FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	133	325

BASALT	GRAVEL
CLINKER	SAND
TUFF	SILT
WEATHERED ROCK	CLAY
CINDER	SILTY CLAY
BOULDER	CLAYEY SILT

- 2" O.D. STANDARD SPLIT SPOON SAMPLER
- 3" O.D. SPLIT TUBE SAMPLER
- SHELBY TUBE
- NX CORING
- RQD ROCK QUALITY DESIGNATION
- WATER LEVEL

W.O. 90-1953	North Halawa Highway - Unit II
ERNEST K. HIRATA & ASSOCIATES, INC.	BORING LEGEND

LEGEND

GRAPH	SOIL DESCRIPTION
	ASPHALT CONCRETE
	BASE
	CLAYEY, WITH CLAY
	CLAY
	SILTY, WITH SILT
	SILT
	SANDY, WITH SAND
	SAND
	GRAVELLY
	GRAVEL, PEBBLES, DECOMPOSED ROCK
	ORGANIC MATERIAL
	COBBLES
	BOULDERS
	BASALT
	CLINKER
	TUFF

CW ASSOCIATES, INC. dba
GEOLABS-HAWAII
Geology Soils and Foundation Engineering

GENERAL NOTES:

* ELEVATIONS ESTIMATED BY ERNEST K. HIRATA & ASSOCIATES FROM TOPOGRAPHIC MAPS PROVIDED BY R.M. TOWILL CORP. DATED MAY 3, 1989.

BORING LOG LEGEND

MAJOR ROCK TYPES
- BASALT
- TUFF
- DECOMPOSED ROCK
- CLINKER
- CINDERS

SECONDARY DESCRIPTION
- GRAVELLY
- SANDY
- SILTY
- CLAYEY

MAJOR SOIL TYPES
- BOULDERS
- GRAVEL
- SAND
- SILT
- CLAY

SAMPLING SYMBOLS
- SHELBY TUBE SAMPLE
- 3" O.D. CALIFORNIA SAMPLE
- 2" O.D. STANDARD PENETRATION SAMPLE
- Run #3 NX-CORE RUN
- WATER LEVEL

FEWELL GEOTECHNICAL ENGINEERING, LTD.
FILE 953-1

ALAN J. SHIMAMOTO REGISTERED PROFESSIONAL ENGINEER No. 4392-C HAWAII, U.S.A.

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Alan J. Shimamoto

BOB Y. K. WONG REGISTERED PROFESSIONAL ENGINEER No. 3862 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Bob Y. K. Wong
SIGNATURE

PAUL S. MORIMOTO REGISTERED PROFESSIONAL ENGINEER No. 5299 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Paul S. Morimoto
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. B1 OF 33 SHEETS

133

ORIGINAL PLAN | SURVEY PLOTTED BY | DRAWN BY | TRACED BY | DESIGNED BY | QUANTITIES BY | CHECKED BY | DATE | NOTE BOOK | NO.

187210

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	124	325

BORING: IB1-1 ABUT A1 **PROJECT:** Interstate Route H-3, North Halawa Highway
FILE: 953-1 **SURFACE ELEV.:** 485'±
DATE: 10-30-90 **DEPTH TO WATER:** 87' **DATE:** 10-30-90
PAGE 1 OF 3 **WATER ELEV.:** 398'± **TIME:** 10:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
LL=80, PI=25	29		12	1	1, 5	Orange and Brown Clayey **SILT** (MH) with gravel and cobbles, stiff, moist
	52		17	2	10	
			11	3	15	
qu=1940 p.s.f.	55	66	21	4	20	
LL=64, PI=25	51		12	5	25	(ALLUVIUM)
Gradation: 42% Gravel 44% Sand 14% Silt/Clay	52		PUSH	6	30, 35	Brown and Gray Gravelly **SAND** (SW-SM) with silt, loose to medium dense, moist (WEATHERED CLINKER)

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A1

BORING: IB1-1 ABUT A1 **PROJECT:** Interstate Routh H-3, North Halawa Highway
FILE: 953-1 **SURFACE ELEV.:** 485'±
DATE: 10-30-90 **DEPTH TO WATER:** 87' **DATE:** 10-30-90
PAGE 2 OF 3 **WATER ELEV.:** 398'± **TIME:** 10:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	58	56	18	7	35	Brown and Gray Gravelly **SAND** (SW-SM) with silt, loose to medium dense, moist
	70		9	8	40	(WEATHERED CLINKER)
	38	73	103	9	45	Gray Moderately to Highly Weathered **BASALT** (WM-WH), medium hard to hard, extremely broken
			70% REC 0% RQD	RUN # 1	50	
			60% REC 0% RQD	RUN # 2	55	
			55% REC 0% RQD	RUN # 3	60	Grayish Brown Highly Weathered **CLINKER** (WH), dense
			98% REC 7% RQD	RUN # 4	65	Gray Moderately Weathered **BASALT** (WM) with occasional seams of completely weathered basalt, hard, extremely broken
			50% REC 0% RQD	RUN # 5	70	Red Highly Weathered **TUFF** (WH), soft, extremely broken

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A2

BORING: IB1-1 ABUT A1 **PROJECT:** Interstate Route H-3, North Halawa Highway
FILE: 953-1 **SURFACE ELEV.:** 485'±
DATE: 10-30-90 **DEPTH TO WATER:** 87' **DATE:** 10-30-90
PAGE 3 OF 3 **WATER ELEV.:** 398'± **TIME:** 10:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			50% REC 0% RQD	RUN # 5	70	Red Highly Weathered **TUFF** (WH), soft, extremely broken
			33% REC 0% RQD	RUN # 6	75	Gray and Brown Highly Weathered **CLINKER** (WH), medium dense to dense
	54		29	10		
			24% REC 0% RQD	RUN # 7	80	
			60/.5' R	11		
			78% REC 9% RQD	RUN # 8	85	Gray Moderately Weathered **BASALT** (WM), medium hard to hard, broken
			89% REC 22% RQD	RUN # 9	90	Red Highly Weathered **TUFF** (WH), soft, broken
						Brownish and Gray Moderately Weathered **CLINKER** (WM), dense
					95	BOH @ 92.0'
					100, 105	

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Plate A3

BORING: IB1-2 ABUT A1 **PROJECT:** Interstate Route H-3, North Halawa Highway
FILE: 953-1 **SURFACE ELEV.:** 477±
DATE: 10-25-90 **DEPTH TO WATER:** 47' **DATE:** 10-26-90
PAGE 1 OF 3 **WATER ELEV.:** 430'± **TIME:** 9:30 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
LL=83, PI=23	63		15	1	1, 5	Brown and Gray Clayey **SILT** (MH) with cobbles and organics, medium stiff, saturated
			10	2	10	(FILL)
qu=610 p.s.f. GRADATION: 12% Gravel 52% Sand 36% Silt/Clay	62	63	28	3	15	Brownish Gray Silty **SAND** (GM) with gravel, medium dense, moist
	52		52	4	20	Grades to dense @ 20.0' (SAPROLITE)
qu=1710 p.s.f.	57	65	22	5	25	Gray and Brown Silty **SAND** (ML-SM) with gravel, medium dense, moist
	70		18	6	30, 35	(WEATHERED CLINKER)

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A4

BORING: IB1-2 ABUT A1 **PROJECT:** Interstate Route H-3, North Halawa Highway
FILE: 953-1 **SURFACE ELEV.:** 477±
DATE: 10-25-90 **DEPTH TO WATER:** 47' **DATE:** 10-26-90
PAGE 2 OF 3 **WATER ELEV.:** 430'± **TIME:** 9:30 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			63	7	35	Gray and Brown Silty **SAND** (ML-SM) with gravel, medium dense, moist (WEATHERED CLINKER)
	56		25	8	40	
			36	9	45	Gray Silty **GRAVEL** (GM) with sand and remnant rock structure, medium dense to dense, moist
	45		64	10	50	
qu=1640 p.s.f.	45	71	85	11	55	(SAPROLITE)
	54		27	12	60	Mottled Orange and Gray Highly Weathered **CLINKER** (WH), dense
			100/.9'	13	65	Gray Highly Weathered **BASALT** (WH), medium hard to hard, extremely broken
			70/.2'	14	70	Gray Moderately Weathered **BASALT** (WM), hard, broken

Plate A5

BORING: IB 1-2 ABUT A1 **PROJECT:** Interstate Route H-3, North Halawa Highway
FILE: 953-1 **SURFACE ELEV.:** 477±
DATE: 10-25-90 **DEPTH TO WATER:** 47' **DATE:** 10-26-90
PAGE 3 OF 3 **WATER ELEV.:** 430'± **TIME:** 9:30 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			95% REC 17% RQD	RUN # 1	70	Gray Moderately Weathered **BASALT** (WM), hard, broken
			90% REC 40% RQD	RUN # 2	75	Grayish Brown Highly Weathered **CLINKER** (WH), dense
						Red Highly Weathered **TUFF** (WH), medium hard, occasionally broken
					80	Grayish Brown Moderately Weathered Vesicular **BASALT** (WM), medium hard, massive
					85, 90, 95, 100, 105	BOH @ 80.0'

Plate A6

ALAN J. SHIMAMOTO REGISTERED PROFESSIONAL ENGINEER No. 4393-C HAWAII, U.S.A.

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Alan J. Shimamoto

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. B12 OF 33 SHEETS

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

137318

134

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	139	325

BORING: IB1-3 IP-1 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 447'±
DATE: 10-10-90 DEPTH TO WATER: 10.5' DATE: 10-10-90
PAGE 1 OF 2 WATER ELEV.: 436'± TIME: 3:00 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	61	61	PUSH	1	1, 5	Brown Clayey **SILT** (MH) with gravel, medium stiff, moist to saturated (FILL)
LL=73, PI=32	30		33	2	10	Gray/Brown Sandy **SILT** (MH-SM) with decomposed gravel, very stiff, moist
qu=1130 p.s.f.	58	67	44	3	15	(WEATHERED CINDERS)
	59		24	4	20	Mottled Gray Clayey **SILT** (MH) with trace sand and remnant rock structure, very stiff, moist (SAPROLITE)
	45		105/.8'	5	25	Gray Moderately Weathered **BASALT** (WM), medium hard, extremely broken
			92% REC 10% RQD	RUN # 1	30	
			85% REC 9% RQD	RUN # 2	35	Gray Brown Highly Weathered **CLINKER** (WH), dense; Red Highly Weathered **TUFF** (WH), medium hard, broken

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A7

BORING: IB1-3 IP-1 PROJECT: Interstate Routh H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 447'±
DATE: 10-12-90 DEPTH TO WATER: 10.5' DATE: 10-12-90
PAGE 2 OF 2 WATER ELEV.: 436'± TIME: 3:00 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			85% REC 9% RQD	RUN # 2	35	Gray Slightly Moderately Weathered Vesicular **BASALT** (WS-WM), hard, occasionally broken
			87% REC 25% RQD	RUN # 3	40	
			80% REC 30% RQD	RUN # 4	45	Gray Fresh Vugular **BASALT** (F), very hard, occasionally broken to massive
			100%REC 70% RQD	RUN # 5	50	Red and Gray Slightly Weathered Welded **CLINKER** (WS), medium hard, occasionally broken to massive
			100%REC 88% RQD	RUN # 6	55	
			100%REC 80% RQD	RUN # 7	60	Gray Fresh Vesicular **BASALT** (F), very hard, massive
					65, 70	BOH @ 62.0'

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Plate A8

BORING: IB1-4 IP-2 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 452'±
DATE: 10-2-90 DEPTH TO WATER: 19.0' DATE: 10-4-90
PAGE 1 OF 3 WATER ELEV.: 433'± TIME: 11:15 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	41	77	PUSH	1	1, 5	Brown Clayey **SILT** (MH) with gravel, sand and cobbles, soft to medium stiff, moist to saturated
	42		6	2	10	(ALLUVIUM)
qu=790 p.s.f. LL=81, PI=37	50	71	PUSH	3	15	Brown Gray Clayey **SILT** (MH) with sand and gravel, soft to medium stiff, saturated (ALLUVIUM)
			90% REC 0% RQD	RUN # 1	20	Gray **BOULDERS, COBBLES** and **GRAVEL** in a sand matrix, dense, saturated
			83% REC 0% RQD	RUN # 2	25	
			83% REC 0% RQD	RUN # 3	30	
			85% REC 10% RQD	RUN # 4	35	(ALLUVIUM)

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A9

BORING: IB1-4 IP-2 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 452'±
DATE: 10-2-90 DEPTH TO WATER: 19.0' DATE: 10-4-90
PAGE 2 OF 3 WATER ELEV.: 433'± TIME: 11:15 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			85% REC 10% RQD	RUN # 4	35	
			95% REC 17% RQD	RUN # 5	40	Gray Moderately to Highly Weathered **BASALT** (WM-WH), medium hard, extremely broken
			60% REC 0% RQD	RUN # 6	45	
			68% REC 10% RQD	RUN # 7	50	Brown Gray Highly Weathered **CLINKER** (WH), medium hard, extremely broken; Red Highly Weathered **TUFF** (WH), medium hard, broken
			50% REC 17% RQD	RUN # 8	55	Gray Brown Moderately to Highly Vesiular **BASALT** (WM-WH), medium hard, broken
			80% REC 20% RQD	RUN # 9	60	Gray Brown Moderately to Highly Weathered **CLINKER** (WM-WH), medium hard, extremely broken
			100%REC 85% RQD	RUN # 10	65	Gray Fresh to Slightly Weathered **BASALT** (F-WS), hard to very hard, broken
			100%REC 60% RQD	RUN # 11	70	Red Gray Moderately Weathered **CLINKER** (WM), medium hard, broken; Gray Slightly Weathered **BASALT** (WS) with clinker, hard, broken

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A10

BORING: IB1-4 IP-2 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 452'±
DATE: 10-2-90 DEPTH TO WATER: 19.0' DATE: 10-4-90
PAGE 3 OF 3 WATER ELEV.: 433'± TIME: 11:15 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			100%REC 60% RQD	RUN # 11	70	Gray Slightly Weathered **BASALT** (WS) with clinker, hard, broken
			100%REC 77% RQD	RUN # 12	75	BOH @ 75.0'
					80, 85, 90, 95, 100, 105	

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Plate A11

ALAN J. SHIMAMOTO REGISTERED PROFESSIONAL ENGINEER No. 4393-C HAWAII, U.S.A.

FEWELL GEOTECHNICAL ENGINEERING, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. B13 OF 33 SHEETS

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

137316

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-I(69)	1992	130	325

BORING: IB1-5 IP-3 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 457'±
DATE: 9-21-90 DEPTH TO WATER: 16' DATE: 10-2-90
PAGE 1 OF 3 WATER ELEV.: 441'± TIME: 12:45 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
LL=80, PI=36	51	72	PUSH	1	1, 5	Brown Clayey SILT (MH) with gravel and sand, soft to medium stiff, moist to saturated
			10	2	10	
qu=830 p.s.f.	55	69	PUSH	3	15	
			57% REC 0% RQD	RUN # 1	20	Grades with occasional boulders
			10% REC 0% RQD	RUN # 2	25	(FILL)
			R 80% REC 0% RQD	4 RUN # 3	30	Gray BOULDERS,COBBLES and GRAVEL in a sand matrix, dense, saturated
			69% REC 0% RQD	RUN # 4	35	

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A12

BORING: IB1-5 IP-3 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 457'±
DATE: 9-21-90 DEPTH TO WATER: 16' DATE: 10-2-90
PAGE 2 OF 3 WATER ELEV.: 441'± TIME: 12:45 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			69% REC 0% RQD	RUN # 4	35	Gray BOULDERS, COBBLES and GRAVEL with sand, dense, saturated
			75% REC 0% RQD	RUN # 5	40	(ALLUVIUM)
			79% REC 7% RQD	RUN # 6	45	Gray Moderately to Highly Weathered BASALT (WM-WH), medium hard to hard, extremely broken
			92% REC 18% RQD	RUN # 7	50	
			90% REC 0% RQD	RUN # 8	55	Gray Brown Highly Weathered CLINKER (WH), dense
			53	5		
			90% REC 33% RQD	RUN # 9	60	Red Highly Weathered TUFF (WH), medium hard, broken
						Brownish Gray Moderately to Highly Weathered Vesicular BASALT (WM-WH), medium hard, broken
			100%REC 9% RQD	RUN # 10	65	Gray Brown Slightly to Moderately Weathered CLINKER (WS-WM), dense
			73% REC 35% RQD	RUN # 11	70	Gray Fresh BASALT(F), very hard, broken

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A13

BORING: IB1-5 IP-3 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 457'±
DATE: 9-21-90 DEPTH TO WATER: 16' DATE: 10-2-90
PAGE 3 OF 3 WATER ELEV.: 441'± TIME: 12:45 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			73% REC 35% RQD	RUN # 11	70, 75, 80, 85, 90, 95, 100, 105	Gray Fresh BASALT (F), very hard, broken
						BOH @ 72.0'

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A14

BORING: IB1-6 IP-4 PROJECT: Intestate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 476'±
DATE: 9-18-90 DEPTH TO WATER: 35.5' DATE: 9-21-90
PAGE 1 OF 2 WATER ELEV.: 440.5'± TIME: 9:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	40		11	1	1, 5	
qu=1160 p.s.f.	49	76	11	2	10	
LL=78, PI=38	56		6	3	15	Brown Clayey SILT (MH) with gravel, soft to medium stiff, moist
			PUSH	4	20	
qu=920 p.s.f.	54	71	12	5	25	
	54		4	6	30	(FILL)
					35	Gray Clayey SILT (ML-MH) with gravel and cobbles, stiff, moist (ALLUVIUM)

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A15

BORING: IB1-6 IP-4 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 476'±
DATE: 9-18-90 DEPTH TO WATER: 35.5' DATE: 9-21-90
PAGE 2 OF 2 WATER ELEV.: 440.5'± TIME: 9:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	52	66	PUSH	7	35	Gray Clayey SILT (ML-MH) with gravel and cobbles, stiff, moist (ALLUVIUM)
	21	109	52	8	40	Gray BOULDERS, COBBLES and GRAVEL with sand and silt, dense
			89%REC 0% RQD	RUN # 1	45	
			54%REC 0% RQD	RUN # 2	50	(ALLUVIUM)
			90%REC 13% RQD	RUN # 3	55	Gray Moderately Weathered BASALT (WM), medium hard to hard, extremely broken
			88%REC 0% RQD	RUN # 4	60	
			73%REC 0% RQD	RUN # 5	65	
			100%REC 0% RQD	RUN # 6	70	BOH @ 70.0'

Plate A16

ALAN J. SHIMAMOTO REGISTERED PROFESSIONAL ENGINEER No. 4393-C HAWAII, U.S.A.

