITY (PCF)	MOIST. CONT. (%)		DESCRIPTION
1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-				BASALT (WS) - Gray	y, hard, moderately fractured.
1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-					om 62 to 67 feet.
-65				Moderately weathe medium hard.	ered at 64 feet, dense to
17 17 17 17 17 1 1 1 1 1 1 1 1 1 1 1 1				100% Recovery fro	om 67 to 70 feet.
1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-				Highly fractured fo	rom 69 to 70.5 feet.
70				60% Recovery from RQD = 16% Highly to moderat 73.5 feet, dense	m 70 to 75 feet. tely weathered from 70.5 to to medium hard.
17 17 17 17 17 17				Moderately weathe	ered from 73.5 to 75 feet.
-75				96% Recovery from RQD = 60%	m 75 to 80 feet.
-80 - [17,17,17] -17,17,17 -17,17,17 -17,17,17 -17,17,17 -17,17,17				84% Recovery from RQD = 52%	m 80 to 85 feet.
17 17 17 17 17 17 17 17 17 17 17 17 17 1				Clinker at 83.5 to	o 84.5 feet.
-85				End boring at 85 fe	et.
	,				

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—35—

Geotechnical Engineering BORING LOG W.O. <u>98-3029</u> ___ DATE OF DRILLING <u>7-15-98</u> _ DRIVING WT. _____140 lb. SURFACE ELEV. 448± DROP 30 in. WATER LEVEL @ 9 ft. BLOWS DRY DENSITY CONT. (PCF) (%) DESCRIPTION 23

25

21

68

13

63

14/3"
76
10/No Penetration
14

63

20

17

62

25

10/No Penetration
17

62 Clayey SILT (MH) — Brown, moist, medium stiff, with sand and cobbles. WEATHERED BASALT (WC) — Mottled grayish brown, moist, medium dense, completely weathered. 56 Dense at 13 feet. 53 66

BASALT (WS) — Gray, hard, slightly weathered.

Begin NX coring from 29 feet.

End boring at 34 feet.

96% Recovery from 29 to 34 feet. RQD = 96%

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BORING LOG

DRIVING WT. 140 lb.

W.O. <u>98-3029</u>

DATE OF DRILLING 8-31-98

SURFACE ELEV			ROP	
DEPTHO	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	DESCRIPTION
0 - 1 - 0				Clayey SILT (MH) — Grayish brown, moist, stiff, with weathered rock fragments.
	7	78	44	
_ 5 _	9	82	42	WEATHERED BASALT (WC) — Dark brown, moist, medium dense, completely weathered.
—10————	11	92	34	Mottled gray and orange brown color from 8 to 15 feet.
	15	94	32	
-15-				
-20-	22	66	45	
	18	63	50	
25				
30	26	75	46	

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

BORING LOGS

HANA HIGHWAY REPLACEMENT OF UAOA BRIDGE AND APPROACHES DISTRICT OF MAKAWAO Federal-Aid Project No. BR-036-1(14)

Scale: As Noted

Date: May, 1999 SHEET No. C-5 OF 42 SHEETS

TOTAL SHEETS FISCAL YEAR SHEET NO. FED. AID PROJ. NO. FED.ROAD DIST.NO. BR-036-1(14) 2000 HAWAII HAW. 70

ERNEST	K.	HIRATA	&	ASSOCIATES,	INC.	
Geotechnical	En	ineering				

BORING LOG W.O. <u>98-3029</u> BORING NO. B5 (continued) DRIVING WT. 140 lb. DATE OF DRILLING 8-31-98 SURFACE ELEV. 517± DROP 30 in. WATER LEVEL None BLOWS DRY DENSITY CONT. (PCF) (%) DESCRIPTION 79 48 78 Clayey SILT (MH) — Mottled grayish brown, moist, medium stiff to stiff, with weathered rock fragments. (Completely Weathered Basalt) 67 60 13 -50-28 76 65 60 -60-12 81 43 --65-80 WEATHERED BASALT (WH-WC) — Mottled grayish brown, moist, dense, highly to completely weathered. -70 -75 -80 -85 -90 93 32 25 Medium dense at 83 feet. 74

