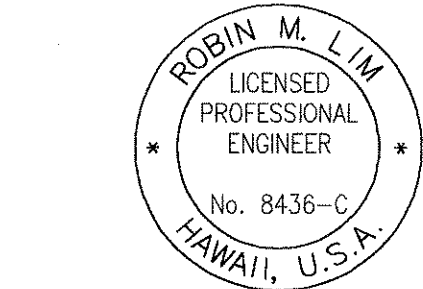


INDEX TO DRAWINGS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	351	816

SHEET NO.	DESCRIPTION	SHEET NO.	DESCRIPTION	SHEET NO.	DESCRIPTION
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AG0.2	GENERAL BORING LOCATION PLAN	AG2.26	BORING LOGS		
		AG2.27	BORING LOGS		
		AG2.28	BORING LOGS		
AG1.1	BORING LOCATION PLAN	AG2.29	BORING LOGS		
AG1.2	BORING LOCATION PLAN	AG2.30	BORING LOGS		
AG1.3	BORING LOCATION PLAN	AG2.31	BORING LOGS		
AG1.4	BORING LOCATION PLAN	AG2.32	BORING LOGS		
AG1.5	BORING LOCATION PLAN	AG2.33	BORING LOGS		
AG1.6	BORING LOCATION PLAN	AG2.34	BORING LOGS		
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AG2.05	BORING LOGS	AG2.41	BORING LOGS		
AG2.06	BORING LOGS	AG2.42	BORING LOGS		
AG2.07	BORING LOGS	AG2.43	BORING LOGS		
AG2.08	BORING LOGS	AG2.44	BORING LOGS		
AG2.09	BORING LOGS	AG2.45	BORING LOGS		
AG2.10	BORING LOGS	AG2.46	BORING LOGS		
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AG2.12	BORING LOGS				
AG2.13	BORING LOGS	AG3.1	JET GROUTING NOTES		
AG2.14	BORING LOGS	AG3.2	DEEP SOIL STABILIZATION PLAN		
AG2.15	BORING LOGS	AG3.3	DEEP SOIL STABILIZATION AREAS DETAIL		
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AG2.22	BORING LOGS				
AG2.23	BORING LOGS				
AG2.24	BORING LOGS				