FEWELL GEOTECHNICAL ENGINEERING, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-I(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 34 OF 33 SHEETS

136

PLAN NOTE BOOK No. DRAWN BY TRACED BY DESIGNED BY QUANTITIES BY CHECKED BY

137210

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-I(69)	1992	137	325

BORING: IB1-7 IP-5 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 458'±
DATE: 9-5-90 DEPTH TO WATER: 22.0' DATE: 9-5-90
PAGE 1 OF 2 WATER ELEV. 436'± TIME: 11:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
						2" A.C. Over Tan Silty **CORAL** fragments, dense to very dense, damp (FILL)
LL=81, PI=41	53	80	16	1	5	Brown Clayey **SILT** (MH) with gravel, very hard, damp
	13		PUSH	2	10	Gray Clayey **SILT** (ML) with remnant rock structure and seams of highly weathered basalt, stiff, moist
	19		60/5" 0% REC 0% RQD	3 RUN # 1	15	(SAPROLITE)
qu=1490 p.s.f.	41	79	PUSH	4	20	Reddish Brown Clayey **SILT** (M) with decomposed gravel, stiff to very stiff, damp (SAPROLITE)
	41		58	5	25	Gray Clayey **SILT** (MH) with remnant rock structure, very stiff to very hard, damp
	40	81	PUSH	6	30	(SAPROLITE)
					35	Brown Gray Clayey **SILT** (MH) with gravel and seams of highly weathered basalt, very stiff, damp

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A17

BORING: IB1-7 IP-5 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 458'±
DATE: 9-5-90 DEPTH TO WATER: 22.0' DATE: 9-5-90
PAGE 2 OF 2 WATER ELEV.: 436'± TIME: 11:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	57		32	7	35	Brown Gray Clayey **SILT** (MH) with gravel and seams of highly weathered basalt, very stiff, damp
			R	8	40	Gray Moderately to Highly Weathered **BASALT** (WM-WH), medium hard to hard, broken to very broken
			100%REC 0% RQD	RUN # 1	45	
			100%REC 0% RQD	RUN # 2		Gray Slightly Weathered **BASALT** (WS) hard, very broken
			100%REC 0% RQD	RUN # 3		
			100%REC 15% RQD	RUN # 4	50	Red Moderately Weathered **BASALT** (WM), medium hard, extremely broken
						Brown Gray Highly Weathered **CLINKER** (WH), dense
					55	Gray Slightly Weathered **BASALT** (WS), hard, occasionally broken
						BOH @ 54.5'
					60	
					65	
					70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A18

BORING: IB1-8 IP-6 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 495'±
DATE: 11-9-90 DEPTH TO WATER: NONE ENCOUNTERED
PAGE 1 OF 2

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	30	73	85	1	5	Brown Clayey **SILT** (MH) with gravel and cobbles, very stiff, moist
LL=92, PI=36	42		11	2	10	
	53	59	PUSH R	3	15	
	61		10	4	20	(ALLUVIUM)
qu=1680 p.s.f.	35	87	60	5	25	**BOULDERS, COBBLES,** and **GRAVEL** in Clayey Silt with sand matrix, dense, moist
	25		31	6	30	(ALLUVIUM)
					35	

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A19

BORING: IB1-8 IP-6 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 495'±
DATE: 11-9-90 DEPTH TO WATER: NONE ENCOUNTERED
PAGE 2 OF 2

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			85% REC 0% RQD	RUN # 1	35	**BOULDERS, COBBLES,** and **GRAVEL** in Clayey Silt with sand matrix, dense, moist (ALLUVIUM)
			60% REC 7% RQD	RUN # 2	40	Gray Moderately Weathered **BASALT** (WM), medium hard, very broken
			30% REC 0% RQD	RUN # 3	45	Grayish Brown Highly Weathered **CLINKER** (WH), dense to very dense
			31	7	50	
			9% REC 0% RQD	RUN # 4		
			57	8	55	Brownish Gray Moderately Weathered **BASALT** (WM), medium hard to hard, broken
			85% REC 9% RQD	RUN # 5		
			10% REC 0% RQD	RUN # 6	60	Brown Gray Highly Weathered **CLINKER** (WH), dense
			36	9	65	BOH @ 64.5'
					70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A20

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-9 IP-7 DRIVING WT. 140 lb. DATE OF DRILLING 5-7-90
SURFACE ELEV. 462± DROP 30 in. WATER LEVEL @ 17 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Brown, moist, firm to medium stiff, with weathered gravel.
5				71	46		
10							Grading with numerous cobbles and boulders from 8.5 feet.
15							Begin NX coring from 12 feet. 84% Recovery from 12 to 17 feet. RQD = 40%
							90% Recovery from 17 to 19 feet. RQD = 70%
20							60% Recovery from 19 to 24 feet. RQD = 20%
							End NX coring at 24 feet.
							COMPLETELY WEATHERED ROCK - Mottled gray, brown, dense to medium hard.
25			90/9"		30		BASALT - Mottled gray/brown, dense to medium hard, highly fractured, weathered. Begin Dennison coring from 26 feet. 85% Recovery from 26 to 28 feet.
30							60% Recovery from 29 to 31 feet.

Plate A21

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-9 (Cont.) IP-7 DRIVING WT. 140 lb. DATE OF DRILLING 5-8-90
SURFACE ELEV. 462± DROP 30 in. WATER LEVEL @ 17 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							End Dennison coring at 31 feet. Begin NX coring from 31 feet. 96% Recovery from 31 to 36 feet. RQD = 14% Grading to moderately vesicular from 33.5 to 42 feet.
35							100% Recovery from 36 to 41 feet. RQD = 54%
40							78% Recovery from 41 to 45 feet. RQD = 25%
45							64% Recovery from 45 to 50 feet. RQD = 8%
50							58% Recovery from 50 to 55 feet. RQD = 26%
55							60% Recovery from 55 to 59 feet. RQD = 13%.
							End boring at 59 feet.
60							

Plate A22

PAUL S. MORIMOTO REGISTERED PROFESSIONAL ENGINEER No. 5299 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

ALAN J. SHIMAMOTO REGISTERED PROFESSIONAL ENGINEER No. 4393-C HAWAII, U.S.A.

FEWELL GEOTECHNICAL ENGINEERING, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. B6 OF 33 SHEETS

137

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	100	325

BORING: IB1-10 IP-8 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 463'±
DATE: 8-30-90 DEPTH TO WATER: 30' DATE: 9-7-90
PAGE 1 OF 2 WATER ELEV.: 433'± TIME: 1:30 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
					1	Brown Clayey **SILT** (MH) with gravel, very stiff, damp (ALLUVIUM)
LL=67, PI=24			21	1	5	
	14		70/6" 75% REC 0% RQD	2 RUN # 1	10	Gray Boulders in Matrix of Brown Clayey **SILT** (MH) with cobbles and gravel, dense to very dense, damp
			100%REC 0% RQD	RUN # 2		
	17		31	3	15	
	31		40/4" R	4	20	(ALLUVIUM)
	21	99	27	5	25	Brown Clayey **SILT** (MH) with cobbles and Gravel, very stiff, damp (ALLUVIUM)
	36		PUSH	6	30	Gray/Brown Gravelly **SILT** (GM-ML) with seams of highly weathered basalt, very stiff, damp (SAPROLITE)
					35	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A23

BORING: IB1-10 IP-8 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 463'±
DATE: 8-30-90 DEPTH TO WATER: 30' DATE: 9-7-90
PAGE 2 OF 2 WATER ELEV.: 433'± TIME: 1.30 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	24		50	7	35	Gray/Brown Gravelly **SILT** (GM-ML) with seans of highly weathered basalt, very stiff, damp
			80% REC 30% RQD	RUN # 3	40	Gray Moderately to Slightly Weathered **BASALT** (WM-WS) with vesicles, hard, broken to occasionally broken
			93% REC 31% RQD	RUN # 4	45	
			70% REC 14% RQD	RUN # 5	50	Brown Gray Highly Weathered **CLINKER** gravel (GM), medium hard, very broken
					55	Gray Moderately to Slightly Weathered **BASALT** (WM-WS), hard, broken to occasionally broken
					60	BOH @ 60.0'
					65	
					70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A24

BORING: IB1-11 IP-9 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 465'±
DATE: 8-30-90 DEPTH TO WATER: 47' DATE: 9-5-90
PAGE 1 OF 2 WATER ELEV.: 418'± TIME: 10:00AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
					1	Brown Clayey **SILT**(MH) with gravel and trace of organic debris, soft to medium stiff, damp (FILL)
LL=62, PI=16			12	1	5	Brown Clayey **SILT** (MH) with sand, gravel and trace of roots, medium stiff, damp (ALLUVIUM)
	21	101	10/3" R	2	10	**BOULDERS, COBBLES** and **GRAVEL** (GM) in matrix of Brown Clayey Silt, dense to very dense, damp
LL=55, PI=17	26		54	3	15	
			92% REC 0% RQD	RUN # 1		
	21		102	4	20	(ALLUVIUM)
			70% REC 27% RQD	RUN # 2	25	Gray Slightly Weathered Vesicular **BASALT** (WS), hard, very broken
			72% REC 22% RQD	RUN # 3	30	Brown Gray Highly Weathered **CLINKER** (WH), soft, very broken
						Gray Slightly Weathered Vugular **BASALT** (F-WS), hard, moderately broken
					35	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A25

BORING: IB1-11 IP-9 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 465'±
DATE: 8-30-90 DEPTH TO WATER: 47' DATE: 9-5-90
PAGE 2 OF 2 WATER ELEV.: 418'± TIME: 10:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			72% REC 22% RQD	RUN # 3	35	Gray Slightly Weathered Vugular **BASALT** (F-WS), hard, occasionally broken
			75% REC 13% RQD	RUN # 4	40	Brown Gray Highly Weathered **CLINKER** (WH), soft, extremely broken
					45	
			77% REC 35% RQD	RUN # 5		Gray Slightly Weathered **BASALT** (F-WS), hard, occasionally broken
					50	
			100%REC 64% RQD	RUN # 6	55	
					60	BOH @ 60.0'
					65	
					70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A26

BORING: IB1-12 IP-10 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 471'±
DATE: 9-10-90 DEPTH TO WATER: 29.5' DATE: 9-12-90
PAGE 1 OF 2 WATER ELEV.: 441.5'± TIME: 3:15 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
					1	
	62	56	PUSH	1	5	Brown Clayey **SILT** (MH) with gravel and cobbles, medium stiff, moist
LL=70, PI=28	39		11	2	10	(COLLUVIUM)
	39		PUSH	3	15	Brown Clayey **SILT** (MH) with gravel and cobbles, stiff, moist to wet
			70	4	20	Grades to hard @ 20' (ALLUVIUM)
LL=81, PI=41	59		24	5	25	Red Brown Clayey **SILT** (MH) with gravel, very stiff, moist to saturated (RESIDUAL)
	16		70/.4" 56% REC 9% RQD	6 RUN # 1	30	Gray Moderately Weathered **BASALT** (WM), medium hard, extremely broken
					35	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A27

BORING: IB1-12 IP-10 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 471'±
DATE: 9-10-90 DEPTH TO WATER: 29.5' DATE: 9-12-90
PAGE 2 OF 2 WATER ELEV.: 441.5'± TIME: 3:15 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			56% REC 9% RQD	RUN # 1	35	Gray Moderately Weathered **BASALT** (WM), medium hard, extremely broken
			55% REC 10% RQD	RUN # 2	40	Brown Gray Highly Weathered **CLINKER** (WH), medium dense to dense
			100%REC 44% RQD	RUN # 3	45	Gray Fresh to Slightly Weathered **BASALT** (F-WS), very hard, occasionally broken
			70% REC 17% RQD	RUN # 4		
					50	Brown Gray Moderately to Highly Weathered **CIINKER** (WM-WH), dense
			100%REC 75% RQD	RUN # 5	55	Gray Fresh **BASALT** (F), very hard, occasionally broken to massive
			90% REC 70% RQD	RUN # 6	60	BOH @ 62.0'
					65	
					70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A28

ALAN J. SHIMAMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 4393-C
HAWAII, U.S.A.

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Alan J. Shimamoto

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 316 OF 33 SHEETS

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	139	325

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-13 IP-11 DRIVING WT. 140 lb. DATE OF DRILLING 7-18-90
SURFACE ELEV. 489± DROP 30 in. WATER LEVEL @ 24.5 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, firm to medium stiff, with gravel.
			18		34		
5			7	No Recovery			
10			57		52		
							Boulder at 12.5 feet.
15			4		41		Grading with highly weathered rock fragments from 14 feet.
20			43		43		
25			10		36		
							COMPLETELY WEATHERED ROCK - Mottled gray, dense.
30			36		30		

Plate A29

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-13 (Cont.) IP-11 DRIVING WT. 140 lb. DATE OF DRILLING 7-18-90
SURFACE ELEV. 489± DROP 30 in. WATER LEVEL @ 24.5 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30			50/3"		30		Grading to medium hard from 35 feet.
35							
			20/0"	No Penetration			BASALT - Mottled gray, dense to medium hard, vesicular, fractured, weathered. Begin NX coring from 38 feet. 40% Recovery from 38 to 48 feet. RQD = 5%
40							
45							Grading hard from 48 feet. 95% Recovery from 48 to 58 feet. RQD = 55%
50							
55							
							End boring at 58 feet.
60							

Plate A30

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-14 IP-12 DRIVING WT. 140 lb. DATE OF DRILLING 5-25-90
SURFACE ELEV. 498± DROP 30 in. WATER LEVEL Not Recorded

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, medium stiff to stiff, with weathered gravel. Grading with fine roots at upper 9 feet.
			15		50		
5				75	39		
10			8		57		
15			21		50		Grading with gravel and cobbles from 14 feet.
20				84	30		
							COMPLETELY WEATHERED ROCK - Mottled grayish brown, moist, medium dense to dense.
25			17		46		
30				77	31		

Plate A31

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-14 (Cont.) IP-12 DRIVING WT. 140 lb. DATE OF DRILLING 5-29-90
SURFACE ELEV. 498± DROP 30 in. WATER LEVEL Not Recorded

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30			39		46		Grading dense from 35 feet.
35							
40				79	34		
45			28		59		
50					31		
			50/1"	Tip Recovery			BASALT - Gray, medium hard, slightly vesicular, fractured, weathered. Begin NX coring from 54 feet. 83% Recovery from 54 to 57 feet. RQD = 13% 80% Recovery from 57 to 62 feet. RQD = 16%
55							
60							

Plate A32

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-14 (Cont.) IP-12 DRIVING WT. 140 lb. DATE OF DRILLING 5-29-90
SURFACE ELEV. 498± DROP 30 in. WATER LEVEL Not Recorded

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							45% Recovery from 62 to 64 feet. RQD = 0% 56% Recovery from 64 to 69 feet. RQD = 8%
65							
70							End boring at 69 feet.
75							
80							
85							
90							

Plate A33

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

PAUL S. MORIMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 5299
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 137 OF 33 SHEETS

137218

139

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	140	325

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-15 IP-13 DRIVING WT. 140 lb. DATE OF DRILLING 7-19-90
SURFACE ELEV. 480± DROP 30 in. WATER LEVEL @ 19 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Brown, moist, medium stiff, with cobbles and boulders.
			10		26		
5			3		56		
10					37		Grading stiff from 11 feet.
15			50/5"		35		
				82	34		Grading to completely weathered rock from 17 feet.
20							BASALT - Mottled gray, dense to medium hard, highly fractured, weathered. Begin NX coring from 20.5 feet. 100% Recovery from 20.5 to 25.5 feet. RQD = 7%
25							100% Recovery from 25.5 to 30.5 feet. RQD = 0%
30							Plate A34

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-15 (Cont.) IP-13 DRIVING WT. 140 lb. DATE OF DRILLING 7-17-90
SURFACE ELEV. 480± DROP 30 in. WATER LEVEL @ 19 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							68% Recovery from 30.5 to 35.5 feet. RQD = 6%
35							100% Recovery from 35.5 to 40.5 feet. RQD = 0%
40							83% Recovery from 40.5 to 45.5 feet. RQD = 4%
45							End boring at 45.5 feet.
50							
55							
60							Plate A35

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-16 IP-14 DRIVING WT. 140 lb. DATE OF DRILLING 6-16-90
SURFACE ELEV. 490± DROP 30 in. WATER LEVEL @ 9.5 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, medium stiff.
			5		21		
5				89	15		Grading with sand and boulders from 5 feet.
10			10/0"	No Penetration			
				81	31		
15							
			38		52		COMPLETELY WEATHERED ROCK - Mottled gray, dense.
20					63		
25			15/3"	Tip Recovery			BASALT - Mottled gray, dense to medium hard, highly fractured, weathered. Begin NX coring from 24 feet. 50% Recovery from 24 to 26 feet. RQD = 0% 50% Recovery from 26 to 27.5 feet. RQD = 0%
30							Plate A36

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-16 (Cont.) IP-14 DRIVING WT. 140 lb. DATE OF DRILLING 6-16-90
SURFACE ELEV. 490± DROP 30 in. WATER LEVEL @ 9.5 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							88% Recovery from 27.5 to 32.5 feet. RQD = 0% Reddish brown clinker from 31 to 33 feet. 80% Recovery from 32.5 to 37.5 feet. RQD = 0%
35							85% Recovery from 37.5 to 41.5 feet. RQD = 0%
40							96% Recovery from 41.5 to 46.5 feet. RQD = 13%
45							End boring at 46.5 feet.
50							
55							
60							Plate A37

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-17 IP-15 DRIVING WT. 140 lb. DATE OF DRILLING 7-2-90
SURFACE ELEV. 511± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, stiff, with gravel and cobbles.
			43		11		
5			17/6" 45/1"		35		Boulder at 6 feet.
10			45		48		
							COMPLETELY WEATHERED ROCK - Mottle brown, moist, medium dense.
15				77	30		
20			29		32		
25				85	24		Grading to mottled orange brown color from 24 to 34 feet.
30			27		36		Plate A38

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-17 (Cont.) IP-15 DRIVING WT. 140 lb. DATE OF DRILLING 7-2-90
SURFACE ELEV. 511± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							
35				64	39		Grading dense from 34 feet.
40			40		32		
45				No Penetration			Grading medium hard from 44 feet.
			15/0"	No Penetration			Begin NX coring from 48 feet. 43% Recovery from 48 to 58 feet. RQD = 9%
50							
55							BASALT - Mottled gray, medium hard, vesicular, fractured, slightly weathered.
60							Plate A39

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-17 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 7-2-90
SURFACE ELEV. 511± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							98% Recovery from 58 to 68 feet. RQD = 20%
65							90% Recovery from 68 to 78 feet. RQD = 14%
70							
75							
80							End boring at 78 feet.
85							
90							Plate A40

PAUL S. MORIMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 5299
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 138 OF 33 SHEETS

140

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	141	325

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

BORING NO. IB1-18 IP-16 DRIVING WT. 140 lb. DATE OF DRILLING 7-6-90
SURFACE ELEV. 496± DROP 30 in. WATER LEVEL @ 11 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, stiff, with gravel and cobbles.
				72	29		
							Grading with cobbles and boulders from 3 feet.
5			12		28		
			15/1"	No Recovery			
10							
15			15/0"	No Penetration			Begin NX coring from 14 feet. 80% Recovery from 14 to 16.5 feet. RQD = 80% 30% Recovery from 16.5 to 21.5 feet. RQD = 20% End NX coring at 21.5 feet.
20							COMPLETELY WEATHERED ROCK - Mottled grayish brown, medium dense.
25			27		29		
30							

Plate A41

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

BORING NO. IB1-18 IP-16 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 7-6-90
SURFACE ELEV. 496± DROP 30 in. WATER LEVEL @ 11 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30			25		37		
35			22		35		
40			50/2"	No Recovery			BASALT - Mottled gray, dense to medium hard, highly fractured, weathered. Begin NX coring from 39 feet. 68% Recovery from 39 to 43 feet. RQD = 0% 98% Recovery from 43 to 48 feet. RQD = 0%
45							
50							Grading medium hard from 48 feet. 100% Recovery from 48 to 53 feet. RQD = 32%
55							
							100% Recovery from 53 to 58 feet. RQD = 14%
60							

Plate A42

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

BORING NO. IB1-18 IP-16 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 7-6-90
SURFACE ELEV. 496± DROP 30 in. WATER LEVEL @ 11 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							80% Recovery from 58 to 63 feet. RQD = 6%
65							100% Recovery from 63 to 68 feet. RQD = 46%
							End boring at 68 feet.
70							
75							
80							
85							
90							

Plate A43

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

BORING NO. IB1-19 ABUT A2 DRIVING WT. 140 lb. DATE OF DRILLING 7-23-90
SURFACE ELEV. 540± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							
35				57	47		
40			51		11		Grading dense to medium hard from 39 feet.
45			25/0"	No Penetration			
50			20/0"	No Penetration			BASALT - Mottled gray, medium hard, vesicular, fractured, slightly weathered. Begin NX coring from 51 feet. 93% Recovery from 51 to 61 feet. RQD = 32%
55							
60							

Plate A45

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

BORING NO. IB1-19 ABUT A2 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 7-23-90
SURFACE ELEV. 540± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0							COMPLETELY WEATHERED ROCK - Mottled grayish brown and red, moist, medium dense to dense.
			22		34		
5				61	60		
10			39		38		
15				69	48		
20			23		36		
25				70	46		
30			26		35		

Plate A44

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

BORING NO. IB1-19 ABUT A2 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 7-23-90
SURFACE ELEV. 540± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							100% Recovery from 61 to 71 feet. RQD = 16%
65							
70							
							End boring at 71 feet.
75							
80							
85							
90							