76

45

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			В	BORING LOG	W .O. <u>9</u>	8-3029
Ε	35 (continu	ued) [DRIVING WT	. 140 lb.	DATE OF DRILLING	9-1-98
SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)		DESCRIPTION	
	57	78	43			
	28	67	55			
				End boring at	99.5 feet.	
	S A M P L	S A BLOWS PER FOOT E 57	S A BLOWS PER POOT (PCF) 57 78	B5 (continued) DRIVING WT EV. 517± DROP S A BLOWS PER PER POOT (PCF) (%) E 57 78 43	S	B5 (continued) DRIVING WT. 140 lb. DATE OF DRILLING DROP 30 in. WATER LEVEL NOTE DENSITY CONT. (%) B BLOWS PER FOOT (PCF) (%) 57 78 43

ERNEST K. HIRATA & ASSOCIATES, INC.

Geotechnical Engineering BORING LOG W.O. <u>98-3082</u> DRIVING WT. 140 lb. DATE OF DRILLING 9-1-98 SURFACE ELEV. 522± DROP______30 in. WATER LEVEL None BLOWS DRY MOIST.
PER DENSITY CONT.
FOOT (PCF) (%) DESCRIPTION Clayey SILT (MH) — Dark brown, moist, medium stiff. 13 61 46 WEATHERED BASALT (WC) — Grayish brown, moist, dense, completely weathered. 33 73 44 82 43 87 38 74 43 93 33 81 32 Medium hard at 30 feet. -40 -45 -50 74 75 50 No Recovery 66 End boring at 50.5 feet.

ERNEST K. HIRATA & ASSOCIATES, INC. Geotechnical Engineering

BORING LOG

W.O. <u>98-3029</u>

BORING NO			140 lb DATE OF DRILLING <u>8-4-98</u>
SURFACE ELEV	506±	DROP	30 in. WATER LEVEL @ 72 feet
D G R A P L E	BLOWS DR PER DENS FOOT (PC	ITY CONT.	DESCRIPTION
	22 82	2 22	Clayey SILT (MH) — Brown, moist, medium stiff, with basalt gravel.
5_	20 68	3 52	Cobbles at 2.5 feet.
	50/No Pene	tration	WEATHERED BASALT (WH-WC) — Grayish brown, moist, dense, highly to completely weathered.
-10 - 1-1-1-1 1-1-1-1-1 1-1-1-1-1 1-1-1-1-1			Moderately weathered from 9.5 to 12 feet, dense to medium hard, highly fractured. Begin NX coring from 10 feet. 57% Recovery from 10 to 13.5 feet. RQD = 0% End NX coring at 13.5 feet.
-15	21 82	2 32	
_20	8 85	5 34	Completely weathered, medium dense at 20 feet.
_25	78 84	ł 19	Medium hard at 23.5 feet. Dense to medium hard from 25 feet.
			Plate B18

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

BORING LOGS

HANA HIGHWAY REPLACEMENT OF UAOA BRIDGE AND APPROACHES DISTRICT OF MAKAWAO Federal-Aid Project No. BR-036-1(14)

Scale: As Noted

Date: May, 1999

SHEET No. C-6 OF

42 SHEETS

ERNEST K. HIRATA & ASSOCIATES, INC.

BORING NO. B7 (continued) DRIVING WT. 140 lb.

BLOWS DRY MOIST.
PER DENSITY CONT.
FOOT (PCF) (%)

No Recovery

60

49

47

58

83

_ DROP___

Geotechnical Engineering

SURFACE ELEV. 506±

10/No penetration

11/1-1-1-1

11/1-1-1-1

11/1-1-1-1

11/1-1-1-1

11/1-1-1-1

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SURVEY PLC DRAWN BY_ TRACED BY_ DESIGNED B QUANTITIES

BORING LOG

30 in.

W.O. <u>98-3029</u>

DATE OF DRILLING 8-5-98

WATER LEVEL @ 72 feet

DESCRIPTION

Moderately to highly weathered from 30 to

35 feet, dense to medium hard, highly fractured.