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



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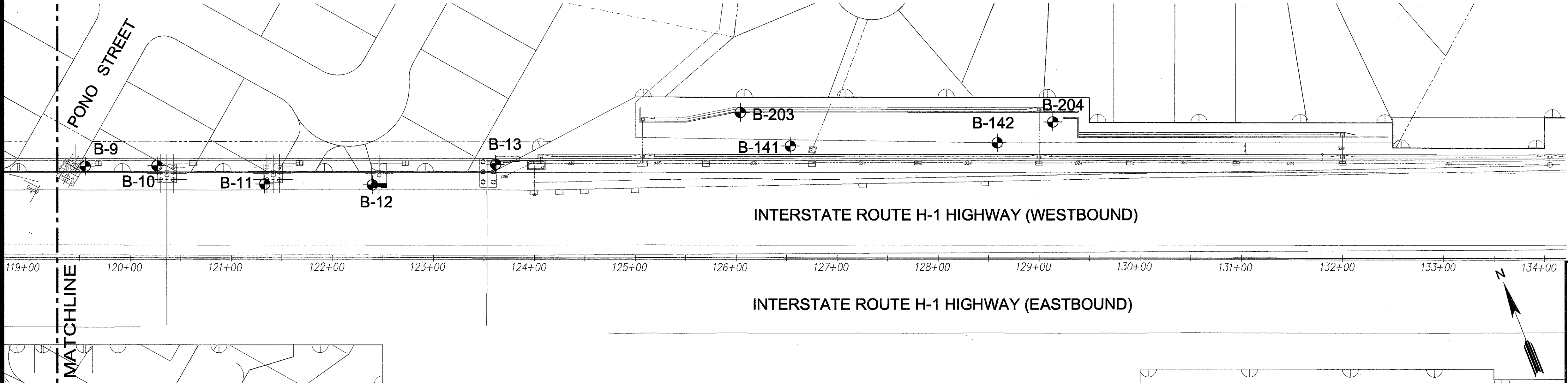
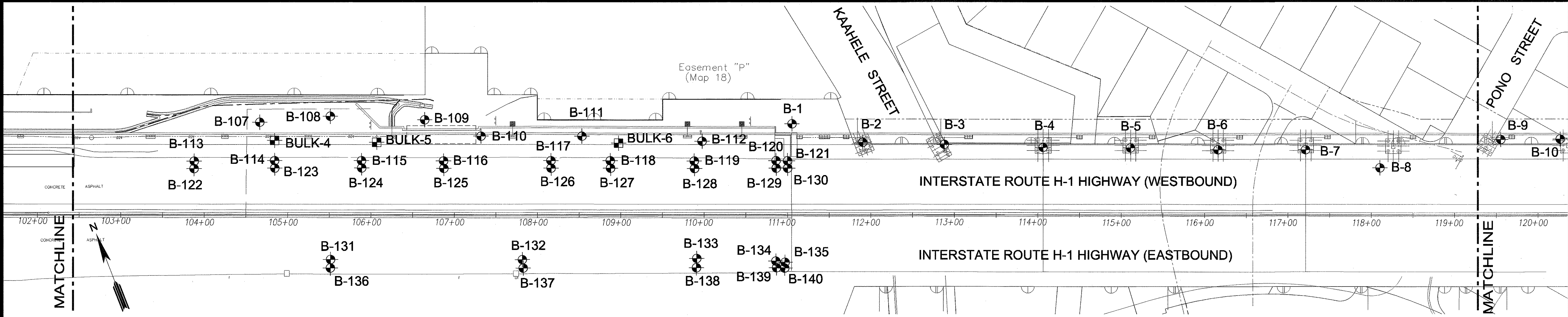
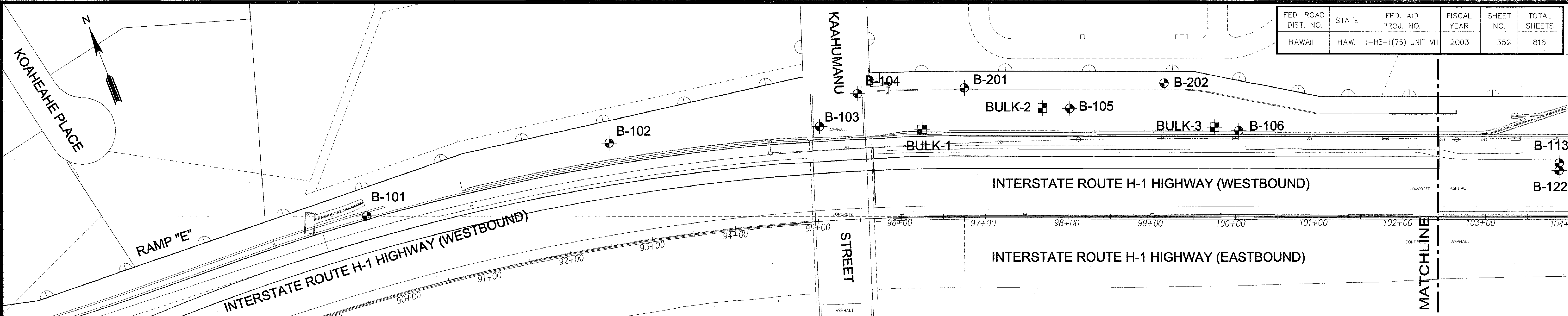
INDEX TO DRAWINGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

Scale: None Date: Mar. 31, 2003

SHEET No. AG0.1 OF 63 SHEETS

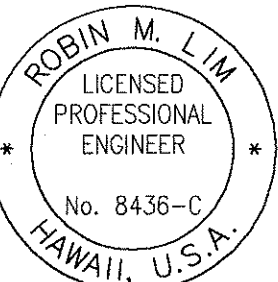
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	352	816



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

- LEGEND:**
- APPROXIMATE BORING LOCATION
 - APPROXIMATE BULK SAMPLE LOCATION

REFERENCE: SITE PLAN TRANSMITTED BY R. M. TOWILL CORPORATION ON MARCH 25 AND 28, 2003.