Plate A46

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

PAUL S. MORIMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 5299
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 81 OF 33 SHEETS

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	142	325

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-20 ABUT A2 DRIVING WT. 140 lb. DATE OF DRILLING 7-16-90
SURFACE ELEV. 544± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0							COMPLETELY WEATHERED ROCK - Mottled grayish brown and red, moist, dense.
			36		42		
5				72	37		
10			31		37		
							Grading dense to medium hard from 14 feet.
15				78	26		
20			80		31		
25			45		26		
30			47		30		

Plate A47

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-20 ABUT A2 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 7-16-90
SURFACE ELEV. 544± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							
65			43		36		
70			68		37		
75			48		38		
80			45		33		
85			110/7"		29		
							BASALT - Gray, dense to medium hard, weathered.
90			60/0"	No Penetration			

Plate A49

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-20 ABUT A2 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 7-16-90
SURFACE ELEV. 544± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							
35			50		37		
40				78	30		
45			100/9"		33		
50			25		33		
55				71	39		
60			60/4"		37		

Plate A48

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. IB1-20 ABUT A2 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 7-16-90
SURFACE ELEV. 544± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
90							Begin NX coring from 89 feet. 40% Recovery from 89 to 99 feet. RQD = 4 %
95							
100							End boring at 99 feet.
105							
110							
115							
120							

Plate A50

BORING: OB1-21 ABUT A1 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 480'±
DATE: 10-23-90 DEPTH TO WATER: 65' DATE: 10-24-90
PAGE 1 OF 3 WATER ELEV.: 415'± TIME: 9:40 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
					1	Brown Clayey SILT (MH) with gravel and cobbles, stiff, moist to saturated (FILL)
	77	58	R	1	5	
LL=73, PI=23	66		14	2	10	Mottled Orange Brown Clayey SILT (MH), stiff, moist (RESIDUAL)
qu=1930 p.s.f.	57	67	29	3	15	
	40		37	4	20	Mottled Orange and Gray Clayey SILT (MH) with decomposed gravel, very stiff, moist (SAPROLITE)
Direct Shear: Ø=41° C=550 p.s.f.	67	60	21	5	25	
	52		6	6	30	Mottled Reddish Brown Clayey SILT (ML) with sand and weathered gravel, stiff, moist (WEATHERED CLINKER)
					35	

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A51

BORING: OB1-21 ABUT A1 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 480'±
DATE: 10-19-90 DEPTH TO WATER: 65' DATE: 10-24-90
PAGE 2 OF 3 WATER ELEV.: 415'± TIME: 9:40 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
qu=1990 p.s.f.	40	76	90/.8'	7	35	Mottled Reddish Brown Clayey SILT (ML) with sand and weathered gravel, stiff, moist (WEATHERED CLINKER)
			97% REC 8% RQD	RUN # 1	40	Gray Moderately Weathered BASALT (WM), hard, extremely broken
			97% REC 0% RQD	RUN # 2	45	Grayish Brown Highly Weathered Welded CLINKER (WH), medium hard, broken
			80% REC 0% RQD	RUN # 3	50	Gray Moderately Weathered BASALT (WM), medium hard to hard, broken
			65% REC 33% RQD	RUN # 4	55	
			60% REC 17% RQD	RUN # 5	60	Reddish Gray Highly Weathered Welded CLINKER (WH), medium hard, occasionally broken
			80% REC 7% RQD	RUN # 6	65	Gray Moderately to Highly Weathered BASALT (WM-WH), medium hard to hard, very broken
			62% REC 0% RQD	RUN # 7	70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A52

BORING: OB1-21 ABUT A1 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 480'±
DATE: 10-23-90 DEPTH TO WATER: 65' DATE: 10-24-90
PAGE 3 OF 3 WATER ELEV.: 415'± TIME: 9:40 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			62% REC 0% RQD	RUN # 7	70	Gray/Brown Highly Weathered CLINKER (MH), medium dense
			90% REC 10% RQD	RUN # 8		Red Weathered TUFF (WH), medium hard, broken
					75	Gray Moderately Weathered Vesicular BASALT (WM), medium hard, broken
			100%REC 45% RQD	RUN # 9	80	Gray Slightly Weathered BASALT (WS), hard, massive
			87% REC 25% RQD	RUN # 10		Gray/Brown Highly Weathered CLINKER (WH), medium hard, broken
					85	Gray Slightly Weathered Vugula BASALT (WS), hard, broken
			95% REC 50% RQD	RUN # 11	90	Red/Gray Moderately Weathered Welded CLINKER (WM), medium hard to hard, occasionally broken to massive
			75% REC 10% RQD	RUN # 12	95	
					100	BOH @ 97.0'
					105	

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A53

PAUL S. MORIMOTO REGISTERED PROFESSIONAL ENGINEER No. 5299 HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

ALAN J. SHIMAMOTO REGISTERED PROFESSIONAL ENGINEER No. 4393-C HAWAII, U.S.A.

FEWELL GEOTECHNICAL ENGINEERING, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 110 OF 33 SHEETS

142

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	143	325

BORING: OB1-22 ABUT A1 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 502'±
DATE: 10-12-90 DEPTH TO WATER: 28.5' DATE: 10-18-90
PAGE 1 OF 3 WATER ELEV.: 473.5'± TIME: 11:30 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	39		13	1	1, 5	Brown Clayey SILT (MH) with gravel and cobbles, stiff, moist (FILL)
qu=10150 p.s.f. LL=86, PI=28	51	68	54	2	10	Mottled Grayish Brown Clayey SILT (MH) with gravel and cobbles, hard, damp (ALLUVIUM)
	53		18	3	15	
qu=1500 p.s.f. Consol	61	63	17	4	20	Mottled Grayish Brown Clayey SILT (MH) with gravel, stiff, moist
	58		17	5	25	
				6	30	(ALLUVIUM)
LL=91, PI=45	57		67 60% REC 60% RQD	7 RUN # 1	35	Gray BOULDERS, COBBLES, and GRAVEL with gray Silty Clay martrix, dense

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A54

BORING: OB1-22 ABUT A1 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 502'±
DATE: 10-12-90 DEPTH TO WATER: 28.5' DATE: 10-18-90
PAGE 2 OF 3 WATER ELEV.: 473.5'± TIME: 11:30 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			60% REC 60% RQD	RUN # 1	35	Gray BOULDERS, COBBLES, and GRAVEL in Gray Silty Clay matrix, dense
			91% REC 9% RQD	RUN # 2	40	
			100%REC 10% RQD	RUN # 3	45	
			63% REC 0% RQD	RUN # 4	50	
			100%REC 0% RQD	RUN # 5	55	(ALLUVIUM)
			82% REC 25% RQD	RUN # 6	60	Brown Gray Moderately Weathered BASALT (WM), hard, broken
			100%REC 10% RQD	RUN # 7	65	Gray Slightly Weathered BASALT (WS), hard, broken
			100%REC 37% RQD	RUN # 8	70	Grayish Brown Moderately Weathered Welded CLINKER (WM), medium hard, occasionally broken

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A55

BORING: OB1-22 ABUT A1 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 502'±
DATE: 10-12-90 DEPTH TO WATER: 28.5' DATE: 10-18-90
PAGE 3 OF 3 WATER ELEV.: 473.5'± TIME: 11:30 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			100%REC 37% RQD	RUN # 8	70	Grayish Brown Moderately Weathered Welded CLINKER (WM), medium hard, occasionally broken
			75% REC 25% RQD	RUN # 9	75	Gray Fresh BASALT (F), very hard, massive
						BOH @ 77.0'
					80	
					85	
					90	
					95	
					100	
					105	

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A56

BORING: OB1-23 OP-1 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 457'±
DATE: 10-9-90 DEPTH TO WATER: 17.0' DATE: 10-9-90
PAGE 1 OF 3 WATER ELEV.: 440'± TIME: 12:00 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	40		3	1	5	
qu=660 p.s.f.	56	68	PUSH	2	10	Brown Clayey SILT (MH) with gravel, cobbles and occasional boulders, soft to medium stiff, moist
	61		6	3	15	
qu=520 p.s.f.	63	65	PUSH	4	20	
					25	(FILL)
	58		6	5		Brown Gray Clayey SILT (MH) with gravel, medium stiff, moist (ALLUVIUM)
	29		100/.9'	6	30	Mottled Gray Highly Weathered BASALT (WH), medium hard, broken
					35	Mottled Red Orange Highly Weathered CLINKER (WH), dense, moist

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A57

BORING: OB1-23 OP-1 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 457'±
DATE: 10-9-90 DEPTH TO WATER: 17.0' DATE: 10-9-90
PAGE 2 OF 3 WATER ELEV.: 440'± TIME: 12:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
qu=850 p.s.f.	57	67	32	7	35	Mottled Red Orange Highly Weathered CLINKER (WH), dense, moist
	60		53	8	40	Gray Highly Weathered BASALT (WH) with seams of hard clayey silt, medium hard, broken
	27		R 100%REC 17% RQD	9 RUN # 1	45	
			100%REC 7% RQD	RUN # 2	50	Gray Moderately Weathered BASALT (WM), hard, broken
			70% REC 10% RQD	RUN # 3		Gray Brown Highly Weathered CLINKER (WH), dense, broken
					55	Red Highly Weathered TUFF (WH), medium hard, broken
			100%REC 55% RQD	RUN # 4	60	Gray Brown Slightly to Moderately Weathered Vesicular BASALT (WS-WM), hard, broken
						Red Moderately Weathered Welded CLINKER (WM), medium hard, broken
			100%REC 88% RQD	RUN # 5	65	Gray Fresh Vugular BASALT (F), very hard, occasionally broken to massive
			100%REC 89% RQD	RUN # 6	70	

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Plate A58

BORING: OB1-23 OP-1 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 457'±
DATE: 9-7-90 DEPTH TO WATER: 17.0' DATE: 10-9-90
PAGE 3 OF 3 WATER ELEV.: 440'± TIME: 12:00 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			100%REC 89% RQD	RUN # 6	70	Gray Fresh Vugular BASALT (F), very hard, occasionally broken to massive
			100%REC 90% RQD	RUN # 7	75	Red Gray Slightly Weathered Welded CLINKER (WS), hard, occasionally broken to massive
						BOH @ 77.0'
					80	
					85	
					90	
					95	
					100	
					105	

FEWELL GEOTECHNICAL ENGINEERING, LTD.

Plate A59

ALAN J. SHIMAMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 4393-C
HAWAII, U.S.A.

FEWELL GEOTECHNICAL ENGINEERING, LTD.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. B11 OF 33 SHEETS

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	144	326

BORING: OB1-24 OP-2 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 460'±
DATE: 9-26-90 DEPTH TO WATER: 27.0' DATE: 10-2-90
PAGE 1 OF 3 WATER ELEV.: 433'± TIME: 11:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	44		10	1	1, 5	Brown Clayey **SILT** (MH) with gravel, sand and cobbles, soft to medium stiff, moist to saturated
qu=580 p.s.f.	51	73	PUSH	2	10	
	64		2	3	15	
qu=800 p.s.f. LL=88, PI=43	47	73	PUSH	4	20	
	47		12	5	25	Brownish Gray Sandy **SILT** (ML-SM) with trace gravel, medium stiff, saturated
			44% REC 0% RQD	RUN # 1	30	Gray **BOULDERS, COBBLES** and **GRAVEL** in sand matrix, dense, saturated
			45% REC 0% RQD	RUN # 2	35	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A60

BORING: OB1-24 OP-2 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 460'±
DATE: 9-26-90 DEPTH TO WATER: 27.0' DATE: 10-2-90
PAGE 2 OF 3 WATER ELEV.: 433'± TIME: 11:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			45% REC 0% RQD	RUN # 2	35	Gray **BOULDERS, COBBLES** and **GRAVEL** in sand matrix, dense, saturated (ALLUVIUM)
			80% REC 0% RQD	RUN # 3	40	
			81% REC 7% RQD	RUN # 4	45	Gray Moderately to Highly Weathered **BASALT** (WM-WH), medium hard, extremely btoken
			30% REC 0% RQD	RUN # 5	50	
	37		97/.7'	6	55	
			58% REC 15% RQD	RUN # 6	60	Gray Brown Highly Weathered **CLINKER** (WH), soft to medium hard, extremely broken; Red Highly Weathered **TUFF** (WM), medium hard, broken
			75% REC 20% RQD	RUN # 7	65	Gray Brown Moderately to Highly Weathered Vesicular **BASALT** (WM-WH), medium hard, broken; Gray Brown Moderately Weathered **CLINKER** (WM), medium hard, extremely broken
			66% REC 33% RQD	RUN # 8	70	Gray Fresh **BASALT** (F), very hard, broken

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A61

BORING: OB1-24 OP-2 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 460'±
DATE: 9-26-90 DEPTH TO WATER: 27.0' DATE: 10-2-90
PAGE 3 OF 3 WATER ELEV.: 433'± TIME: 11:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			66% REC 33% RQD	RUN # 8	70, 75, 80, 85, 90, 95, 100, 105	Gray Fresh **BASALT** (F), very hard, broken
						BOH @ 72.0'

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A62

BORING: OB1-25 OP-3 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 480'±
DATE: 9-17-90 DEPTH TO WATER: 40.5' DATE: 9-18-90
PAGE 1 OF 3 WATER ELEV.: 439.5'± TIME: 9:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
LL=78, PI=32 qu=1410 p.s.f.	48	74	PUSH	1	1, 5	Brown Clayey **SILT** (MH) with gravel, cobbles and occasional boulders, soft to medium stiff, moist
	44		6	2	10	
	53		PUSH	3	15	
qu=1100 p.s.f.	51	71	12	4	20	
			48% REC 0% RQD	RUN # 1	25	
			8	5		
			30% REC 0% RQD	RUN # 2	30	
			10	6		
	55		17	7	35	(FILL)

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A63

BORING: OB1-25 OP-3 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 480'±
DATE: 9-17-90 DEPTH TO WATER: 40.5' DATE: 9-18-90
PAGE 2 OF 3 WATER ELEV.: 439.5'± TIME: 9:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			25% REC 0% RQD	RUN # 3	35	Brown Clayey **SILT** (MH) with cobbles, soft to medium stiff, moist (FILL)
			56% REC 0% RQD	RUN # 4	40	Gray **BOULDERS, COBBLES** and **GRAVEL** with sand and silt, dense (ALLUVIUM)
			63% REC 0% RQD	RUN # 5	45	
			40% REC 0% RQD	RUN # 6	50	
			67% REC 0% RQD	RUN # 7	55	
			58% REC 0% RQD	RUN # 8	60	Mottles Gray Highly Weathered **BASALT** (WH), soft to medium hard, extremely broken
			82% REC 0% RQD	RUN # 9	65	Gray Moderately Weathered **BASALT** (WM), medium hard to hard, extremely broken
			100%REC 7% RQD	RUN # 10	70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A64

BORING: OB1-25 OP-3 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 480'±
DATE: 9-17-90 DEPTH TO WATER: 40.5' DATE: 9-18-90
PAGE 3 OF 3 WATER ELEV.: 439.5'± TIME: 9:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			100%REC 7% RQD	RUN # 10	70	Gray Moderately Weathered **BASALT** (WM), medium hard to hard, extremely broken
			90% REC 20% RQD	RUN # 11	75	Drades to broken
			95% REC 45% RQD	RUN # 12	80	Red Highly Weathered **TUFF** (WH), medium hard, broken; Gray Slightly Weathered **BASALT** (WS), hard, occasionally broken
						BOH @ 81.0'

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A65

ALAN J. SHIMAMOTO
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No. 4393-C
HAWAII, U.S.A.

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Alan J. Shimamoto

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 8L 12 OF 33 SHEETS

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

137210

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	145	325

BORING: OB1-26 OP-4 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 462'±
DATE: 9-7-90 DEPTH TO WATER: 46.0' DATE: 9-7-90
PAGE 1 OF 2 WATER ELEV.: 416'± TIME: 3:00 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
qu=930 p.s.f.	43	69	PUSH	1	1, 5	Brown Clayey **SILT** (MH) with gravel, medium stiff to stiff, moist
	49		27	2	10	(RESIDUAL)
			85% REC 0% RQD	RUN # 1	15	Gray Slightly Weathered **BASALT** (WS), hard, extremely broken
			0% REC 0% RQD	RUN # 2	20	Red Brown Highly Weathered **CLINKER** (WH), medium dense
			78% REC 0% RQD	RUN # 3	25, 30	Gray Slightly to Moderately Weathered **BASALT** (WS-WM), medium hard to hard, extremely broken
			30% REC 9% RQD	RUN # 4	35	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A66

BORING: OB1-26 OP-4 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 462'±
DATE: 9-7-90 DEPTH TO WATER: 46.0' DATE: 9-7-90
PAGE 2 OF 2 WATER ELEV.: 416'± TIME: 3:00 PM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			30% REC 9% RQD	RUN # 4	35	Gray Slightly Moderately Weathered **BASALT** (WS-WM), medium hard to hard, extremely broken
					40	Brown Gray Highly Weathered **CLINKER** (WH), dense, moist
			100%REC 20% RQD	RUN # 5	45	Gray Slightly Weathered **BASALT** (WS), medium hard to hard, extremely broken
					50	
			79% REC 30% RQD	RUN # 6	55	Brown Gray Highly Weathered **CLINKER** (WH), dense, moist
						Red Slightly Weathered **TUFF**, medium hard to hard
					60	Gray Fresh **BASALT** (F), hard, occasionally fractured
						BOH @ 60.0'
					65, 70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A67

BORING: OB1-27 OP-5 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 498'±
DATE: 11-2-90 DEPTH TO WATER: NONE ENCOUNTERED
PAGE 1 OF 2

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
LL=80, PI=21	62	57	13	1	1, 5	
qu=1490 p.s.f.	67		6	2	10	
	63	61	PUSH	3	15	Brown Clayey **SILT** (MH) with gravel, medium stiff to stiff, moist
	67		8	4	20	
qu=1740 p.s.f.	63	61	PUSH	5	25	
					30	(ALLUVIUM)
	32		66	6	35	Gray **BOULDERS, COBBLES** and **GRAVEL** with sand in brown clayey silt matrix, very dense, moist (ALLUVIUM)

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A68

BORING: OB1-27 OP-5 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 498'±
DATE: 11-2-90 DEPTH TO WATER: NONE ENCOUNTERED
PAGE 2 OF 2

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	32	85	70/.5' R	7	35	Gray **BOULDERS, COBBLES** and **GRAVEL** with sand in matrix, very dense, moist (ALLUVIUM)
						Gray Slightly Weathered **BASALT** (WS), hard, broken
			100%REC 60% RQD	RUN # 1	40	
			80% REC 25% RQD	RUN # 2	45	Brownish Gray Slightly to Moderately Weathered Welded **CLINKER** (WS-WM), medium hard to hard, occasionally broken
			100%REC 45% RQD	RUN # 3	50	Gray Fresh **BASALT** (F), very hard, massive
						BOH @ 50.0'
					55, 60, 65, 70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A69

BORING: OB1-28 OP-6 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 505'±
DATE: 11-5-90 DEPTH TO WATER: NONE ENCOUNTERED
PAGE 1 OF 2

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
LL=93, PI=40	49		23	1	1, 5	Brown Clayey **SILT** (MH) with gravel and cobbles, very stiff, moist
qu=1930 p.s.f.	45	74	34	2	10	
	55		11	3	15	Grades to stiff @ 15.0'
			PUSH	4	20	
	46	70	68	5	25	
	58	60	29	6	30, 35	(ALLUVIUM)

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A70

BORING: OB1-28 OP-6 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 505'±
DATE: 11-5-90 DEPTH TO WATER: NONE ENCOUNTERED
PAGE 2 OF 2