Begin NX coring from 30 feet. 40% Recovery from 30 to 35 feet. RQD = 0%

30% Recovery from 35 to 40 feet. RQD = 0%

Completely weathered from 40 feet.

Highly weathered from 65 feet.

-105-

					•	200
			7 (continu 506:			7. <u>140 lb.</u> 30 in.
D E P T H	G R A P H	SAMPLE	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST.	
-90-			32	No Rec	overy	
95			53	73	48	
-100-			28	79	39	
		LJ	20	,,,	00	End boring at 101.5
I						

ERNEST K. HIRATA & ASSOCIATES, INC.

BORING LOG W.O. <u>98-3029</u> __ DATE OF DRILLING 8-10-98 _ WATER LEVEL <u>@ 72 feet</u> DESCRIPTION

ERNEST K. HIRATA & ASSOCIATES, INC.

BORING LOG

DRIVING WT. 140 lb.

_ DROP___

DRY MOIST.
DENSITY CONT.
(PCF) (%)

81

Geotechnical Engineering

SURFACE ELEV. 507±

BLOWS PER FOOT

24

61

76

39

33

W.O. <u>98-3029</u>

DATE OF DRILLING 8-11-98

WATER LEVEL None

DESCRIPTION

Clayey SILT (MH) — Brown, moist, medium stiff to stiff.

WEATHERED BASALT (WH) — Mottled grayish brown, moist, dense, highly weathered.

Begin NX coring from 4.5 feet. 33% Recovery from 4.5 to 7.5 feet. RQD = 20%

32% Recovery from 8 to 13 feet. RQD = 0%

Moderately weathered from 5 to 8.5 feet, medium hard, highly fractured.

Highly weathered, dense from 8.5 feet.

Moderately weathered, dense to medium hard from 19 to 21.5 feet.

50% Recovery from 20.5 to 24.5 feet. RQD = 0%

22% Recovery from 24.5 to 29.5 feet. RQD = 0%

34% Recovery from 30 to 35 feet. RQD = 0%

Moderately weathered, dense to medium hard from 30 to 32 feet.

End NX coring at 35 feet. Completely weathered from 34 feet, dense.

FED.ROAD DIST.NO. FISCAL YEAR FED. AID PROJ. NO. SHEET SHEETS NO. 2000 HAW. BR-036-1(14) HAWAII 70

ERNEST K. HIRATA & ASSOCIATES, INC. Geotechnical Engineering

BORING LOG

W.O. <u>98-3029</u>

_ DATE OF DRILLING <u>9-3-98</u>

DRIVING WT. 140 lb. SURFACE ELEV. 550± DROP 30 in. WATER LEVEL None DRY MOIST. CONT. (%) BLOWS PER FOOT DESCRIPTION Clayey SILT (MH) — Mottled brown, moist, medium stiff to stiff, with weathered rock fragments. 90 24 34 -15 -- 20 --WEATHERED BASALT (WC) — Grayish brown, moist, medium dense, completely weathered. 77 87 25 58 72 Loose to medium dense at 14 feet. 73 51 End boring at 20.5 feet. -25-

> STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION

HANA HIGHWAY REPLACEMENT OF UAOA BRIDGE AND APPROACHES DISTRICT OF MAKAWAO

Federal-Aid Project No. BR-036-1(14)

Scale: As Noted

40-45-74 43 End boring at 49.5 feet. No recovery -55--69 50

-65 -70 -75 -80 -85 -90 47 82 45 78

BORING LOGS

Date: May, 1999

SHEET No. C-7 OF 42 SHEETS

9

ERNEST K. HIRATA & ASSOCIATES, INC. Geotechnical Engineering

BORING LOG

W.O. <u>98-3029</u>

SURFA	ACE EL	.EV	558:	± (DROP	30 in. WATER LEVEL None	
D E P T H	G R A P H	S A M P L E	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	DESCRIPTION	
			20	73	51	Clayey SILT (MH) — Mottled orange brown, moist, stiff, with weathered rock fragments.	
- 5 -			23	87	33		
						WEATHERED BASALT (WC) — Grayish brown, moist dense, completely weathered.	, .>g
10			30	80	39		
-15-			60		36	Highly weathered from 14 feet.	
20			57		31	•	
						End boring at 21.5 feet.	
-25-				-			