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STATE OF HAWAII
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HIGHWAYS DIVISION

GENERAL BORING LOCATION PLAN

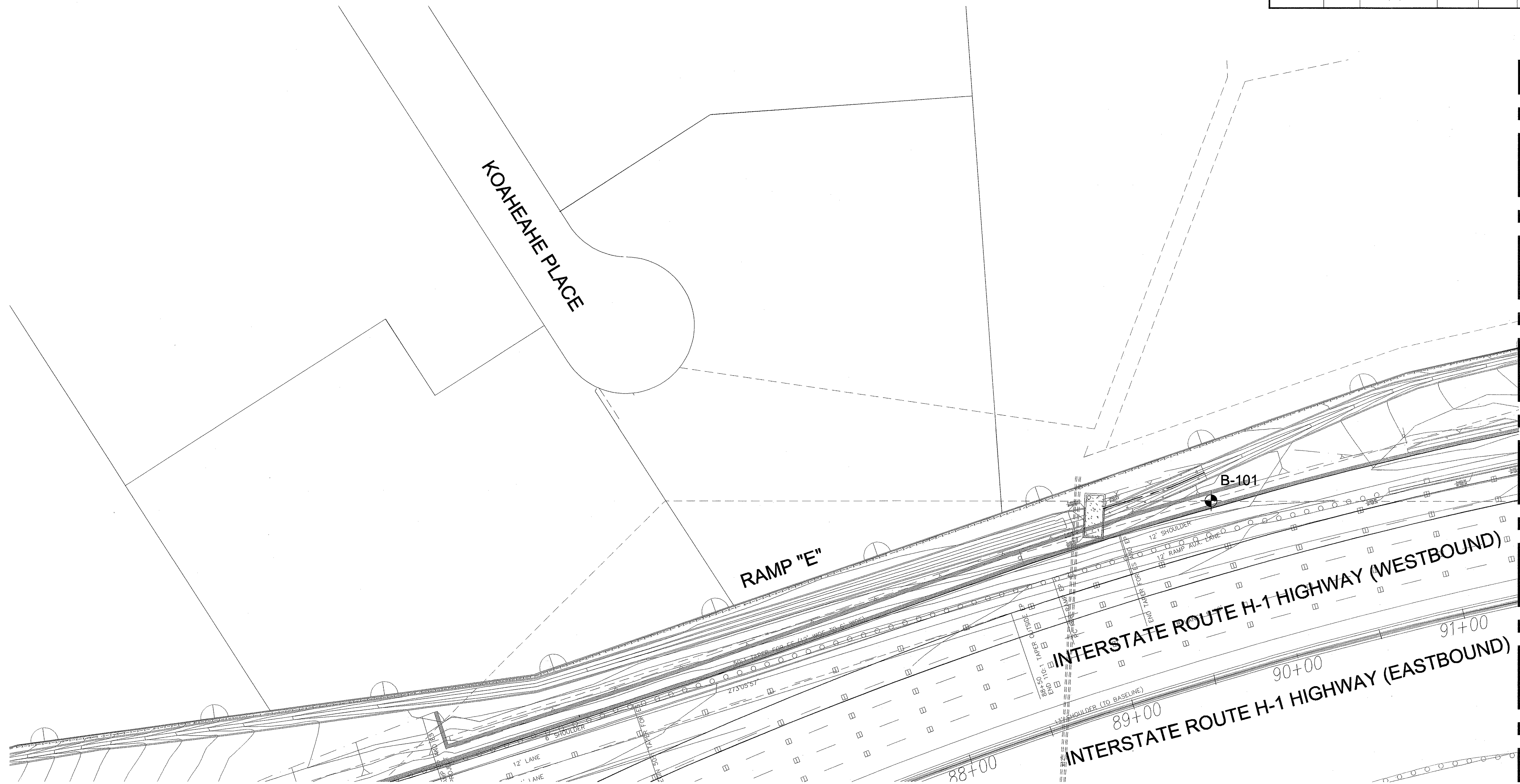
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

Scale: 1" = 60' Date: Mar. 31, 2003

SHEET No. AG0.2 OF 6.3 SHEETS



FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	353	816



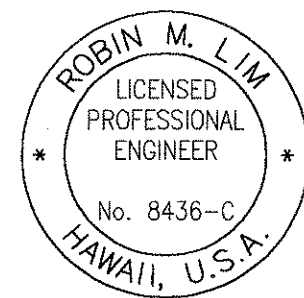
MATCHLINE

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DESIGNED BY	
	TRACED BY	
	CHECKED BY	

LEGEND:

- APPROXIMATE BORING LOCATION
- APPROXIMATE BULK SAMPLE LOCATION

REFERENCE: SITE PLAN TRANSMITTED BY R. M. TOWILL CORPORATION ON MARCH 25 AND 28, 2003.