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
	26		50/.5' R	7	35	Brown Clayey **SILT** (MH) with gravel and cobbles, very stiff, moist
			88% REC 0% RQD	RUN # 1	40	Gray and Brown **BOULDERS, COBBLES,** and **GRAVEL** in silt matrix, very dense, moist
			65% REC 0% RQD	RUN # 2	45	
			40% REC 0% RQD	RUN # 3	50	(ALLUVIUM)
	32		50/.5' R	8		Gray Moderately Weathered **BASALT** (WM), medium hard to hard, very broken
			100%REC 24% RQD	RUN # 4	55	Gray Slightly Weathered Vesicular **BASALT** (WS), very hard, occasionally broken to massive
			80% REC 25% RQD	RUN # 5	60	Gray Brown Moderately Weathered Welded **CLINKER** (WM), medium hard, broken
						BOH @ 62.0'
					65, 70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A71

ALAN J. SHIMAMOTO
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Alan J. Shimamoto

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 13/13 OF 33 SHEETS

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

137318

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	140	325

BORING: OB1-29 OP-7 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 469'±
DATE: 11-29-90 DEPTH TO WATER: NONE ENCOUNTERED
PAGE 1 OF 2

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
LL=40, PI=21	11		29	1	5	BOULDERS, COBBLES AND GRAVEL (GM)in a matrix of Brown Clayey Silt, medium dense, moist
qu=910 p.s.f.	32	92	5/.4' R	2	10	
			46% REC 17% RQD	RUN # 1	15	(FILL)
			100%REC 0% RQD	RUN # 2		Gray Slightly Weathered BASALT (WS), hard, broken to occasionally broken
			100%REC 28% RQD	RUN # 3	20	Gray and Brown Highly Weathered Welded CLINKER (WH), medium hard, broken
			100%REC 71% RQD	RUN # 4	25	Brown Moderately Weathered Vesicular BASALT (WM), medium hard, occasionally broken to massive
			87% REC 73% RQD	RUN # 5		Gray Moderately to Slightly Weathered Vesicular BASALT (WM-WS), hard, massive to occasionally broken
			81% REC 47% RQD	RUN # 6	30 35	Brown/Gray Moderately Weathered Welded CLINKER (WH), medium hard, massive to occasionally broken

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A72

BORING: OB1-29 OP-7 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 469'±
DATE: 11-29-90 DEPTH TO WATER: NONE ENCOUNTERED
PAGE 2 OF 2

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			81% REC 47% RQD	RUN # 6	35	Brown/Gray Moderately Weathered Welded CLINKER (WH), medium hard, massive to occasionally broken
			100%REC 100%RQD	RUN # 7		
			50% REC 50% RQD	RUN # 8	40	Gray Slightly Weathered BASALT (WS), very hard, massive to occasionally broken
			70% REC 17% RQD	RUN # 9	45	Gray/Brown Moderately to Slighily Weathered Welded CLINKER (WM-WS), hard, broken
			70% REC 21% RQD	RUN # 10		Gray/Brown Moderately Weathered CLINKER (WM), dense, damp
					50	Gray Slightly Weathered BASALT (WS), hard, occasionally broken
						BOH @ 52.0'
					55 60 65 70	

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A73

BORING: OB1-30 OP-8 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 463'±
DATE: 8-8-90 DEPTH TO WATER: 23' DATE: 9-5-90
PAGE 1 OF 3 WATER ELEV.: 440'± TIME: 9:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
						Brown Clayey SILT (MH) with boulders, stiff, moist (ALLUVIUM)
	20	103	90	1	5	BOULDERS, COBBLES and GRAVEL in clayey silt matrix, dense, moist to saturated
			83% REC 0% RQD	RUN # 1	10	
			60% REC 0% RQD	RUN # 2	15	
					20	
LL=57, PI=9	38		42	2	25	Mottles Gray Brown Clayey SILT (MH) with gravel and sand, hard, saturated
	36		84	3	30 35	Gray Fresh Vesicular BASALT (F), very hard, moderately broken

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A74

BORING: OB1-30 OP-8 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 463'±
DATE: 8-8-90 DEPTH TO WATER: 23' DATE: 9-5-90
PAGE 2 OF 3 WATER ELEV.: 440'± TIME: 9:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			R	4	35	
			0% REC 0% RQD	RUN # 3	40	Gray Fresh Vesicular BASALT (F), very hard, occasionally broken
			79% REC 22% RQD	RUN # 4	45	Gray Brown Moderately Weathered CLINKER (WL), soft, extremely broken
					50	Gray Fresh Vesicular BASALT (F), very hard, occasionally broken
					55	Red Gray Highly Weathered CLINKER (WH), soft to friable, extremely broken
			93% REC 44% RQD	RUN # 5	60	Gray Fresh Vugular BASALT (F-WS), very hard, occasionally broken
			65% REC 0% RQD	RUN # 6	65 70	Red Gray Moderately Weathered BASALT (WM) with seams of clinker, soft to medium hard, extremely broken

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A75

BORING: OB1-30 OP-8 PROJECT: Interstate Route H-3, North Halawa Highway
FILE: 953-1 SURFACE ELEV.: 463'±
DATE: 8-8-90 DEPTH TO WATER: 23' DATE: 9-5-90
PAGE 3 OF 3 WATER ELEV.: 440'± TIME: 9:00 AM

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
			65% REC 0% RQD	RUN # 6	70	Red Gray Moderately Weathered BASALT (WM) with seams of clinker, soft to medium hard, extremely broken
					75 80 85 90 95 100 105	BOH @ 73.0'

FEWELL GEOTECHNICAL ENGINEERING, LTD.
Plate A76

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FEWELL GEOTECHNICAL ENGINEERING, LTD.
Alan J. Shimamoto

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 13/14 OF 33 SHEETS

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

137210

1465

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	147	325

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB1-31 OP-9 DRIVING WT. 140 lb. DATE OF DRILLING 7-19-90
SURFACE ELEV. 466± DROP 30 in. WATER LEVEL @ 7.7 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Brown, moist, stiff, with gravel.
			15		33		
5				87	19		Grading with cobbles from 5 feet.
10			8/6" 45/6"		47		
15				91	40		
20			70/8"		31		COMPLETELY WEATHERED ROCK - Mottled orange brown, dense to medium hard.
25			85/11"		33		
							BASALT - Gray, hard, slightly weathered.
30			50/1"	No Recovery			

Plate A77

ERNEST K. HIRATA & ASSOCIATES, INC.
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BORING LOG W.O. 90-1953

BORING NO. OB1-31 (Cont.) OP-9 DRIVING WT. 140 lb. DATE OF DRILLING 7-19-90
SURFACE ELEV. 466± DROP 30 in. WATER LEVEL @ 7.7 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							Begin NX coring from 30 feet. 100% Recovery from 30 to 34 feet. RQD = 96%
35							92% Recovery from 34 to 39 feet. RQD = 35% Grading highly fractured from 36.5 feet.
40							100% Recovery from 39 to 44 feet. RQD = 73%
45							100% Recovery from 44 to 49 feet. RQD = 40%
50							End boring at 49 feet.
55							
60							

Plate A78

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB1-32 OP-10 DRIVING WT. 140 lb. DATE OF DRILLING 6-28-90
SURFACE ELEV. 494± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, firm to medium stiff, with gravel and cobbles.
			12		65		
5				56	42		
10			3		44		
15			15		50		
20				69	44		
25			6		45		
							BASALT - Mottled gray, dense to medium hard, vesicular, fractured, weathered to slightly weathered.
30				75	38		

Plate A79

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB1-32 (Cont.) OP-10 DRIVING WT. 140 lb. DATE OF DRILLING 6-28-90
SURFACE ELEV. 494± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							Grading medium hard from 30 feet.
			50/3"	No Recovery			Begin NX coring from 34 feet. 84% Recovery from 34 to 44 feet. RQD = 35%
35							
40							
45							78% Recovery from 44 to 53 feet. RQD = 21%
50							
							End boring at 53 feet.
55							
60							

Plate A80

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB1-33 OP-11 DRIVING WT. 140 lb. DATE OF DRILLING 6-25-90
SURFACE ELEV. 502± DROP 30 in. WATER LEVEL Not Recorded

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Dark brown, moist, firm to medium stiff, with gravel.
			3		45		Grading to mottled brown color from 2 feet.
5				52	53		
10			3		62		
15			25/0"	No Penetration			
			25		17		COMPLETELY WEATHERED ROCK - Mottled grayish brown, moist, medium dense to dense
20			43		38		
25			20		58		
30							

Plate A81

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB1-33 (Cont.) OP-11 DRIVING WT. 140 lb. DATE OF DRILLING 6-25-90
SURFACE ELEV. 502± DROP 30 in. WATER LEVEL Not Recorded

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30				75	40		
			15/0"	No Penetration			BASALT - Gray, medium hard, vesicular, fractured, weathered. Begin NX coring from 34 feet. 96% Recovery from 34 to 42 feet. RQD = 40%
35							
40							94% Recovery from 42 to 52 feet. RQD = 68%
45							Grading hard from 45 feet.
50							
							End boring at 52 feet.
55							
60							

Plate A82

PAUL S. MORIMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 5299
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 86 OF 33 SHEETS

147

SURVEY PLOTTED BY
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
CHECKED BY
DATE

ORIGINAL PLAN
NOTE BOOK
No.

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	140	325

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

BORING NO. OB1-34 OP-12 DRIVING WT. 140 lb. DATE OF DRILLING 6-4-90
SURFACE ELEV. 510± DROP 30 in. WATER LEVEL Not Recorded

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, firm to medium stiff, with gravel and cobbles.
				52	32		
5			8		49		
				68	33		
10							
15			7		48		
20					41		Grading stiff from 19 feet.
25			29		14		
30			21		26		

Plate A83

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

BORING NO. OB1-34 (Cont.) OP-12 DRIVING WT. 140 lb. DATE OF DRILLING 6-3-90
SURFACE ELEV. 510± DROP 30 in. WATER LEVEL Not Recorded

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							
				55	27		
35							COMPLETELY WEATHERED ROCK - Mottled gray/brown, dense to medium hard.
40			50/3"	No Recovery			BASALT - Gray, medium hard to hard, vesicular, fractured, slightly weathered. Begin NX coring from 39 feet. 92% Recovery from 39 to 44 feet. RQD = 74%
45							94% Recovery from 44 to 49 feet. RQD = 0%
50							96% Recovery from 49 to 54 feet. RQD = 40%
55							End boring at 54 feet.
60							

Plate A84

ERNEST K. HIRATA & ASSOCIATES, INC.
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BORING LOG

W.O. 90-1953

BORING NO. OB1-35 OP-13 DRIVING WT. 140 lb. DATE OF DRILLING 7-16-90
SURFACE ELEV. 486± DROP 30 in. WATER LEVEL @ 10 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, stiff, with gravel. Grading with boulders from 2 feet.
			26		35		
5				52	30		
10			10		47		
							COMPLETELY WEATHERED ROCK - Mottled grayish brown, moist, medium dense.
15				60	50		
20			20		44		
25				82	47		Grading medium hard from 24 feet.
30			15/0"	No Penetration			BASALT - Mottled gray, dense to medium hard, vesicular, fractured, weathered. Begin NX coring from 29 feet.

Plate A85

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

BORING NO. OB1-35 (Cont.) OP-13 DRIVING WT. 140 lb. DATE OF DRILLING 7-16-90
SURFACE ELEV. 486± DROP 30 in. WATER LEVEL @ 10 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							73% Recovery from 29 to 39 feet. RQD = 16%
35							
40							90% Recovery from 39 to 49 feet. RQD = 29%
45							
50							End boring at 49 feet.
55							
60							

Plate A86

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BORING LOG

W.O. 90-1953

BORING NO. OB1-36 OP-14 DRIVING WT. 140 lb. DATE OF DRILLING 6-30-90
SURFACE ELEV. 484± DROP 30 in. WATER LEVEL @ 9.6 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, firm to medium stiff, with gravel and few boulders.
			4		47		
5			17		27		
10			3				
15				85	41		COMPLETELY WEATHERED ROCK - Mottled brown, medium dense.
20			8		52		
			50/6"		30		
25							BASALT - Mottled gray, medium hard, highly fractured, weathered. Begin NX coring from 23.5 feet. 96% Recovery from 23.5 to 28.5 feet. RQD = 20%
30							

Plate A87

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Soils and Foundation Engineering
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BORING LOG

W.O. 90-1953

BORING NO. OB1-36 (Cont.) OP-14 DRIVING WT. 140 lb. DATE OF DRILLING 6-30-90
SURFACE ELEV. 484± DROP 30 in. WATER LEVEL @ 9.6 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							100% Recovery from 28.5 to 32.5 feet. RQD = 85%
							Clinkers from 32.5 to 33.5 feet. 100% Recovery from 32.5 to 37.5 feet. RQD = 30%
35							
							100% Recovery from 37.5 to 42.5 feet. RQD = 34%
40							
							End boring at 42.5 feet.
45							
50							
55							
60							

Plate A88

PAUL S. MORIMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 5299
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. BL16 OF 33 SHEETS

148

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	149	325

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB1-37 OP-15 DRIVING WT. 140 lb. DATE OF DRILLING 7-6-90
SURFACE ELEV. 498± DROP 30 in. WATER LEVEL @ 43 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, stiff, with boulders.
5			60		31		COMPLETELY WEATHERED ROCK - Mottled brown, moist, dense.
			36		30		
10			21		39		
15				63	54		
20			22		35		
25				58	49		
30							

Plate A89

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB1-37 (Cont.) OP-15 DRIVING WT. 140 lb. DATE OF DRILLING 7-6-90
SURFACE ELEV. 498± DROP 30 in. WATER LEVEL @ 43 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60			30		36		
65			50/3"	No Recovery			BASALT - Mottled reddish gray, dense to medium hard, vesicular and fractured, slightly weathered. Begin NX coring from 65 feet. 94% Recovery from 65 to 75 feet. RQD = 22%
70							
75							90% Recovery from 75 to 85 feet. RQD = 14 %
80							
85							End boring at 85 feet.
90							

Plate A91

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB1-37 (Cont.) OP-15 DRIVING WT. 140 lb. DATE OF DRILLING 7-6-90
SURFACE ELEV. 498± DROP 30 in. WATER LEVEL @ 43 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30			24		38		
35				65	47		
40			49		33		
45				66	48		
50			32		47		
55				62	43		
60							

Plate A90

BORING OB1-38 OP-16

● Moisture content
▼ Blows per foot

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation 495'±*
* ~~SEE SHEET 133 GENERAL NOTES~~

SOIL DESCRIPTION	USC
BROWN CLAYEY SILT WITH HIGHLY WEATHERED BASALT ROCK, MEDIUM STIFF, MOIST (ALLUVIUM)	ML
DARK BROWN CLAYEY SILT WITH SOME SAND AND GRAVEL, MEDIUM, MOIST (ALLUVIUM)	MH
BROWN SANDY BASALT GRAVEL, HIGHLY WEATHERED, DENSE (ALLUVIUM)	GP
BROWN BASALT COBBLES AND GRAVEL WITH BOULDERS AND SILT (ALLUVIUM)	
DARK GRAY BASALT COBBLES AND BOULDERS WITH SAND AND SILT (ALLUVIUM)	

RUN 1 REC= 83% RQD= 0%
RUN 2 REC= 60% RQD= 0%
RUN 3 REC= 70% RQD= 0%
RUN 4 REC= 80% RQD= 0%
RUN 5 REC= 80% RQD= 0%

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A92

BORING OB1-38 (CONTINUED) OP-16

● Moisture content
▼ Blows per foot

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation

SOIL DESCRIPTION	USC
DARK GRAY BASALT COBBLES AND BOULDERS WITH SAND AND SILT (ALLUVIUM)	
GRAY BASALT, SEVERLY TO MODERATELY JOINTED, HIGHLY WEATHERED	
GRAY BASALT COBBLES AND GRAVEL WITH BOULDERS AND SILTY CLAY (ALLUVIUM)	

RUN 6 REC= 80% RQD= 0%
RUN 7 REC= 100% RQD= 0%
RUN 8 REC= 100% RQD= 0%
RUN 9 REC= 100% RQD= 25%
RUN 10 REC= 100% RQD= 0%
RUN 11 REC= 45% RQD= 0%
RUN 12 REC= 50% RQD= 0%

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A93

BORING OB1-38 (CONTINUED) OP-16

● Moisture content
▼ Blows per foot

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation

SOIL DESCRIPTION	USC
GRAY BASALT COBBLES AND GRAVEL WITH BOULDERS AND SILTY CLAY (ALLUVIUM)	
GRAY BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
GRAY VESICULAR BASALT, SLIGHTLY JOINTED, SLIGHTLY WEATHERED	
GRAY AND REDDISH BROWN VESICULAR BASALT, MODERATELY TO SEVERELY JOINTED, HIGHLY WEATHERED	
GRAY VESICULAR BASALT, MODERATELY JOINTED, SLIGHTLY TO MODERATELY WEATHERED	

RUN 13 REC= 50% RQD= 0%
RUN 14 REC= 100% RQD= 0%
RUN 15 REC= 100% RQD= 90%
RUN 16 REC= 100% RQD= 20%
RUN 17 REC= 90% RQD= 75%
RUN 18 REC= 100% RQD= 80%
RUN 19 REC= 100% RQD= 90%

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A94

BORING OB1-38 (CONTINUED) OP-16

● Moisture content
▼ Blows per foot

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation

SOIL DESCRIPTION	USC
GRAY VESICULAR BASALT, MODERATELY JOINTED, SLIGHTLY TO MODERATELY WEATHERED	

RUN 20 REC= 100% RQD= 80%

BORING TERMINATED AT 110.0 FEET ON OCTOBER 4, 1990

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
14.0 FT	0935	10/19/90

* ELEVATIONS ESTIMATED FROM TOPOGRAPHIC MAP BY R.M. TOWILL CORPORATION, DATED MAY 3, 1989.