ERNEST K. HIRATA & ASSOCIATES, INC. Geotechnical Engineering

BORING LOG

W.O. <u>98-3029</u>

						W.O. <u>90-3029</u>
BORING I	BORING NO SURFACE ELEV			DRIVING WT.		DATE OF DRILLING 7-29-98
SURFACE			± [OROP		WATER LEVEL None
E P T H	RAP	S BLOWS PER FOOT E	DRY DENSITY (PCF)	MOIST. CONT. (%)		DESCRIPTION
0					Clayey SILT (MH) -	- Brown, moist, stiff, with gravel.
		36	84	38		
5 —		37	85	37		
		17	82	39	WEATHERED BASAL medium dense,	.T (WC) — Mottled brown, moist, completely weathered.
10					Dense from 10	feet.
—15— <u>—</u>		54	88	38	Mottled grayish	brown color from 13 feet.
		40	90	38		
-20-						
		35	88	37	Very moist at 2	23 feet.
-25-					End boring at 24.5	5 feet.

ERNEST K. HIRATA & ASSOCIATES, INC.

Geotechnical Engineering

BORING LOG

W.O. <u>98-3029</u>

 BORING NO.
 B12
 DRIVING WT.
 140 lb.

 SURFACE ELEV.
 502±
 DROP
 30 in.
 __ DATE OF DRILLING <u>7-28-98</u> __ WATER LEVEL_____None____ D G S A BLOWS DRY MOIST. P A P PER DENSITY CONT. DESCRIPTION

H H O -	PH	P L E	FOOT	(PCF)	(%)	DESCRIP HON
			8	78	29	Clayey SILT (MH) — Brown, moist, medium stiff.
	- - - -		12	84	28	Cobbles at 2.5 feet.
5 -	_		26	99	28	Mottled reddish brown color and stiff from 5 feet.
-10-			19	97	24	With weathered gravel from 9 feet.
-15-			70	94	34	WEATHERED BASALT (WH-WC) — Mottled grayish brown, moist, dense, highly to completely weathered.
-20-			38/6" 50/4"	86	33	
			12/6"			

End boring at 25.5 feet.

FISCAL SHEET TOTAL YEAR NO. SHEETS FED. AID PROJ. NO. FED.ROAD DIST.NO. HAW. BR-036-1(14) 2000 10 70 HAWAII

ERNEST K. HIRATA & ASSOCIATES, INC. Geotechnical Engineering

BORING LOG

W.O. <u>98-3029</u>

 BORING NO.
 B13
 DRIVING WT.
 140 lb.
 DATE OF DRILLING 7-28-98

 SURFACE ELEV.
 520±
 DROP
 30 in.
 WATER LEVEL
 None

SURFACE ELEV	320	<u> </u>	KUP	JU In. WATER LEVEL None
D G R M P L E	BLOWS PER FOOT	DRY DENSITY (PCF)	MOIST. CONT. (%)	DESCRIPTION
	25	82	32	Clayey SILT (MH) — Mottled brown, moist, stiff.
5	23	90	29	WEATHERED BASALT (WC-WH) — Mottled brown, moist, medium dense to dense, completely to highly weathered.
-10-	22	103	20 .	Mottled grayish brown color from 10 feet.
-15-	26	91	32	End boring at 15.5 feet.
-20-				Life boiling at 10.0 feet.

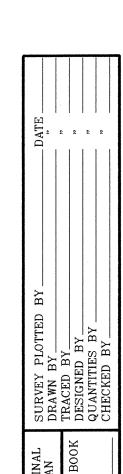
STATE OF HAWAII HIGHWAYS DIVISION

BORING LOGS

HANA HIGHWAY
REPLACEMENT OF UAOA BRIDGE AND APPROACHES
DISTRICT OF MAKAWAO Federal-Aid Project No. BR-036-1(14)

Scale: As Noted

Date: May, 1999



DEPARTMENT OF TRANSPORTATION