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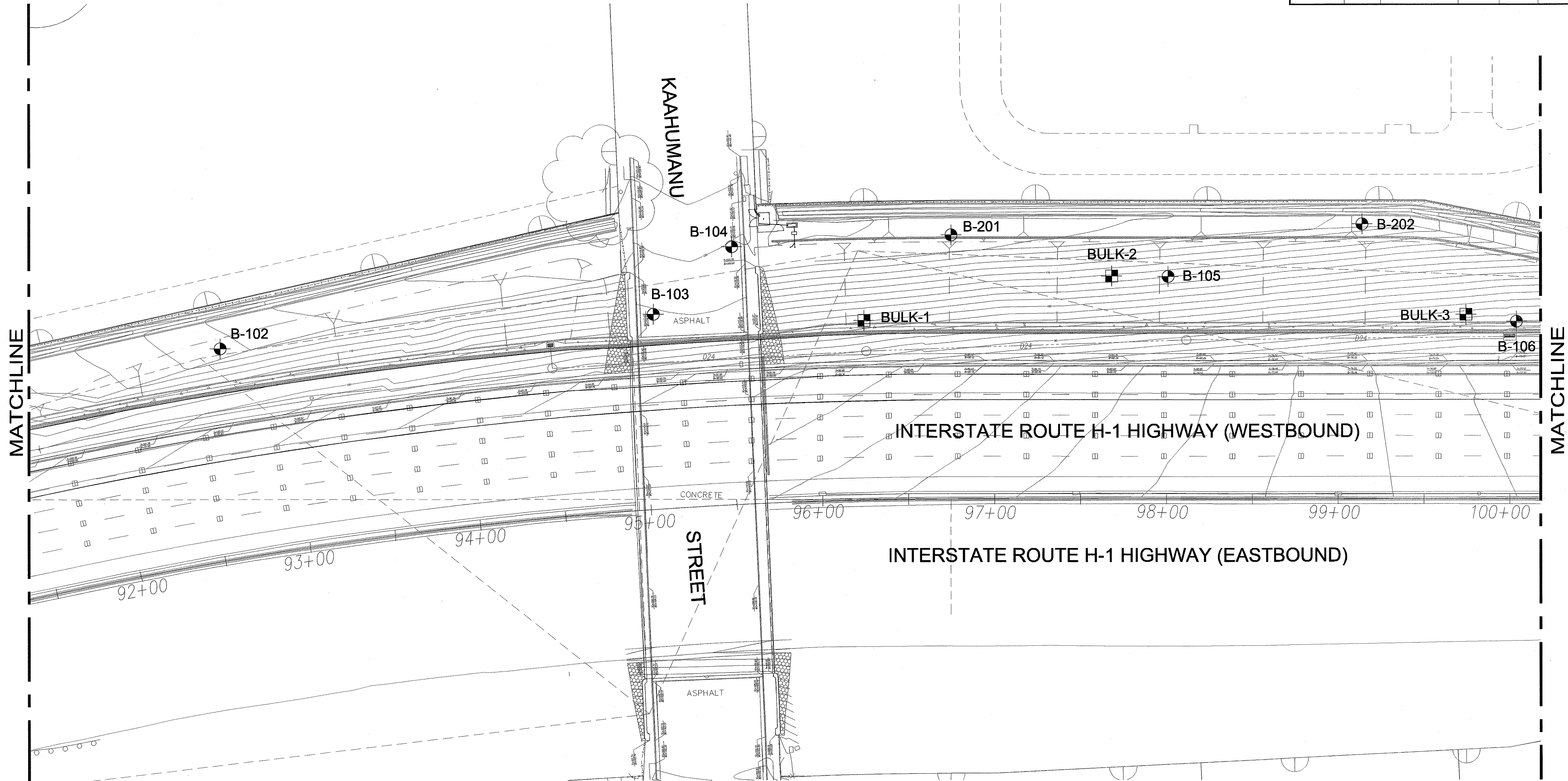
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: 1" = 30' Date: Mar. 31, 2003

SHEET No. AG1.1 OF 63 SHEETS

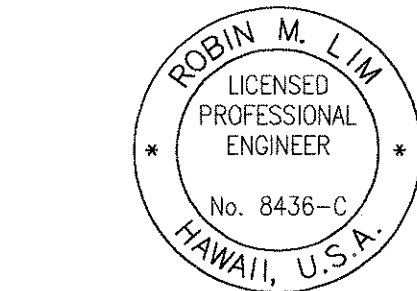
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	354	816



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

- LEGEND:**
- APPROXIMATE BORING LOCATION
 - ⊕ APPROXIMATE BULK SAMPLE LOCATION

REFERENCE: SITE PLAN TRANSMITTED BY R. M. TOWILL CORPORATION ON MARCH 25 AND 28, 2003.