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A95

PAUL S. MORIMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 5299
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
SIGNATURE

BOB Y. K. WONG
REGISTERED PROFESSIONAL ENGINEER
No. 3862
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 81/7 OF 33 SHEETS

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	130	325

BORING OB1-39 ABUT A2

Surface elevation 550'±*

● Moisture content
▼ Blows per foot

Sample — Dry density (pcf) — Depth (feet) — Graph

SOIL DESCRIPTION	U S C
MOTTLED GRAY BROWN CLAYEY SILT WITH SOME DECOMPOSED BASALT GRAVEL, MEDIUM STIFF, MOIST	MH
DARK MOTTLED REDDISH BROWN SILTY CLAY, STIFF TO VERY STIFF, MOIST (RESIDUAL)	MH
MOTTLED BROWN SILTY CLAY WITH SAND, STIFF, MOIST (RESIDUAL)	MH
BROWN GRAY CLAYEY SILT, SAND AND GRAVEL, HARD, MOIST (RESIDUAL)	ML
DARK GRAY SILTY GRAVEL WITH SAND AND CLAY, MEDIUM DENSE, MOIST (SAPROLITE)	GM
GRAYISH BROWN SILTY BASALT GRAVEL WITH COBBLES AND BOULDERS (SAPROLITE)	GM

Sample values: 73, 60, 83

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990

Plate A96

BORING OB1-39 (CONTINUED) ABUT A2

RUN	REC	RQD
RUN 1	60%	0%
RUN 2	50%	0%
RUN 3	50%	0%
RUN 4	25%	0%
RUN 5	60%	0%
RUN 6	85%	0%
RUN 7	95%	0%

GRAYISH BROWN SILTY BASALT GRAVEL WITH COBBLES AND BOULDERS (SAPROLITE)

GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A97

BORING OB1-39 (CONTINUED) ABUT A2

Surface elevation

RUN	REC	RQD
RUN 8	5%	0%
RUN 9	95%	5%
RUN 10	40%	0%
RUN 11	60%	15%
RUN 12	25%	0%
RUN 14	100%	20%

GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED

BROWN AND GRAY BASALT COBBLES WITH GRAVEL, HIGHLY WEATHERED

GRAY BASALT, MODERATELY TO SEVERELY JOINTED, HIGHLY WEATHERED

BORING TERMINATED AT 100.0 FEET ON OCTOBER 12, 1990

GROUNDWATER NOT MEASURED HOLE CAVED IN

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A98

BORING OB1-40 ABUT A2

Surface elevation 552'±*

SOIL DESCRIPTION	U S C
BROWN CLAYEY SILT WITH EXTREMELY DECOMPOSED BASALT GRAVEL, SOFT TO MEDIUM, MOIST (RESIDUAL)	MH
MOTTLED BROWN CLAYEY SILT WITH DECOMPOSED BASALT SAND AND GRAVEL, STIFF TO VERY STIFF, MOIST (RESIDUAL)	MH
BROWN SANDY SILT WITH SOME DECOMPOSED BASALT SAND AND GRAVEL (SAPROLITE)	ML
BROWNISH GRAY CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL (SAPROLITE)	ML-CL

Sample values: 59, 59, 66, 93

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A99

BORING OB1-40 (CONTINUED) ABUT A2

Surface elevation

SOIL DESCRIPTION	U S C
BROWNISH GRAY CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL (SAPROLITE)	ML-CL
DARK GRAY BROWN SILTY VESICULAR BASALT GRAVEL WITH SAND, MEDIUM DENSE, WET (SAPROLITE)	GM
GRADES TO LOOSE	
GRADES TO MEDIUM DENSE	
GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

RUN	REC	RQD
RUN 1	100%	0%
RUN 2	80%	0%

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A100

BORING OB1-40 (CONTINUED) ABUT A2

Surface elevation

SOIL DESCRIPTION	U S C
GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

RUN	REC	RQD
RUN 3	60%	0%

BORING TERMINATED AT 75.0 FEET ON OCTOBER 5, 1990

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
67.0 FT	0928	10/19/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A101

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE

BOB Y. K. WONG
REGISTERED PROFESSIONAL ENGINEER
No. 3862
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 8118 OF 33 SHEETS

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	151	225

BORING IB2-41 ABUT A3

Surface elevation 565'±* (* SEE SHEET 133 GENERAL NOTES)

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	USC
			BROWN CLAYEY SILT, MEDIUM, MOIST (RESIDUAL)	MH
		5	MOTTLED BROWN CLAYEY SILT AND DECOMPOSED BASALT GRAVEL, STIFF, MOIST (RESIDUAL)	ML-GM
64		10	MOTTLED BROWN CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL, MEDIUM TO VERY STIFF, MOIST (RESIDUAL)	ML-MH
60	400 PSI/.5' 900 PSI/.5' 62	15		
70 76		20		
	500 PSI 1000 PSI/.3'	25		
		30		
		35	BROWN SILTY WEATHERED BASALT GRAVEL WITH SAND, DENSE, MOIST (SAPROLITE)	GM

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A102

BORING IB2-41 (CONTINUED) ABUT A3

Surface elevation

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	USC
77			BROWN-GRAY CLAYEY SAND WITH GRAVEL, VERY DENSE, WET	SC
149	RUN 1 REC= 80% RQD= 35%	75	BROWNISH GRAY BASALT, MODERATELY TO SEVERELY JOINTED, HIGHLY WEATHERED	
	RUN 2 REC= 67% RQD= 0%	80	REDDISH BROWN CLINKER	
	RUN 3 REC= 65% RQD= 0%	85	BROWNISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
	RUN 4 REC= 70% RQD= 0%	90		
	RUN 5 REC= 60% RQD= 0%	95	REDDISH BROWN CLINKER	
	RUN 6 REC= 65% RQD= 0%	100	BROWNISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
		105		

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A104

BORING IB2-42 ABUT A3

Surface elevation 555'±* (* SEE SHEET 133 GENERAL NOTES)

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	USC
			BROWN CLAYEY SILT AND DECOMPOSED BASALT GRAVEL, MEDIUM TO STIFF, MOIST (RESIDUAL)	MH
66		5		
		10	BOULDER ?	
		15	MOTTLED REDDISH BROWN CLAYEY SILT AND DECOMPOSED BASALT SAND AND GRAVEL, VERY STIFF, MOIST (SAPROLITE)	MH/GM
		20	GRAY BROWN CLAYEY SAND WITH DECOMPOSED BASALT GRAVEL, DENSE TO MEDIUM DENSE, WET (SAPROLITE)	SC
		25		
		30	GRAY BROWN SILTY SAND WITH DECOMPOSED BASALT GRAVEL, MEDIUM DENSE, WET (SAPROLITE)	SM
		35		

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990

Plate A106

BORING IB2-42 (CONTINUED) ABUT A3

Surface elevation

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	USC
		75	DARK GRAY CLAYEY BASALT SAND WITH GRAVEL, MEDIUM DENSE TO DENSE, MOIST (SAPROLITE)	SC
		80		
		85	GRAY BROWN SILTY DECOMPOSED BASALT GRAVEL AND SAND, DENSE, MOIST (SAPROLITE)	GM
		90		
		95		
		100	BORING TERMINATED AT 101.5 FEET ON OCTOBER 18, 1990	
		105	GROUNDWATER LEVEL AT: DEPTH 37.0 FT HOURS 0740 DATE 10/22/90	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

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W.O. 2531-00 NOVEMBER 1990

Plate A108

BORING IB2-41 (CONTINUED) ABUT A3

Surface elevation

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	USC
			BROWN SILTY WEATHERED BASALT GRAVEL WITH SAND, DENSE, MOIST (SAPROLITE)	GM
		40	BROWN-GRAY CLAYEY GRAVEL AND SAND, DENSE, MOIST (SAPROLITE)	GC
	1100 PSI/.3' LIGHT TAPS/.2' 76	45		
		50		
		55	BROWN CLAYEY SAND WITH GRAVEL, DENSE, WET (SAPROLITE)	SC
63		60		
66		65		
	1000 PSI/.5' 1200 PSI/.1' 71		BROWN VESICULAR BASALT, HIGHLY WEATHERED	
		70	BROWN-GRAY CLAYEY SAND WITH GRAVEL, VERY DENSE, WET (SAPROLITE)	SC

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990

Plate A103

BORING IB2-41 (CONTINUED) ABUT A3

Surface elevation

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	USC
	RUN 7 REC= 50% RQD= 0%	110	BROWNISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
			BROWN CLINKER	
			COBBLE ENCOUNTERED AT 106.5 FT.	
	RUN 8 REC= 80% RQD= 0%	115	GRAY AND REDDISH GRAY VESICULAR BASALT, MODERATELY TO SEVERELY JOINTED, HIGHLY WEATHERED	
	RUN 9 REC= 65% RQD= 0%	120	BROWNISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
	RUN 10 REC= 50% RQD= 0%	125	BORING TERMINATED AT 125.0 FEET ON OCTOBER 23, 1990	
			GROUNDWATER LEVEL AT: DEPTH 55.0 FT HOURS 0935 DATE 10/30/90	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990

Plate A105

BORING IB2-42 (CONTINUED) ABUT A3

Surface elevation

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	USC
			GRAY BROWN SILTY SAND WITH DECOMPOSED BASALT GRAVEL, MEDIUM DENSE, WET (SAPROLITE)	SM
		40		
			GRAY BROWN CLAY	CH
67		45	GRAY BROWN SILTY SAND WITH DECOMPOSED BASALT GRAVEL, MEDIUM DENSE TO DENSE, WET (SAPROLITE)	SM
		50		
		55	GRAY BROWN CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL AND SAND, HARD, MOIST (SAPROLITE)	ML-CL
		60	BROWN SILTY GRAVEL WITH DECOMPOSED BASALT SAND, DENSE, WET (SAPROLITE)	GM
		65	DARK GRAY CLAYEY BASALT SAND WITH GRAVEL, MEDIUM DENSE TO DENSE, MOIST (SAPROLITE)	SC
		70		

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A107

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 81 OF 33 SHEETS

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	132	325

BORING IB2-43 IP-17

Surface elevation 530'±*
* ~~SEE SHEET 133 GENERAL NOTES.~~

Sample: Moisture content (●), Blows per foot (▼) — Dry density (pcf) — Depth (feet) — Graph

Sample	Dry density (pcf)
▼ 15/.5' + 20/.1'	
● 69	
▼ 9/.5' + 50/.4'	
▼ 14/.5' + 25/.2'	
● 59	
RUN 1 REC= 60% RQD= 12%	▼ 1/.7' + 15/.0'

SOIL DESCRIPTION	USC
DARK BROWN SANDY SILT WITH ORGANIC MATERIALS (ALLUVIUM)	ML
BOULDER	
GRAY AND BROWN CLAYEY SAND WITH SOME GRAVEL, COBBLES AND BOULDERS, MEDIUM, MOIST (ALLUVIUM)	SC
BROWN SILTY CLAY WITH SAND, VERY SOFT, SATURATED (ALLUVIUM)	CL
BROWN SILTY BASALT GRAVEL WITH SOME SAND, COBBLES AND BOULDERS, MEDIUM DENSE, SATURATED (ALLUVIUM)	GM
MOTTLED GRAYISH BROWN BASALT, MODERATELY TO SEVERELY JOINTED, HIGHLY WEATHERED	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed
- Plastic limit
- Liquid limit
- Natural water content
- Water level
- T Torvane Shear (psf)
- FV Field Vane Shear (psf)
- Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A109

BORING IB2-43 (CONTINUED) IP-17

Surface elevation

Sample	Dry density (pcf)
RUN 2 REC= 90% RQD= 0%	
RUN 3 REC= 70% RQD= 14%	
RUN 4 REC= 40% RQD= 0%	
RUN 5 REC= 80% RQD= 0%	
RUN 6 REC= 80% RQD= 0%	
RUN 7 REC= 90% RQD= 0%	
RUN 8 REC= 80% RQD= 0%	

SOIL DESCRIPTION	USC
MOTTLED GRAYISH BROWN BASALT, MODERATELY TO SEVERELY JOINTED, HIGHLY WEATHERED	
DARK REDDISH BROWN AND GRAY BASALT, SEVERELY JOINTED, EXTREMELY WEATHERED	
BROWN VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
GREENISH GRAY BASALT, SEVERELY TO MODERATELY JOINTED, HIGHLY WEATHERED	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed
- Plastic limit
- Liquid limit
- Natural water content
- Water level
- T Torvane Shear (psf)
- FV Field Vane Shear (psf)
- Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990
Plate A110

BORING IB2-43 (CONTINUED) IP-17

Surface elevation

Sample	Dry density (pcf)
RUN 9 REC= 100% RQD= 20%	

SOIL DESCRIPTION	USC
GREENISH GRAY BASALT, SEVERELY TO MODERATELY JOINTED, HIGHLY WEATHERED	
BORING TERMINATED AT 75.0 FEET ON OCTOBER 31, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
6.5 FT	0900 TO 1100	11/27/90

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed
- Plastic limit
- Liquid limit
- Natural water content
- Water level
- T Torvane Shear (psf)
- FV Field Vane Shear (psf)
- Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990
Plate A111

BORING IB2-44 IP-18

Surface elevation 535'±*

Sample	Dry density (pcf)
●	
●	
RUN 1 REC= 45% RQD= 0%	▼
RUN 2 REC= 50% RQD= 0%	▼
RUN 3 REC= 85% RQD= 0%	
RUN 4 REC= 85% RQD= 0%	
RUN 5 REC= 90% RQD= 0%	

SOIL DESCRIPTION	USC
GRAY BROWN CLAYEY SILT WITH SOME DECOMPOSED BASALT GRAVEL, MEDIUM, MOIST	MH
GRADES WITH DECOMPOSED BASALT SAND AND GRAVEL	
GRAY BROWN BASALT COBBLES AND GRAVEL WITH SILT (ALLUVIUM)	
BROWNISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
GRADES TO REDDISH BROWN	
GRADES TO GREENISH GRAY	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed
- Plastic limit
- Liquid limit
- Natural water content
- Water level
- T Torvane Shear (psf)
- FV Field Vane Shear (psf)
- Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990
Plate A112

BORING IB2-44 (CONTINUED) IP-18

Surface elevation

Sample	Dry density (pcf)
RUN 6 REC= 100% RQD= 0%	
RUN 7 REC= 80% RQD= 0%	
RUN 8 REC= 50% RQD= 0%	
RUN 9 REC= 27% RQD= 0%	
RUN 10 REC= 50% RQD= 0%	
RUN 11 REC= 50% RQD= 0%	
RUN 12 REC= 68% RQD= 0%	

SOIL DESCRIPTION	USC
GREENISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
BROWN AND GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
BROWN, GRAY AND BLACK BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed
- Plastic limit
- Liquid limit
- Natural water content
- Water level
- T Torvane Shear (psf)
- FV Field Vane Shear (psf)
- Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990
Plate A113

BORING IB2-44 (CONTINUED) IP-18

Surface elevation

Sample	Dry density (pcf)
RUN 13 REC= 56% RQD= 0%	

SOIL DESCRIPTION	USC
BROWN, GRAY AND BLACK BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
BORING TERMINATED AT 75.0 FEET ON NOVEMBER 3, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
7.6 FT	0900 TO 1100	11/27/90

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed
- Plastic limit
- Liquid limit
- Natural water content
- Water level
- T Torvane Shear (psf)
- FV Field Vane Shear (psf)
- Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A114

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE — DATE: AS NOTED

SHEET No. 131 OF 33 SHEETS

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	122	325

BORING IB2-45 IP-19

Surface elevation 551'±* (* SEE SHEET 33 GENERAL NOTES)

Sample (Moisture content ●, Blows per foot ▼; Dry density (pcf) 50 40 30 20 10 0)	Depth (feet)	Graph	SOIL DESCRIPTION	USC
●63			BROWN SILTY CLAY WITH BASALT GRAVEL AND COBBLES, STIFF, MOIST (ALLUVIUM)	MH
RUN 1 REC= 70% RQD= 0%	5, 10		GRAY BASALT COBBLES AND GRAVEL WITH SILT AND SAND (ALLUVIUM)	
RUN 2 REC= 67% RQD= 0%	15, 20			
	25		GRAY BROWN CLAYEY SILT WITH SOME SAND AND GRAVEL, STIFF, WET (RESIDUAL)	ML-MH
	30		BROWN SILTY DECOMPOSED BASALT GRAVEL WITH SAND (SAPROLITE)	GM
●60 RUN 3 REC= 100% RQD= 0%	35		TAN AND REDDISH BROWN BASALT WITH POCKETS OF LOOSE SILTY GRAVEL AND SAND, SEVERELY JOINTED, HIGHLY WEATHERED	

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A115

BORING IB2-45 (CONTINUED) IP-19

Sample (Moisture content ●, Blows per foot ▼; Dry density (pcf) 50 40 30 20 10 0)	Depth (feet)	Graph	SOIL DESCRIPTION	USC
RUN 4 REC= 95% RQD= 0%	40		TAN AND REDDISH BROWN BASALT WITH POCKETS OF LOOSE SILTY GRAVEL AND SAND, SEVERELY JOINTED, HIGHLY WEATHERED	
RUN 5 REC= 55% RQD= 0%	45			
RUN 6 REC= 90% RQD= 0%			GRADES TO BROWN	
RUN 7 REC= 80% RQD= 0%	50			
RUN 8 REC= 70% RQD= 0%	55			
RUN 9 REC= 75% RQD= 0%	60			
RUN 10 REC= 50% RQD= 0%	65, 70			

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A116

BORING IB2-45 (CONTINUED) IP-19

Sample (Moisture content ●, Blows per foot ▼; Dry density (pcf) 50 40 30 20 10 0)	Depth (feet)	Graph	SOIL DESCRIPTION	USC
RUN 11 REC= 80% RQD= 0%	60		BROWN BASALT WITH POCKETS OF LOOSE SILTY GRAVEL AND SAND, SEVERELY JOINTED, HIGHLY WEATHERED	
	75		MOTTLED BROWN AND DARK GRAY BASALT, HIGHLY WEATHERED, MOIST	
	80		BORING TERMINATED AT 76.5 FEET ON NOVEMBER 6, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
20.8 FT	0900 TO 1100	11/27/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A117

BORING IB2-46 IP-20

Surface elevation 578'±* (* SEE SHEET 133 GENERAL NOTES)

Sample (Moisture content ●, Blows per foot ▼; Dry density (pcf) 50 40 30 20 10 0)	Depth (feet)	Graph	SOIL DESCRIPTION	USC
▼1/.5' ●+15/.2' 82			BROWN CLAYEY SILT WITH COBBLES AND BOULDERS, SOFT, MOIST	ML
	5		GRADES TO SATURATED	
	10		MOTTLED BROWN CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL AND SAND, HARD TO VERY STIFF, MOIST (RESIDUAL)	MH
	15			
	20		REDDISH BROWN SILTY CLAY WITH SAND, VERY STIFF, MOIST (RESIDUAL)	MH-CH
●88 113	25			
HYD. PUSH	30 S			
	35		DARK BROWN SILTY CLAY, VERY STIFF, MOIST (RESIDUAL)	MH-CH

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A118

BORING IB2-46 (CONTINUED) IP-20

Sample (Moisture content ●, Blows per foot ▼; Dry density (pcf) 50 40 30 20 10 0)	Depth (feet)	Graph	SOIL DESCRIPTION	USC
●66			DARK BROWN SILTY CLAY, VERY STIFF, MOIST (RESIDUAL)	MH-CH
	65, 40		BROWN CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL, VERY STIFF, MOIST (SAPROLITE)	ML
	45		TAN SILTY BASALT GRAVEL WITH SAND, MEDIUM DENSE TO DENSE, MOIST (SAPROLITE)	GM
RUN 1 REC= 90% RQD= 0%	50			
RUN 2 REC= 80% RQD= 0%	55		BROWN AND TAN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
RUN 3 REC= 80% RQD= 0%	60		REDDISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
RUN 4 REC= 85% RQD= 0%	65, 70			

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A119

BORING IB2-46 (CONTINUED) IP-20

Sample (Moisture content ●, Blows per foot ▼; Dry density (pcf) 50 40 30 20 10 0)	Depth (feet)	Graph	SOIL DESCRIPTION	USC
RUN 5 REC= 50% RQD= 0%	75		REDDISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
			REDDISH BROWN TO GRAY BROWN BASALT, HIGHLY WEATHERED	
	80		BORING TERMINATED AT 76.5 FEET ON NOVEMBER 7, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
44.0 FT	0900 TO 1100	11/27/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A120

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 121 OF 33 SHEETS

153

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

137318

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-I(69)	1992	154	325

BORING IB2-47 IP-21

Surface elevation 570'±* (* SEE SHEET 133 GENERAL NOTES)

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
0–5		BROWN TO TAN CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL, VERY STIFF, MOIST (RESIDUAL)	ML-MH
5–10			
10–15		REDDISH BROWN SILTY CLAY WITH SAND, HARD, MOIST (RESIDUAL)	MH-CH
15–20			
20–25	63	MOTTLED BROWN CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL, VERY STIFF, MOIST (SAPROLITE)	MH
25–30	60		
30–35			

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- III Disturbed ring sample
- IV Core sample
- V Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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Plate A121

IP-21 BORING IB2-47 (CONTINUED)

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
70–75	RUN 7 REC= 60% RQD= 0%	GRAYISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
75–80		MOTTLED DARK REDDISH BROWN SILTY DECOMPOSED BASALT GRAVEL AND SAND, MEDIUM DENSE, MOIST	GM-SM
		GRAY CLAYEY DECOMPOSED BASALT SAND, DENSE, MOIST	SC
80		BORING TERMINATED AT 76.5 FEET ON NOVEMBER 11, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
28.5 FT	0900 TO 1100	11/27/90

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- III Disturbed ring sample
- IV Core sample
- V Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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Plate A123

IP-22 BORING IB2-48 (CONTINUED)

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
65		MOTTLED BROWN SILTY SAND WITH SOME GRAVEL, DENSE TO VERY DENSE, MOIST (SAPROLITE)	SM
40–45		BROWN SILTY GRAVEL WITH SAND, DENSE TO VERY DENSE, WET (SAPROLITE)	GM
45–70	RUN 1 REC= 70% RQD= 0%; RUN 2 REC= 85% RQD= 0%; RUN 3 REC= 80% RQD= 0%; RUN 4 REC= 90% RQD= 0%; RUN 5 REC= 90% RQD= 0%	MOTTLED DARK BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
70		GRADES TO REDDISH BROWN	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- III Disturbed ring sample
- IV Core sample
- V Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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Plate A125

IP-21 BORING IB2-47 (CONTINUED)