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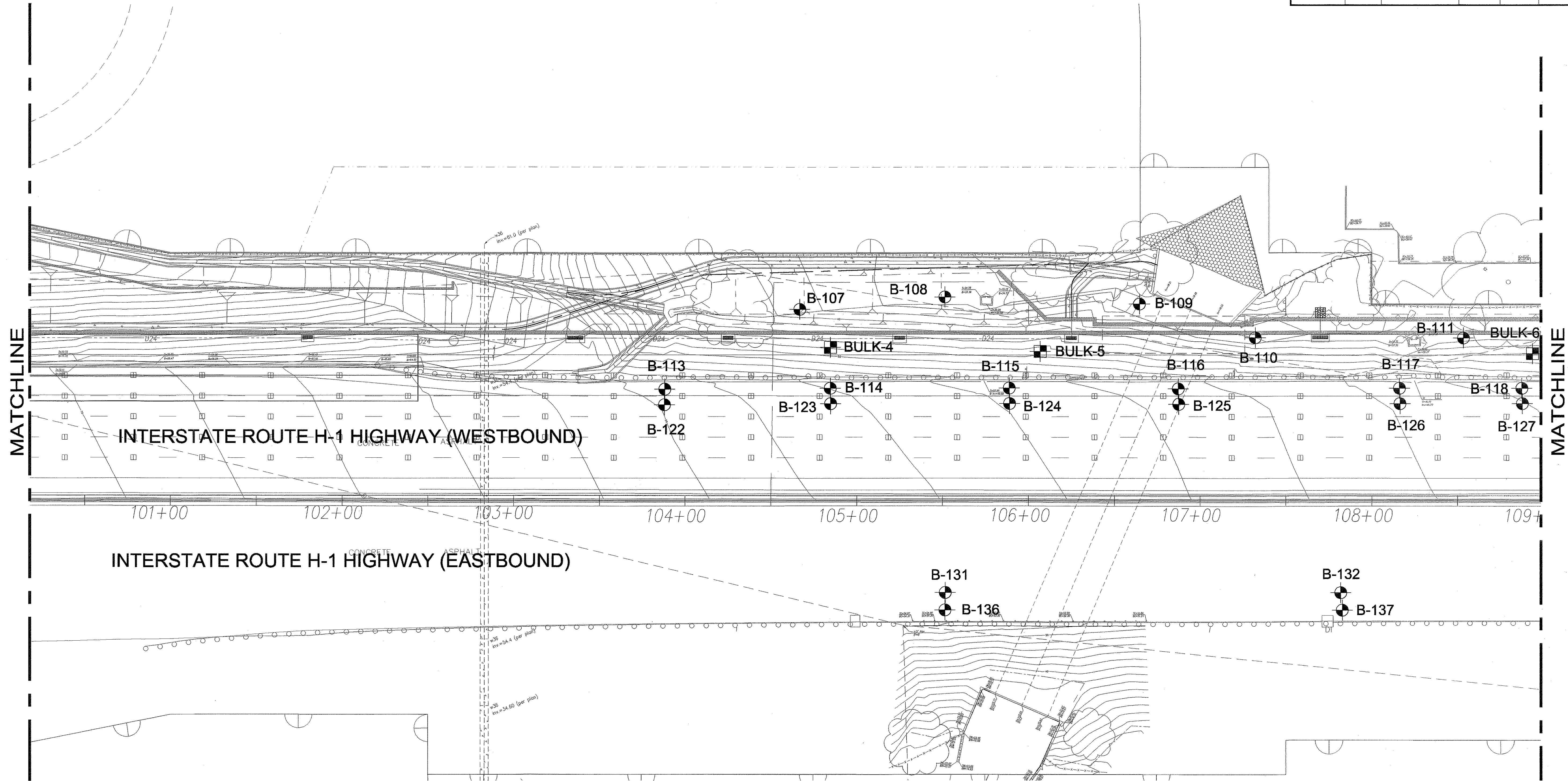
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: 1" = 30' Date: Mar. 31, 2003

SHEET No. AG1.2 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	355	816

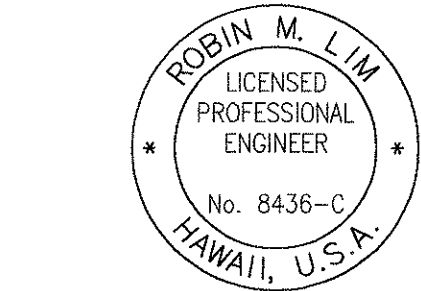


ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	

- LEGEND:**
- APPROXIMATE BORING LOCATION
 - APPROXIMATE BULK SAMPLE LOCATION

REFERENCE: SITE PLAN TRANSMITTED BY R. M. TOWILL CORPORATION ON MARCH 25 AND 28, 2003.