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
59		MOTTLED BROWN CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL, VERY STIFF, MOIST (SAPROLITE)	MH
40–50	RUN 1 REC= 85% RQD= 0%; RUN 2 REC= 80% RQD= 0%; RUN 3 REC= 80% RQD= 0%	TAN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
50–65	RUN 4 REC= 60% RQD= 0%; RUN 5 REC= 40% RQD= 0%	REDDISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
65–70	RUN 6 REC= 60% RQD= 0%	GRAYISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- III Disturbed ring sample
- IV Core sample
- V Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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W.O. 2531-00 NOVEMBER 1990
Plate A122

BORING IB2-48 IP-22

Surface elevation 560'±*

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
0–5		REDDISH BROWN CLAYEY SILT WITH ORGANIC MATERIAL	ML
5–10	67	GRAYISH BROWN SILTY DECOMPOSED BASALT GRAVEL WITH SAND, MEDIUM DENSE, MOIST	GM
10–15	62	REDDISH BROWN SILTY CLAY WITH SOME BASALT GRAVEL, STIFF TO VERY STIFF, MOIST (RESIDUAL)	MH-CH
15–20	66 / 107	MOTTLED REDDISH BROWN AND GRAY SILTY CLAY WITH SOME BASALT GRAVEL, STIFF, MOIST (RESIDUAL)	CH
20–25	87	TAN BROWN SANDY SILT AND DECOMPOSED BASALT SAND AND GRAVEL, HARD, MOIST (RESIDUAL)	ML
30		BROWN CLAY, VERY SOFT, MOIST	CH
30–35		MOTTLED BROWN SILTY SAND WITH SOME GRAVEL, DENSE TO VERY DENSE, MOIST (SAPROLITE)	SM

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- III Disturbed ring sample
- IV Core sample
- V Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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Plate A124

IP-22 BORING IB2-48 (CONTINUED)

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
70–75	RUN 6 REC= 80% RQD= 0%	BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
80		BORING TERMINATED AT 76.5 FEET ON NOVEMBER 15, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
16.7 FT	0900 TO 1100	11/27/90

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- III Disturbed ring sample
- IV Core sample
- V Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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W.O. 2531-00 NOVEMBER 1990
Plate A126

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Bob Y. K. Wong
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-I(69) & (70)

SCALE: NONE — DATE: AS NOTED

SHEET No. 8122 OF 33 SHEETS

154

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	153	325

BORING IB2-49 IP-23

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation 572'±* ~~SEE SHEET 183 GENERAL NOTES~~

● Moisture content
▼ Blows per foot

Sample	Dry density (pcf)
● 66	
● 64	
83 / 60	

SOIL DESCRIPTION (USC)

- BROWN CLAYEY SILT WITH BASALT GRAVEL, MEDIUM TO STIFF, MOIST (ALLUVIUM) — MH
- BASALT COBBLES AND BOULDERS WITH GRAVEL AND BROWN SILTY CLAY (ALLUVIUM)
- REDDISH BROWN GRAVELLY, SANDY SILT, VERY STIFF, MOIST (RESIDUAL) — ML
- TAN BASALT, MODERATELY TO SEVERELY JOINTED, HIGHLY WEATHERED (SAPROLITE)
- GRADES TO SEVERELY JOINTED AND SECTIONS OF SILTY SAND AND SANDY SILT

RUN 1 REC= 40% RQD= 0%
RUN 2 REC= 100% RQD= 10%
RUN 3 REC= 85% RQD= 10%

Graph depths: 5, 10, 15, 20, 25, 30, 35

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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W.O. 2531-00 NOVEMBER 1990
Plate A127

BORING IB2-49 (CONTINUED) IP-23

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation

Sample	Dry density (pcf)
● 63	
●	
▼ 72	
● 63	
●	

SOIL DESCRIPTION (USC)

- TAN BASALT, SEVERELY JOINTED WITH SECTIONS OF SILTY SAND AND SANDY SILT, HIGHLY WEATHERED (SAPROLITE)
- REDDISH BROWN GRAVELLY CLAYEY SILT (SAPROLITE) — ML
- BROWN CLAYEY SILT WITH HIGHLY WEATHERED BASALT GRAVEL AND SAND, HARD, MOIST (SAPROLITE) — ML
- GRADES TO GRAYISH BROWN

RUN 4 REC= 70% RQD= 10%
RUN 5 REC= 85% RQD= 10%
RUN 6 REC= 80% RQD= 0%
RUN 7 REC= 40% RQD= 0%
RUN 8 REC= 70% RQD= 0%
RUN 9 REC= 35% RQD= 0%
RUN 10 REC= 35% RQD= 0%

Graph depths: 40, 45, 50, 55, 60, 65, 70

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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W.O. 2531-00 NOVEMBER 1990
Plate A128

BORING IB2-49 (CONTINUED) IP-23

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation

Sample	Dry density (pcf)
▼ 87 ●	

SOIL DESCRIPTION (USC)

- GRAYISH BROWN CLAYEY SILT WITH HIGHLY WEATHERED BASALT GRAVEL AND SAND, HARD, MOIST (SAPROLITE) — ML
- GRADES TO REDDISH BROWN
- BORING TERMINATED AT 76.5 FEET ON NOVEMBER 18, 1990

RUN 11 REC= 50% RQD= 0%

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
16.8 FT	0900 TO 1100	11/27/90

Graph depths: 75, 80

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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Plate A129

BORING IB2-50 IP-24

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation 560'±*

Sample	Dry density (pcf)
● 63	
●	
●	
▼ 72	
● 63	
●	

SOIL DESCRIPTION (USC)

- BROWN CLAYEY SILT WITH BASALT GRAVEL AND COBBLES, VERY STIFF, MOIST (ALLUVIUM) — ML
- MOTTLED DARK BROWN CLAYEY SILT WITH SOME GRAVEL, VERY STIFF, MOIST (RESIDUAL) — MH
- GRAYISH BROWN SILTY GRAVEL WITH SAND, VERY DENSE, MOIST — GM
- MOTTLED BROWN SANDY SILT, VERY STIFF, MOIST (SAPROLITE) — ML
- MOTTLED BROWN SANDY SILT TO SILTY SAND, VERY STIFF TO MEDIUM DENSE, MOIST (SAPROLITE) — ML-SM

Graph depths: 5, 10, 15, 20, 25, 30, 35

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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W.O. 2531-00 NOVEMBER 1990
Plate A130

BORING IB2-50 (CONTINUED) IP-24

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation

Sample	Dry density (pcf)
●	
▼ 59 ●	
●	

SOIL DESCRIPTION (USC)

- MOTTLED BROWN SANDY SILT TO SILTY SAND, VERY STIFF TO MEDIUM DENSE, MOIST (SAPROLITE) — ML-SM
- MOTTLED BROWN SILTY SAND WITH GRAVEL, VERY DENSE, MOIST (SAPROLITE) — SM
- BROWN CLAYEY SILT WITH GRAVEL, MOIST (SAPROLITE) — ML
- MOTTLED BROWN SILTY SAND WITH GRAVEL, MOIST (SAPROLITE) — SM
- GREENISH BROWN SANDY SILT (SAPROLITE) — ML
- REDDISH BROWN CLAYEY SILT (SAPROLITE) — ML

RUN 1 REC= 45% RQD= 0%
RUN 2 REC= 50% RQD= 0%
RUN 3 REC= 50% RQD= 0%
RUN 4 REC= 40% RQD= 0%
RUN 5 REC= 80% RQD= 0%
RUN 6 REC= 60% RQD= 0%

Graph depths: 40, 45, 50, 55, 60, 65, 70

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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W.O. 2531-00 NOVEMBER 1990
Plate A131

BORING IB2-50 (CONTINUED) IP-24

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation

Sample	Dry density (pcf)
●	
▼	

SOIL DESCRIPTION (USC)

- REDDISH BROWN CLAYEY SILT (SAPROLITE) — ML
- GREENISH BROWN SANDY SILT (SAPROLITE) — ML
- DARK BROWN CLAYEY SILT WITH GRAVEL, HARD, MOIST (SAPROLITE) — ML
- BORING TERMINATED AT 76.5 FEET ON NOVEMBER 21, 1990

RUN 7 REC= 75% RQD= 0%

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
24.5 FT	0900 TO 1100	11/27/90

Graph depths: 75, 80

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A132

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE — DATE: AS NOTED

SHEET No. 173 OF 33 SHEETS

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

137216

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	156	325

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

BORING NO. IB2-51 IP-25 DRIVING WT. 140 lb. DATE OF DRILLING 5-12-90
SURFACE ELEV. 558± DROP 30 in. WATER LEVEL @ 21.5 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, firm to medium stiff, with gravel.
5				59	65		
10			10		39		Grading medium stiff from 10 feet.
15				62	58		
20			13		41		
25					38		Grading with cobbles and boulders from 24 feet. Begin NX coring from 25.5 feet. 73% Recovery from 25.5 to 27 feet. RQD = 0%
30							

Plate A133

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BORING LOG

W.O. 90-1953

BORING NO. IB2-51 IP-25 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 5-12-90
SURFACE ELEV. 558± DROP 30 in. WATER LEVEL @ 21.5 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							76% Recovery from 59 to 64 feet. RQD = 12%
							BASALT - Mottled grayish brown, medium hard, vesicular, fractured, slightly weathered to weathered.
65							80% Recovery from 64 to 69 feet. RQD = 0%
70							End boring at 69 feet.
75							
80							
85							
90							

Plate A135

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BORING LOG

W.O. 90-1953

BORING NO. IB2-51 IP-25 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 5-12-90
SURFACE ELEV. 558± DROP 30 in. WATER LEVEL @ 21.5 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							29% Recovery from 27 to 34 feet. RQD = 18%
35							60% Recovery from 34 to 39 feet. RQD = 16% End NX coring at 39 feet.
40							
45							COMPLETELY WEATHERED ROCK - Mottled gray, dense to medium hard. Begin NX coring from 44 feet. 40% Recovery from 44 to 54 feet. RQD = 0%
50							
55							80% Recovery from 54 to 59 feet. RQD = 0%
60							

Plate A134

BORING IB2-52 IP-26

Surface elevation 580'±

● Moisture content
▼ Blows per foot

Sample Dry density (pcf)	Depth (feet) Graph	SOIL DESCRIPTION	U S C
		2.0-INCH ASPHALT CONCRETE	
		GRAVEL BASE	
62; 550 PSI/.5' 550 PSI/.5'	76	MOTTLED REDDISH BROWN CLAYEY SILT WITH SOME SAND AND TRACES OF GRAVEL, STIFF, MOIST (RESIDUAL)	MH
75		GRAY BROWN CLAYEY SILT WITH SAND AND WEATHERED GRAVEL, STIFF TO VERY STIFF, MOIST (RESIDUAL)	MH
60; 600 PSI/.5' 750 PSI/.5'	72	BROWN GRAY SILTY SAND WITH TRACES OF HIGHLY WEATHERED GRAVEL, DENSE TO VERY DENSE, WET (SAPROLITE)	SM

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990
Plate A136

BORING IB2-52 (CONTINUED) IP-26

● Moisture content
▼ Blows per foot

Sample Dry density (pcf)	Depth (feet) Graph	SOIL DESCRIPTION	U S C
59; 33/.3' + 50/.3'	70	BROWN GRAY SILTY SAND WITH TRACES OF HIGHLY WEATHERED GRAVEL, DENSE TO VERY DENSE, WET (SAPROLITE)	SM
88; 95	81	GRAY SILTY GRAVEL AND SAND, VERY DENSE, MOIST (SAPROLITE)	GM
68		REDDISH BROWN SILTY SAND WITH GRAVEL, MEDIUM DENSE, SATURATED (SAPROLITE)	SM
		GRAY SILTY GRAVEL WITH SAND, DENSE, WET (SAPROLITE)	GM

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A137

BORING IB2-52 (CONTINUED) IP-26

● Moisture content
▼ Blows per foot

Sample Dry density (pcf)	Depth (feet) Graph	SOIL DESCRIPTION	U S C
38/.5' + 50/.3'	74	GRAY SILTY GRAVEL WITH SAND, DENSE, WET (SAPROLITE)	GM
63		BROWN AND GRAY SILTY SAND WITH TRACES OF GRAVEL, DENSE TO VERY DENSE, WET (SAPROLITE)	SM
69; 85	68	LIGHT TAN SILTY GRAVEL WITH SAND, VERY DENSE, MOIST (SAPROLITE)	GM
42/.5' + 55/.4'		GRAY SILTY SAND AND GRAVEL, VERY DENSE, SATURATED (SAPROLITE)	SM/GM

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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W.O. 2531-00 NOVEMBER 1990
Plate A138

BORING IB2-52 (CONTINUED) IP-26

● Moisture content
▼ Blows per foot

Sample Dry density (pcf)	Depth (feet) Graph	SOIL DESCRIPTION	U S C
89		GRAY SILTY SAND AND GRAVEL, VERY DENSE, SATURATED (SAPROLITE)	SM/GM
52/.5'		BORING TERMINATED AT 110.5 FEET ON SEPTEMBER 20, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
35.0 FT	1530	09/20/90
28.5 FT	0903	10/19/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2431-00 NOVEMBER 1990
Plate A139

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THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
Signature

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
SIGNATURE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 124 OF 33 SHEETS

156

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

137318

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	157	325

BORING IB2-53 ABUT A4

Surface elevation 586'±* (*SEE SHEET 131 GENERAL NOTES)

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
		GRAYISH BROWN SANDY SILT WITH TRACES OF GRAVEL, VERY STIFF, DAMP (RESIDUAL)	ML
5	500 PSI/.5' 750 PSI/.5'		
10	51 / 73	BROWN AND GRAY CLAYEY SILT WITH SAND, MEDIUM STIFF TO STIFF, MOIST (RESIDUAL)	MH
15		BROWN CLAYEY SILT WITH SOME SAND AND GRAVEL, VERY STIFF TO HARD, DAMP (RESIDUAL)	MH
20	500 PSI/.5' 500 PSI/.5' / 60 / 66	GRAYISH BROWN SILTY SAND WITH GRAVEL, VERY DENSE (SAPROLITE)	SM
25	67		
30	73	GRAY BROWN CLAYEY SILT, MEDIUM STIFF, VERY MOIST (SAPROLITE)	MH
35		BROWN SILTY SAND WITH GRAVEL, VERY DENSE, MOIST (SAPROLITE)	SM

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A140

BORING IB2-53 (CONTINUED) ABUT A4

Surface elevation

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
	69	BROWN GRAY SILTY SAND AND GRAVEL, DENSE TO VERY DENSE, SATURATED (SAPROLITE)	SM/GM
75	74		
80	65/.5'		
85	29/.5' + 40/.2'		
90	74		
95			
100	64		
105			

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A142

BORING IB2-54 ABUT A4

Surface elevation 609'±* (*SEE SHEET 133 GENERAL NOTES)

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
5		BROWN CLAYEY SILT AND SAND WITH HIGHLY WEATHERED BASALT GRAVEL, COBBLES AND BOULDERS, MEDIUM DENSE, MOIST (ALLUVIUM)	ML-SM
		BOULDER	
10		MOTTLED REDDISH BROWN CLAYEY SILT WITH SAND, MEDIUM TO STIFF, MOIST (ALLUVIUM)	MH
15	63	MOTTLED REDDISH BROWN AND GRAY CLAYEY SILT, VERY STIFF, MOIST (RESIDUAL)	MH
20	59		
25	65		
30	67	MOTTLED BROWN GRAY CLAYEY SILT WITH SOME SAND, STIFF, MOIST (RESIDUAL)	ML-MH
35		MOTTLED BROWN CLAYEY SILT, VERY STIFF, MOIST (RESIDUAL)	ML

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A144

BORING IB2-54 (CONTINUED) ABUT A4

Surface elevation

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
	RUN 4 REC= 75% RQD= 0%	LIGHT GRAYISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
75	68	REDDISH BROWN TO BROWN SILTY SAND AND GRAVEL (SAPROLITE)	SM/GM
	RUN 5 REC= 85% RQD= 0%		
80			
	RUN 6 REC= 75% RQD= 0%	DARK GRAYISH BROWN SILTY GRAVEL AND SAND (SAPROLITE)	GM/SM
85	RUN 7 REC= 70% RQD= 0%		
90	RUN 8 REC= 75% RQD= 0%	REDDISH BROWN AND BROWN SILTY GRAVEL AND SAND (SAPROLITE)	GM/SM
95	RUN 9 REC= 70% RQD= 0%	GREENISH GRAY SILTY GRAVEL WITH SAND (SAPROLITE)	GM
100	71	BORING TERMINATED AT 100.0 FEET ON NOVEMBER 27, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
29.1 FT	0900 TO 1100	11/27/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A146

BORING IB2-53 (CONTINUED) ABUT A4

Surface elevation

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
	20/.5' + 60/.3' REFUSAL	BROWN SILTY SAND WITH GRAVEL, VERY DENSE, MOIST (SAPROLITE)	SM
40	61		
45	62		
50	66	GRAYISH BROWN SILTY GRAVEL WITH SAND, DENSE TO VERY DENSE, SATURATED (SAPROLITE)	GM
55		BROWN GRAY SILTY SAND AND GRAVEL, DENSE TO VERY DENSE, SATURATED (SAPROLITE)	SM/GM
60	90		
65	81		
70			

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A141

BORING IB2-53 (CONTINUED) ABUT A4

Surface elevation

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
		BROWN GRAY SILTY SAND AND GRAVEL, DENSE TO VERY DENSE, SATURATED (SAPROLITE)	SM/GM
110	76	REDDISH BROWN SILTY SAND WITH WEATHERED BASALT GRAVEL, VERY DENSE, HARD (SAPROLITE)	SM
115		GRAYISH BROWN SILTY SAND WITH WEATHERED BASALT GRAVEL, VERY DENSE, HARD (SAPROLITE)	SM
120	39/.5' + 80/.3'	GRAY WEATHERED BASALT GRAVEL, SATURATED, HARD (WEATHERED BASALT)	

BORING TERMINATED AT 120.8 FEET ON SEPTEMBER 24, 1990

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
32.5 FT	1200	09/21/90
32.5 FT	0905	10/19/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A143

BORING IB2-54 (CONTINUED) ABUT A4

Surface elevation

Depth (feet)	Sample / Dry density (pcf)	SOIL DESCRIPTION	USC
		MOTTLED BROWN CLAYEY SILT, VERY STIFF, MOIST (RESIDUAL)	ML
40	70	MOTTLED REDDISH BROWN AND GRAY CLAYEY SILT, STIFF, WET (RESIDUAL)	ML
45	800 PSI	MOTTLED BROWN CLAYEY SILT WITH SAND, MEDIUM DENSE TO DENSE, WET (SAPROLITE)	ML
50	67		
55	RUN 1 REC= 60% RQD= 0%		
60	RUN 2 REC= 40% RQD= 0%	REDDISH BROWN SILTY SAND AND GRAVEL (SAPROLITE)	SM/GM
65	RUN 3 REC= 65% RQD= 0%		
70		LIGHT GRAYISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A145

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 129 OF 33 SHEETS

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

137219

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	158	325

BORING OB2-55 ABUT A3

Surface elevation 555'± ~~SEE SHEET 133 GENERAL NOTES~~

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	U S C
		0–5	BROWN CLAYEY SILT WITH SOME CLAY AND ROUNDED MODERATELY WEATHERED PEBBLES, SOFT TO MEDIUM STIFF, MOIST (ALLUVIUM)	MH
		5–15	DARK BROWN CLAYEY SILT WITH SAND AND HIGHLY WEATHERED BASALT COBBLES, VERY STIFF, MOIST (ALLUVIUM)	MH
		15–20	MOTTLED REDDISH BROWN SILTY SAND AND GRAVEL, MEDIUM DENSE, DAMP (HIGHLY WEATHERED CLINKER LAYER)	SM
		20–35	GRAY SILTY SAND AND GRAVEL, DENSE, DAMP (SAPROLITE)	SM/GM

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A147

BORING OB2-55 (CONTINUED) ABUT A3

Surface elevation

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	U S C
		70–75	DARK REDDISH GRAY CLINKER, HIGHLY WEATHERED	
		75–85	BROWNISH GRAY BASALT, HIGHLY WEATHERED	
		85–105	BROWN BASALT, HIGHLY WEATHERED	
		105	GRAY BASALT, HIGHLY TO MODERATELY WEATHERED	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A149

BORING OB2-56 OP-17

Surface elevation 530'± ~~SEE SHEET 133 GENERAL NOTES~~

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	U S C
		0–5	GRAY BROWN CLAYEY SILT WITH ROOTS AND SAND, VERY SOFT, MOIST	MH
		5–30	BROWN SILTY BASALT GRAVEL AND BOULDERS WITH SAND AND COBBLES, MEDIUM DENSE, WET (ALLUVIUM)	GM
		30–35	BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

RUN 1 REC= 90% RQD= 0%
RUN 2 REC= 80% RQD= 0%
RUN 3 REC= 25% RQD= 0%

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A151

BORING OB2-56 (CONTINUED) OP-17

Surface elevation

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	U S C
		35–75	GRAY BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

RUN 11 REC= 95% RQD= 0%

BORING TERMINATED AT 75.0 FEET ON NOVEMBER 2, 1990

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
7.5 FT	–	11/02/90
8.0 FT	0900 TO 1100	11/27/90

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A153

BORING OB2-55 (CONTINUED) ABUT A3

Surface elevation

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	U S C
		35–76	GRAY SILTY SAND AND GRAVEL, DAMP, DENSE (SAPROLITE)	SM/GM
		76–45	DARK GRAYISH BROWN SILTY SAND, MEDIUM DENSE, MOIST (HIGHLY WEATHERED CLINKER LAYER)	SM
		45–50	MOTTLED BROWN AND GRAY SILTY SAND WITH GRAVEL, DENSE, DAMP (SAPROLITE)	SM
		50–73	GRADES TO RED	
		73–60	GREENISH GRAY SILTY SAND AND GRAVEL, VERY DENSE TO MEDIUM DENSE, DAMP (SAPROLITE)	SM
		60–70	DARK REDDISH GRAY CLINKER, HIGHLY WEATHERED	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A148

BORING OB2-55 (CONTINUED) ABUT A3

Surface elevation

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	U S C
		70–126.3	GRAY BASALT, HIGHLY TO MODERATELY WEATHERED; BROWN TO REDDISH BROWN VESICULAR BASALT WITH MANY WEATHERED OLIVINE AND PLAGEOCLASE CRYSTALS, HIGHLY WEATHERED; GRAY BASALT WITH SOME WEATHERED OLIVINES, HIGHLY WEATHERED	

BORING TERMINATED AT 126.3 FEET ON SEPTEMBER 21, 1990

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
39.8 FT	1004	09/18/90
26.1 FT	1242	09/20/90

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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W.O. 2531-00 NOVEMBER 1990
Plate A150

BORING OB2-56 (CONTINUED) OP-17

Surface elevation

Sample	Dry density (pcf)	Depth (feet)	SOIL DESCRIPTION	U S C
		35–45	BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
		45–50	MOTTLED BROWN SILTY GRAVEL AND SAND	GM
		50–55	GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
		55–60	GRAY SILTY SAND WITH SOME GRAVEL	SM
		60–65	GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
		65–70	GRADES TO DARK BROWN	
		70	GRADES TO GRAY BROWN	

RUN 4 REC= 70% RQD= 0%
RUN 5 REC= 70% RQD= 0%
RUN 6 REC= 65% RQD= 0%
RUN 7 REC= 5% RQD= 0%
RUN 8 REC= 80% RQD= 0%
RUN 9 REC= 90% RQD= 15%
RUN 10 REC= 100% RQD= 0%

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS-HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A152

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE — DATE: AS NOTED

SHEET No. 326 OF 33 SHEETS

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

137218

158

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	159	325

BORING OB2-57 OP-18

Surface elevation 535'± *SEE SHEET 123 GENERAL NOTES

● Moisture content
▼ Blows per foot

Sample: Dry density (pcf) — Depth (feet) — Graph

Blows per foot	SOIL DESCRIPTION	USC
	GRAY BROWN SILTY CLAY WITH SAND, GRAVEL AND COBBLES, STIFF, MOIST (ALLUVIUM)	MH
	BROWN SILTY SAND WITH GRAVEL, LOOSE, WET (ALLUVIUM)	SM
	GRAY BASALT GRAVEL WITH SAND AND SILT, DENSE, WET (ALLUVIUM)	GP
	BROWN SILTY SAND WITH DECOMPOSED BASALT GRAVEL AND COBBLES, MEDIUM DENSE, WET (ALLUVIUM)	SM
59	GRAY BROWN CLAYEY SILT WITH DECOMPOSED BASALT SAND AND GRAVEL, VERY DENSE, MOIST	ML-MH
	GRAYISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
	GRADES TO GREENISH GRAY	

Depth (feet): 5, 10, 15, 20, 25, 30, 35

RUN 1
REC= 40%
RQD= 0%

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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W.O. 2531-00 NOVEMBER 1990
Plate A154

BORING OB2-57 (CONTINUED) OP-18

Surface elevation

● Moisture content
▼ Blows per foot

Sample: Dry density (pcf) — Depth (feet) — Graph

Blows per foot	SOIL DESCRIPTION	USC
	GREENISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
	BORING TERMINATED AT 76.5 FEET ON NOVEMBER 6, 1990	

RUN 9
REC= 48%
RQD= 0%
RUN 10
REC= 67%
RQD= 0%

Depth (feet): 75, 80

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
12.8 FT	1034	11/06/90
8.7 FT	1310	11/06/90
8.4 FT	0900 TO 1100	11/27/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A156

ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG — W.O. 90-1953

BORING NO. OB2-58 OP-19 (Cont.) — DRIVING WT. 140 lb. — DATE OF DRILLING 6-9-90
SURFACE ELEV. 551± — DROP 30 in. — WATER LEVEL @ 26.2 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							
35			42		32		
40				86	22		
45			33		26		Grading to mottled brown color from 44 feet.
50				61	38		
55			82		30		Grading medium hard from 54 feet.
60					32		

Plate A158

BORING OB2-57 (CONTINUED) OP-18

Surface elevation

● Moisture content
▼ Blows per foot

Sample: Dry density (pcf) — Depth (feet) — Graph

Blows per foot	SOIL DESCRIPTION	USC
	GREENISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

RUN 2
REC= 60%
RQD= 0%
RUN 3
REC= 53%
RQD= 0%
RUN 4
REC= 38%
RQD= 0%
RUN 5
REC= 52%
RQD= 0%
RUN 6
REC= 10%
RQD= 0%
RUN 7
REC= 48%
RQD= 0%
RUN 8
REC= 45%
RQD= 0%

Depth (feet): 40, 45, 50, 55, 60, 65, 70

78

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed

Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A155

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Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG — W.O. 90-1953

BORING NO. OB2-58 OP-19 — DRIVING WT. 140 lb. — DATE OF DRILLING 6-9-90
SURFACE ELEV. 551± — DROP 30 in. — WATER LEVEL @ 26.2 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Dark brown, moist, medium stiff.
5				60	52		Grading with gravel, cobbles and boulders from 5 feet.
10			96/7"		31		Grading stiff from 9 feet.
15			17		28		
20				79	22		COMPLETELY WEATHERED ROCK - Mottled reddish brown, moist, dense.
25			27		45		
30				77	42		

Plate A157

ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG — W.O. 90-1953

BORING NO. OB2-58 OP-19 (Cont.) — DRIVING WT. 140 lb. — DATE OF DRILLING 6-9-90
SURFACE ELEV. 551± — DROP 30 in. — WATER LEVEL @ 26.2 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60							
65			25	No Recovery			
70				No Recovery			
75							
80			54		29		
85							
90			20		41		

Plate A159

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

PAUL S. MORIMOTO — REGISTERED PROFESSIONAL ENGINEER No. 5299 — HAWAII, U.S.A.

ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG — W.O. 90-1953

BORING NO. OB2-58 OP-19 (Cont.) — DRIVING WT. 140 lb. — DATE OF DRILLING 6-9-90
SURFACE ELEV. 551± — DROP 30 in. — WATER LEVEL @ 26.2 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSI-FICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
90							
95							
100			40	No Recovery			
105			42		22		
110			97	No Recovery			
115							
120			37		28		End boring at 120.5 feet.

Plate A160

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION
SIGNATURE

BOB Y. K. WONG — REGISTERED PROFESSIONAL ENGINEER No. 3862 — HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE — DATE: AS NOTED

SHEET No. 81 OF 33 SHEETS

159

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	160	325

BORING OB2-59 OP-20

Surface elevation 550'±*

Sample — Dry density (pcf) — Depth (feet) — Graph

● Moisture content
▼ Blows per foot

Sample	Blows per foot	Dry density (pcf)
●	62	
●	61	
●	68	
●		650 PSI/.5' 1050 PSI/.1'
●		68

SOIL DESCRIPTION	USC
BROWN CLAYEY SILT WITH HIGHLY WEATHERED BASALT GRAVEL AND BOULDERS, VERY STIFF, MOIST (ALLUVIUM)	MH
MOTTLED REDDISH BROWN SANDY SILT, VERY STIFF, DAMP	ML
GREENISH GRAY CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL AND COBBLES (SAPROLITE)	MH
TAN BASALT, HIGHLY WEATHERED (SAPROLITE)	
GREENISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A161

BORING OB2-59 (CONTINUED) OP-20

Surface elevation

Sample — Dry density (pcf) — Depth (feet) — Graph

● Moisture content
▼ Blows per foot

Sample	Blows per foot	Dry density (pcf)
●	27/.5' + 55/.5'	

RUN 9
REC= 67%
RQD= 0%
RUN 10
REC= 70%
RQD= 0%

SOIL DESCRIPTION	USC
GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

BORING TERMINATED AT 76.0 FEET ON NOVEMBER 8, 1990

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
22.6 FT	0920	11/09/90
19.1 FT	0900 TO 1100	11/27/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A163

BORING OB2-60 (CONTINUED) OP-21

Surface elevation

Sample — Dry density (pcf) — Depth (feet) — Graph

● Moisture content
▼ Blows per foot

RUN 6
REC= 60%
RQD= 0%
RUN 7
REC= 10%
RQD= 0%
RUN 8
REC= 15%
RQD= 0%
RUN 9
REC= 60%
RQD= 0%
RUN 10
REC= 70%
RQD= 0%
RUN 11
REC= 80%
RQD= 0%
RUN 12
REC= 80%
RQD= 0%

SOIL DESCRIPTION	USC
TANNISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
MOTTLED DARK BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED (CRUSHES TO SILTY SAND WITH SOME GRAVEL)	
BROWN VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990

Plate A165

BORING OB2-59 (CONTINUED) OP-20

Surface elevation

Sample — Dry density (pcf) — Depth (feet) — Graph

● Moisture content
▼ Blows per foot

RUN 1
REC= 46%
RQD= 0%
RUN 2
REC= 53%
RQD= 0%
RUN 3
REC= 67%
RQD= 0%
RUN 4
REC= 32%
RQD= 0%
RUN 5
REC= 74%
RQD= 0%
RUN 6
REC= 47%
RQD= 0%
RUN 7
REC= 62%
RQD= 0%

SOIL DESCRIPTION	USC
GREENISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
DARK BROWNISH GRAY SANDY SILT WITH SOME CLAY, VERY STIFF (EXTREMELY WEATHERED ROCK)	ML
BROWNISH GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
GRADES TO DARK GRAY	
GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A162

BORING OB2-60 OP-21

Surface elevation 542'±*
* SEE SHEET 123 GENERAL NOTES

Sample — Dry density (pcf) — Depth (feet) — Graph

● Moisture content
▼ Blows per foot

Sample	Blows per foot	Dry density (pcf)
●		
●		
●		
●		
●		

RUN 1
REC= 53%
RQD= 33%
RUN 2
REC= 55%
RQD= 0%
RUN 3
REC= 40%
RQD= 0%
RUN 4
REC= 40%
RQD= 0%
RUN 5
REC= 60%
RQD= 0%

SOIL DESCRIPTION	USC
BROWN CLAYEY SILT WITH SOME SAND, MEDIUM STIFF, MOIST (ALLUVIUM)	MH
GRAY BASALT BOULDERS WITH SOME BROWN CLAYEY SILT (ALLUVIUM)	
LIGHT BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED (SAPROLITE)	
TANNISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
REDDISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
TANNISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990

Plate A164

BORING OB2-60 (CONTINUED) OP-21

Surface elevation

Sample — Dry density (pcf) — Depth (feet) — Graph

● Moisture content
▼ Blows per foot

Sample	Blows per foot	Dry density (pcf)
●	70/.5'	
●		

RUN 13
REC= 60%
RQD= 0%

SOIL DESCRIPTION	USC
BROWN VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
GRADES TO GREENISH GRAY	

BORING TERMINATED AT 74.0 FEET ON NOVEMBER 15, 1990

GROUNDWATER NOT MEASURED HOLE CAVED IN

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed

Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A166

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SIGNATURE

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 81 OF 33 SHEETS

160

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	161	325

BORING OB2-61 OP-22

● Moisture content
▼ Blows per foot

Sample — Dry density (pcf) — Depth (feet) — Graph

Surface elevation 546'± * ~~SEE SHEET 123 GENERAL NOTES~~

Sample	Dry density (pcf)	SOIL DESCRIPTION	USC
		BROWN CLAYEY SILT WITH SOME SAND, GRAVEL, COBBLES AND BOULDERS, VERY STIFF, WET (ALLUVIUM)	MH
RUN 1 REC= 83% RQD= 0%		LIGHT BROWN TO DARK GRAY BASALT, SEVERELY JOINTED, HIGHLY WEATHERED (SAPROLITE)	
RUN 2 REC= 50% RQD= 0%	▼ 20/.0'		
RUN 3 REC= 50% RQD= 0%		TANNISH BROWN BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
RUN 4 REC= 20% RQD= 15%			
RUN 5 REC= 60% RQD= 0%		REDDISH BROWN BASALT, HIGHLY WEATHERED (CRUSHES TO CLAYEY SILT WITH SOME GRAVEL)	
		GRAY BASALT, SEVERELY TO MODERATELY JOINTED, MODERATELY TO HIGHLY WEATHERED	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed
- Plastic limit
- Liquid limit
- Natural water content
- Water level
- T Torvane Shear (psf)
- FV Field Vane Shear (psf)
- Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990

Plate A167

BORING OB2-61 (CONTINUED) OP-22

● Moisture content
▼ Blows per foot

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation

Sample	Dry density (pcf)	SOIL DESCRIPTION	USC
RUN 13 REC= 80% RQD= 0%	▼ 106	GRAY BASALT, SEVERELY JOINTED, MODERATELY WEATHERED	
		BORING TERMINATED AT 75.0 FEET ON NOVEMBER 19, 1990	
		GROUNDWATER NOT MEASURED HOLE CAVED IN	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed
- Plastic limit
- Liquid limit
- Natural water content
- Water level
- T Torvane Shear (psf)
- FV Field Vane Shear (psf)
- Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
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W.O. 2531-00 NOVEMBER 1990

Plate A169

ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB2-62 (Cont.) OP-23 DRIVING WT. 140 lb. DATE OF DRILLING 6-19-90
SURFACE ELEV. 552± DROP 30 in. WATER LEVEL @ 11.4 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30			26				
35			80		34		
40			26		31		
45			19		25		
50			54		21		Grading dense from 50 feet.
55			41		32		
60							

Plate A171

ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB2-62 (Cont.) OP-23 DRIVING WT. 140 lb. DATE OF DRILLING 6-19-90
SURFACE ELEV. 552± DROP 30 in. WATER LEVEL @ 11.4 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
90							
95			32		63		
100							
105			49		49		
110							End boring at 106.5 feet.
115							
120							

Plate A173

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

PAUL S. MORIMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 5299
HAWAII, U.S.A.

BORING OB2-61 (CONTINUED) OP-22

● Moisture content
▼ Blows per foot

Sample — Dry density (pcf) — Depth (feet) — Graph — Surface elevation

Sample	Dry density (pcf)	SOIL DESCRIPTION	USC
RUN 6 REC= 100% RQD= 10%		GRAY BASALT, SEVERELY TO MODERATELY JOINTED, MODERATELY TO HIGHLY WEATHERED	
RUN 7 REC= 80% RQD= 0%		GRAY AND MOTTLED RED CLINKER, SEVERELY JOINTED, HIGHLY WEATHERED	
RUN 8 REC= 100% RQD= 0%		GRAY WEAKLY VESICULAR BASALT, MODERATELY JOINTED, MODERATELY WEATHERED	
RUN 9 REC= 80% RQD= 0%		REDDISH BROWN CLINKER, SEVERELY JOINTED, EXTREMELY WEATHERED	
		GRAY BASALT, MODERATELY JOINTED, MODERATELY WEATHERED	
		BROWN GRAY CLINKER, SEVERELY JOINTED, EXTREMELY WEATHERED	
	● 61	ORANGE RED TUFF (CRUSHES TO SILT)	
RUN 10 REC= 100% RQD= 0%		LIGHT BROWN VESICULAR BASALT, BASALT, MODERATELY JOINTED, HIGHLY WEATHERED	
RUN 11 REC= 100% RQD= 0%		GRAY BASALT, MODERATELY JOINTED, MODERATELY TO HIGHLY WEATHERED	
RUN 12 REC= 100% RQD= 0%		ORANGE RED CLINKER, SLIGHTLY JOINTED, EXTREMELY WEATHERED	
		GRAY BASALT, SEVERELY JOINTED, MODERATELY WEATHERED	

LEGEND
- I 2.0" O.D. split-spoon sample
- II Undisturbed ring sample
- Disturbed ring sample
- Core sample
- Shelby tube sample
- P Sampler pushed
- Plastic limit
- Liquid limit
- Natural water content
- Water level
- T Torvane Shear (psf)
- FV Field Vane Shear (psf)
- Driving energy: 140 lb. wt., 30" drop

BORING LOG

GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology

W.O. 2531-00 NOVEMBER 1990

Plate A168

ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB2-62 OP-23 DRIVING WT. 140 lb. DATE OF DRILLING 6-19-90
SURFACE ELEV. 552± DROP 30 in. WATER LEVEL @ 11.4 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled grayish brown, moist, firm to medium stiff, with gravel.
			3		29		
5				65	44		
10			27		20		COMPLETELY WEATHERED ROCK - Mottled grayish brown, moist, medium dense to dense.
15				92	29		
20			38		21		
25				76	28		
30							

Plate A170

ERNEST K. HIRATA & ASSOCIATES, INC.

Soils and Foundation Engineering
99-1433 Koaha Place * Aiea, Hawaii 96701-1028 * Phone 486-0787

BORING LOG W.O. 90-1953

BORING NO. OB2-62 (Cont.) OP-23 DRIVING WT. 140 lb. DATE OF DRILLING 6-19-90
SURFACE ELEV. 552± DROP 30 in. WATER LEVEL @ 11.4 ft.

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
60			28	No Recovery			
65			65		29		
70			32		27		
75			46		50		
80			74		41		
85							
90							

Plate A172

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE

BOB Y. K. WONG
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HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. B129 OF 33 SHEETS

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

137318

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-I(69)	1992	162	325

BORING OB2-63 OP-24

Surface elevation 551'± *
* ~~SEE SHEET 133 GENERAL NOTES~~

Depth (feet)	Graph	SOIL DESCRIPTION	USC
		DARK BROWN SILTY CLAY WITH SOME PEBBLES AND COBBLES, WET (ALLUVIUM)	CH
5		DARK BROWN SILTY CLAY, BOULDERS AND COBBLES WITH SAND AND GRAVEL, MEDIUM DENSE, SATURATED (ALLUVIUM)	CH
10			
15			
20		BROWNISH GRAY CLAYEY GRAVEL AND SAND, MEDIUM DENSE, SATURATED (SAPROLITE)	GC
25			
30		BROWNISH GRAY SILTY CLAY WITH SOME SAND, VERY STIFF, MOIST (SAPROLITE)	MH
35		GRAY VESICULAR BASALT, HIGHLY WEATHERED (CRUSHES TO SILTY SAND AND GRAVEL) (SAPROLITE)	

Sample: Dry density (pcf) — 50 40 30 20 10 0
● Moisture content
▼ Blows per foot

8/.5' + 25/.2'
63

RUN 1 REC= 73% RQD= 40%
RUN 2 REC= 43% RQD= 33%
RUN 3 REC= 22% RQD= 0%

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
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W.O. 2531-00 NOVEMBER 1990
Plate A174

BORING OB2-63 (CONTINUED) OP-24

Depth (feet)	Graph	SOIL DESCRIPTION	USC
		GRAY WEAKLY VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
75		REDDISH BROWN CLINKER, SEVERELY JOINTED, HIGHLY WEATHERED	
		GRAY CLINKER, HIGHLY WEATHERED	

RUN 7 REC= 32% RQD= 0%

BORING TERMINATED AT 75.0 FEET ON NOVEMBER 21, 1990

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
8.8 FT	0900 TO 1100	11/27/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A176

BORING OB2-64 (CONTINUED) OP-25

Depth (feet)	Graph	SOIL DESCRIPTION	USC
		MOTTLED BROWN TO REDDISH BROWN SANDY SILT WITH DECOMPOSED ROCK, STIFF TO VERY STIFF, WET (SAPROLITE)	ML
40			
45		GREENISH GRAY CLAYEY SILT WITH SOME SAND AND GRAVEL, HARD, MOIST (SAPROLITE)	ML
50			
55		REDDISH BROWN SANDY SILT WITH A LITTLE CLAY AND GRAVEL, VERY STIFF, VERY MOIST (SAPROLITE)	ML
60		REDDISH BROWN CLAYEY SAND WITH SOME GRAVEL, DENSE, VERY MOIST (SAPROLITE)	SC
65		BROWN SILTY SAND, MEDIUM DENSE, SATURATED (SAPROLITE)	SM
70		GRAY SILTY GRAVEL AND SAND, VERY DENSE, MOIST (SAPROLITE)	GM

Sample: Dry density (pcf) — 50 40 30 20 10 0
● Moisture content
▼ Blows per foot

61
700 PSI/.6' 71
95
65
300 PSI/.5' 400 PSI/.5' 550 PSI/.5'
70
70

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A178

BORING OB2-63 (CONTINUED) OP-24

Depth (feet)	Graph	SOIL DESCRIPTION	USC
15		GRAY VESICULAR BASALT, HIGHLY WEATHERED (CRUSHES TO SILTY SAND AND GRAVEL) (SAPROLITE)	
40			
45			
50		REDDISH BROWN CLINKER, HIGHLY WEATHERED (CRUSHES TO CLAYEY SILT WITH SOME SAND) (SAPROLITE)	
55		GRAY VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
60		REDDISH BROWN CLINKER, HIGHLY WEATHERED	
65		GRAY WEAKLY VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
70			

Sample: Dry density (pcf) — 50 40 30 20 10 0
● Moisture content
▼ Blows per foot

700 PSI/.5' 1000 PSI/.1'
700 PSI/.5' 1000 PSI/.5' 73
75

RUN 4 REC= 0% RQD= 0%
RUN 5 REC= 40% RQD= 0%
RUN 6 REC= 80% RQD= 0%

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A175

BORING OB2-64 OP-25

Surface elevation 573'± *
* ~~SEE SHEET 133 GENERAL NOTES~~

Depth (feet)	Graph	SOIL DESCRIPTION	USC
		2.3-INCH ASPHALT CONCRETE	
		CRUSHED BASALT BASE	
5		MOTTLED BROWN AND GRAY SILTY CLAY WITH SOME DECOMPOSED BASALT GRAVEL, MEDIUM STIFF TO STIFF, MOIST (RESIDUAL)	CH
10			
15			
20			
25			
30		MOTTLED BROWN TO REDDISH BROWN SANDY SILT WITH DECOMPOSED ROCK, STIFF TO VERY STIFF, WET (SAPROLITE)	ML
35			

Sample: Dry density (pcf) — 50 40 30 20 10 0
● Moisture content
▼ Blows per foot

500 PSI/.5' 500 PSI/.5' 500 PSI/.5' 500 PSI/.5' 69
120
500 PSI/.5' 600 PSI/.5' 600 PSI/.5' 600 PSI/.5'
62

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A177

BORING OB2-64 (CONTINUED) OP-25

Depth (feet)	Graph	SOIL DESCRIPTION	USC
		GRAY SILTY GRAVEL AND SAND, VERY DENSE, MOIST (SAPROLITE)	GM
75		MOTTLED BROWN AND GRAY SILTY SAND, VERY DENSE, MOIST (SAPROLITE)	SM
80		BORING TERMINATED AT 76.5 FEET ON SEPTEMBER 18, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
27.3 FT	0900	10/19/90

Sample: Dry density (pcf) — 50 40 30 20 10 0
● Moisture content
▼ Blows per foot

32/.5' + 40/.3' 73
78

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit
Liquid limit
Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A179

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-I(69) & (70)

SCALE: NONE — DATE: AS NOTED

SHEET No. 131 OF 33 SHEETS

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	163	325

BORING OB2-65 ABUT A4

Surface elevation 583'± *
*SEE SHEET 133 GENERAL NOTES

Sample (Dry density (pcf))	Depth (feet)	SOIL DESCRIPTION	USC
		MOTTLED BROWN AND GRAY SILTY CLAY WITH DECOMPOSED BASALT GRAVEL, STIFF TO VERY STIFF, MOIST (RESIDUAL)	MH-CH
500 PSI/.5' 500 PSI/.5' 550 PSI/.5' 650 PSI/.5' (58)	10 S		
450 PSI/.5' 550 PSI/.5' (68)	25 S	REDDISH BROWN SILTY CLAY AND DECOMPOSED BASALT GRAVEL, VERY STIFF, MOIST (RESIDUAL)	MH
		GRAY BROWN CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL, VERY STIFF, MOIST (RESIDUAL)	MH

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A180

BORING OB2-65 (CONTINUED) ABUT A4

Sample (Dry density (pcf))	Depth (feet)	SOIL DESCRIPTION	USC
		BROWN SILTY BASALT SAND, MEDIUM DENSE, WET (SAPROLITE)	SM
		GREENISH GRAY SILTY BASALT SAND WITH A LITTLE GRAVEL, DENSE TO VERY DENSE, WET (SAPROLITE)	SM
		GREENISH GRAY SANDY SILT, HARD, WET (SAPROLITE)	ML
		MOTTLED BROWN SILTY DECOMPOSED BASALT SAND, VERY DENSE, WET	SM
RUN 1 REC= 100% RQD= 0%		GRAY VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
RUN 2 REC= 88% RQD= 0%		YELLOW-BROWN CLINKER	
RUN 3 REC= 87% RQD= 0%		GRAY TO BROWNISH GRAY VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
RUN 4 REC= 100% RQD= 0%			

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A182

BORING OB2-66 ABUT A4

Surface elevation 605'± *
*SEE SHEET 133 GENERAL NOTES

Sample (Dry density (pcf))	Depth (feet)	SOIL DESCRIPTION	USC
		LIGHT BROWN SILTY SAND AND DECOMPOSED PEBBLES/COBBLES, MEDIUM DENSE TO LOOSE, VERY MOIST	SM
800 PSI/.5' 1000 PSI/.1' (76)	5 S	GRAY CLAYEY SILT WITH SAND AND GRAVEL, VERY STIFF, VERY MOIST (SAPROLITE)	ML-MH
500 PSI/.5' 1200 PSI/.2'	30 S	MOTTLED BROWN CLAYEY SILT WITH SOME GRAVEL, VERY STIFF TO HARD, MOIST (SAPROLITE)	MH

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A184

BORING OB2-66 (CONTINUED) ABUT A4

Sample (Dry density (pcf))	Depth (feet)	SOIL DESCRIPTION	USC
		GRAYISH BROWN CLAYEY SILT WITH TRACES OF SAND, VERY STIFF, MOIST (SAPROLITE)	MH
		GRAY VESICULAR BASALT, HIGHLY WEATHERED (CRUSHES TO SILTY GRAVEL WITH SAND) (SAPROLITE)	
		REDDISH BROWN CLINKER, HIGHLY WEATHERED (CRUSHES TO CLAYEY SILT WITH SOME GRAVEL) (SAPROLITE)	
RUN 1 REC= 25% RQD= 0%		GRAY VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED (CRUSHES TO SILTY GRAVEL WITH SAND) (SAPROLITE)	
RUN 2 REC= 60% RQD= 0%			
RUN 3 REC= 40% RQD= 0%			
		REDDISH BROWN CLINKER, SEVERELY JOINTED, HIGHLY WEATHERED	
		BORING TERMINATED AT 100.0 FEET ON NOVEMBER 27, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
44.2 FT	0900 TO 1100	11/27/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A186

BORING OB2-65 (CONTINUED) ABUT A4

Sample (Dry density (pcf))	Depth (feet)	SOIL DESCRIPTION	USC
		GRAY BROWN CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL, VERY STIFF, MOIST (RESIDUAL)	MH
		REDDISH BROWN CLAYEY SILT WITH DECOMPOSED BASALT GRAVEL, HARD, MOIST (RESIDUAL)	MH
(76)	45 II	GREENISH GRAY DECOMPOSED BASALT GRAVEL WITH SAND AND SILT (SAPROLITE)	GM
		BROWN GRAY CLAYEY SILT WITH DECOMPOSED BASALT SAND AND GRAVEL, HARD, MOIST (SAPROLITE)	ML
		GREENISH GRAY CLAYEY SILT AND DECOMPOSED BASALT SAND WITH GRAVEL, HARD, MOIST (SAPROLITE)	ML
		BROWN SILTY BASALT SAND, MEDIUM DENSE, WET (SAPROLITE)	SM

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A181

BORING OB2-65 (CONTINUED) ABUT A4

Sample (Dry density (pcf))	Depth (feet)	SOIL DESCRIPTION	USC
RUN 4 REC= 100% RQD= 0%		GRAY TO BROWNISH GRAY VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
RUN 5 REC= 90% RQD= 0%		REDDISH BROWN TO GRAYISH BROWN CLINKER, SEVERELY JOINTED, HIGHLY WEATHERED	
RUN 6 REC= 100% RQD= 0%		BROWN VESICULAR BASALT, SEVERELY JOINTED, HIGHLY WEATHERED	
		BORING TERMINATED AT 117.0 FEET ON SEPTEMBER 28, 1990	

GROUNDWATER LEVEL AT:

DEPTH	HOURS	DATE
33.0 FT	0909	10/19/90

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A183

BORING OB2-66 (CONTINUED) ABUT A4

Sample (Dry density (pcf))	Depth (feet)	SOIL DESCRIPTION	USC
		MOTTLED BROWN CLAYEY SILT WITH SOME GRAVEL, VERY STIFF TO HARD, MOIST (SAPROLITE)	MH
		REDDISH BROWN CLAYEY SILT WITH SOME SAND AND GRAVEL, STIFF, MOIST (SAPROLITE)	MH
700 PSI/.5' 1100 PSI/.2' (62)	45 S		
		BROWNISH RED SILTY CLAY, MEDIUM STIFF, MOIST (SAPROLITE)	MH-CH
		GRAY CLAYEY SILT WITH TRACES OF GRAVEL, VERY STIFF TO HARD, MOIST (SAPROLITE)	MH
1100 PSI/.5' 1100 PSI/.2' (66)	65 S	BROWNISH RED SILTY CLAY, VERY STIFF, MOIST (SAPROLITE)	MH-CH
		GRAYISH BROWN CLAYEY SILT WITH TRACES OF SAND, VERY STIFF, MOIST (SAPROLITE)	MH

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
III Disturbed ring sample
IV Core sample
V Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A185

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

Bob Y. K. Wong
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE — DATE: AS NOTED

SHEET No. 163 OF 33 SHEETS

163

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(69)	1992	164	325

BORING: CULVERT-1 CS 1-67
FILE: 953-1
DATE: 9-5-90
PAGE 1 OF 1

PROJECT: Interstate Route H-3, North Halawa Highway
SURFACE ELEV.: 436'±
DEPTH TO WATER: None Encountered

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
					1	4" A. C. over base course
LL=58, PI=20	37	81	PUSH	1	5	Brown Clayey SILT (MH) with gravel and cobbles, stiff, moist (FILL)
	40		14	2	10	
LL=69, PI=14			100/.9'	3	15	Mottled Brown Gray Clayey SILT (MH) with gravel and cobbles, hard, moist (ALLUVIUM/ CONGLOMERATE)
qu=1560 p.s.f.	49	73	53	4	20	Mottled Brown Gray Clayey SILT (MH) with gravel, hard, moist
			73	5	25	(RESIDUAL)
					30	BOH @ 26.5'
					35	

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Plate A187

BORING: CULVERT-1 CS 1-68
FILE: 953-1
DATE: 10-31-90
PAGE 1 OF 1

PROJECT: Interstate Route H-3, North Halawa Highway
SURFACE ELEV.: 428'±
DEPTH TO WATER: NONE ENCOUNTERED

LAB TEST RESULTS	MOIST CONT %	DRY WT. PCF	BLOWS PER FT.	SAMPLE	DEPTH	CLASSIFICATION
					1	Brown Clayey SILT (ML-MH) with gravel and cobbles, medium stiff, moist (ALLUVIUM)
LL=50, PI=7	35		24	1	5	
	27		50/.3'	2		BOULDERS, COBBLES and GRAVEL in very stiff clayey silt matrix, dense, moist (ALLUVIUM)
LL=96, PI=52	56		50/.5'	3	10	
			33% REC 0% RQD	RUN # 1		
			80% REC 20% RQD	RUN # 2	15	Brownish Gray Slightly Weathered Welded CLINKER (WS), medium hard to hard, broken to occasionally broken
			92% REC 40% RQD	RUN # 3	20	
			89% REC 77% RQD	RUN # 4		
					25	Gray Fresh BASALT (F) with some welded clinker, hard, massive
					30	BOH @ 25.0'
					35	

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Plate A188

BORING CS2-69 CULVERT-2

Surface elevation 560'±*

Sample — Dry density (pcf) — Depth (feet) — Graph

● Moisture content
▼ Blows per foot

SOIL DESCRIPTION	USC
BROWN CLAYEY SILT WITH SOME SAND, MEDIUM, MOIST	MH
REDDISH BROWN SILTY CLAY AND DECOMPOSED BASALT GRAVEL, MEDIUM STIFF, MOIST	MH
BROWN SILTY CLAY AND BOULDERS WITH EXTREMELY DECOMPOSED BASALT GRAVEL, VERY SOFT, VERY MOIST (ALLUVIUM)	CL
DARK GRAYISH BROWN VESICULAR BASALT GRAVEL WITH SAND, SILT AND COBBLES, DENSE TO MEDIUM DENSE, MOIST (ALLUVIUM)	GM
BORING TERMINATED AT 26.5 FEET ON OCTOBER 24, 1990 GROUNDWATER NOT ENCOUNTERED	

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A189

BORING CS2-70 CULVERT-2

Surface elevation 545'±*
* SEE SHEET 133 GENERAL NOTES

Sample — Dry density (pcf) — Depth (feet) — Graph

● Moisture content
▼ Blows per foot

SOIL DESCRIPTION	USC
3.0-INCH ASPHALT CONCRETE	
DARK GRAY SANDY BASALT GRAVEL WITH SILT, DENSE, MOIST (BASE COURSE)	GM
BROWN SILTY CLAY WITH SOME SAND, STIFF, MOIST	MH
BROWN CLAYEY SILT WITH SAND AND COBBLES, STIFF, MOIST (ALLUVIUM)	ML
DARK GRAY BROWN CLAYEY SAND WITH GRAVEL AND COBBLES, MEDIUM DENSE, MOIST (ALLUVIUM)	SC
BORING TERMINATED AT 26.5 FEET ON SEPTEMBER 17, 1990 GROUNDWATER NOT ENCOUNTERED	

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A190

BORING CS3-71 CULVERT-3

Surface elevation 623'±*
* SEE SHEET 133 GENERAL NOTES

Sample — Dry density (pcf) — Depth (feet) — Graph

● Moisture content
▼ Blows per foot

SOIL DESCRIPTION	USC
BROWN CLAYEY SILT WITH SOME SAND AND GRAVEL, STIFF, MOIST	MH
BOULDER	
BOULDER OR ROCK FORMATION?	
BORING TERMINATED AT 13.0 FEET ON JULY 20, 1990 GROUNDWATER NOT ENCOUNTERED	

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A191

BORING CS3-72 CULVERT-3

Surface elevation 620'±*

Sample — Dry density (pcf) — Depth (feet) — Graph

● Moisture content
▼ Blows per foot

SOIL DESCRIPTION	USC
RED BROWN CLAYEY SILT WITH SAND AND GRAVEL, STIFF, DAMP	MH
BROWN CLAYEY SAND AND GRAVEL, MEDIUM DENSE, WET	SC
DARK BROWN SILTY CLAY WITH SAND AND ORGANIC MATERIAL, STIFF, MOIST	MH
BOULDER OR ROCK FORMATION?	
BORING TERMINATED AT 15.5 FEET ON JULY 20, 1990 GROUNDWATER LEVEL AT: DEPTH 3.0 FT, HOURS 1445, DATE 07/20/90	

LEGEND
I 2.0" O.D. split-spoon sample
II Undisturbed ring sample
Disturbed ring sample
Core sample
Shelby tube sample
P Sampler pushed
Plastic limit — Liquid limit — Natural water content
Water level
T Torvane Shear (psf)
FV Field Vane Shear (psf)
Driving energy: 140 lb. wt., 30" drop

BORING LOG
GEOLABS—HAWAII
Foundation Engineering • Soil Engineering • Geology
W.O. 2531-00 NOVEMBER 1990
Plate A192

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE
DATE: AS NOTED

SHEET No. 132 OF 33 SHEETS

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

137218

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1 (69)	1992	165	325

ERNEST K. HIRATA & ASSOCIATES, INC.
Soils and Foundation Engineering
99-1433 Koaha Place • Aiea, Hawaii 96701-1028 • Phone 486-0787

BORING LOG

W.O. 90-1953

370'± FROM CULVERT-1

BORING NO. OGR-73 DRIVING WT. 140 lb. DATE OF DRILLING 6-22-90
SURFACE ELEV. 436± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, firm to medium stiff, with gravel and roots at upper 5 feet. Covered by 4 inches of asphaltic concrete and 8 inches of base course material.
			15/0"	No Penetration			
			6		51		
5				75	42		
10			6/6"		52		Grading with cobbles and boulders from 9 feet.
15				72	39		
20			4		66		
25				68	41		
							End boring at 26 feet.
30							

Plate A193

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BORING LOG

W.O. 90-1953

220'± FROM CULVERT-3

BORING NO. ORG-74 DRIVING WT. 140 lb. DATE OF DRILLING 7-25-90
SURFACE ELEV. 640± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
0		MH					Clayey SILT - Mottled brown, moist, medium stiff to stiff, with gravel.
			11		47		
5				74	30		
10			19		54		
15				69	42		
20			12		52		
25				72	43		
							COMPLETELY WEATHERED ROCK - Mottled grayish brown, moist, dense.
30			25/0"	No Penetration			

Plate A194

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BORING LOG

W.O. 90-1953

220'± FROM CULVERT-4

BORING NO. OGR-74 (Cont.) DRIVING WT. 140 lb. DATE OF DRILLING 7-25-90
SURFACE ELEV. 640± DROP 30 in. WATER LEVEL None

DEPTH (FEET)	GRAPH SYMBOL	UNIFIED SOIL CLASSIFICATION	BLOWS/FT.	DRY DENSITY (PCF.)	MOISTURE CONTENT (%)	RELATIVE COMPACTION (%)	DESCRIPTION
30							
35				74	51		
40			43		37		
							End boring at 40.5 feet.
45							
50							
55							
60							

Plate A195

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

PAUL S. MORIMOTO
REGISTERED PROFESSIONAL ENGINEER
No. 5299
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.
Signature

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
F.A.I. PROJECT NO. I-H3-1(69) & (70)

SCALE: NONE DATE: AS NOTED

SHEET No. 165 OF 325 SHEETS

137218

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