RMTC JOB NO.: 1-19369-OE



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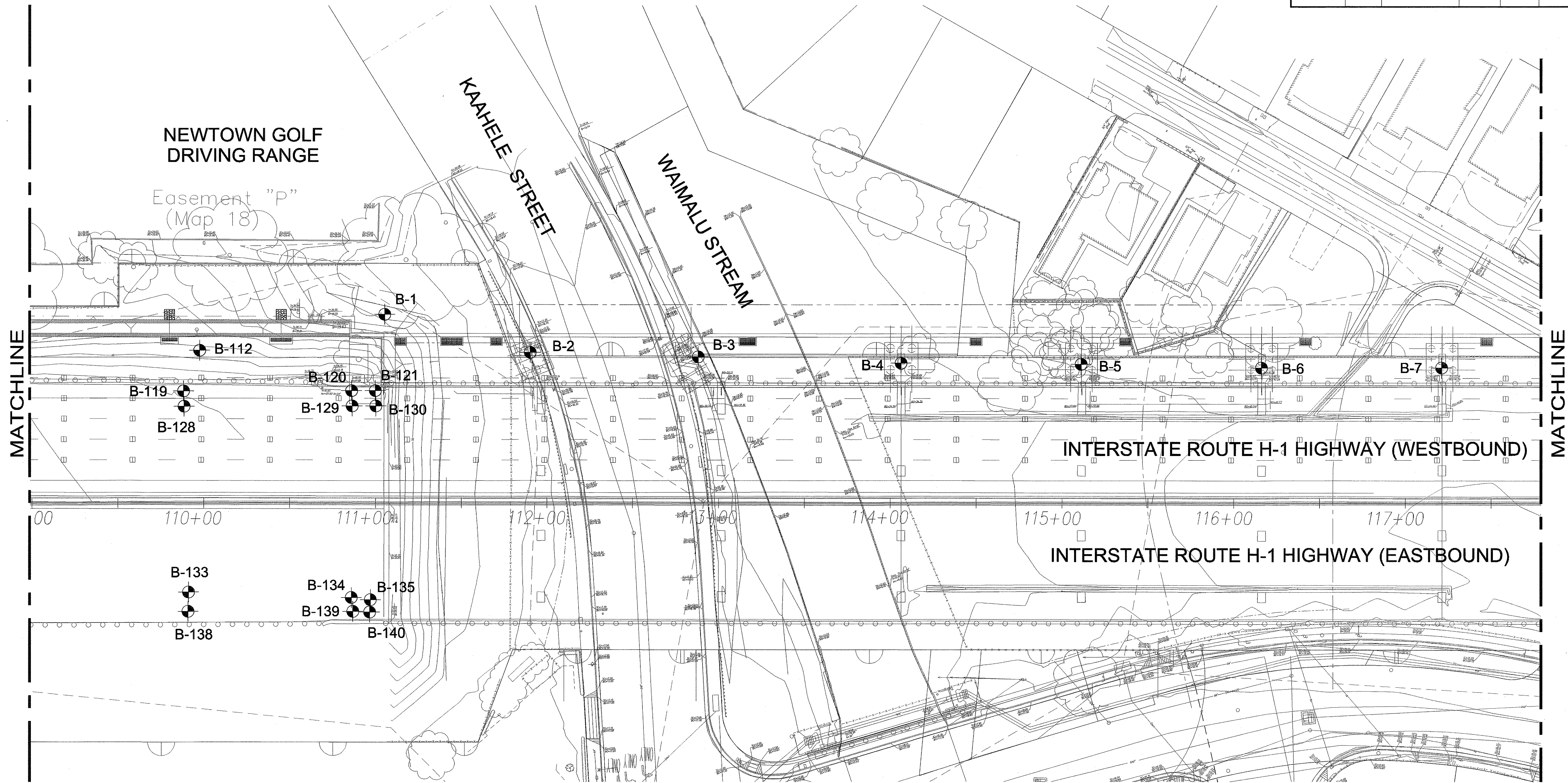
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: 1" = 30' Date: Mar. 31, 2003

SHEET No. AG1.3 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	356	816

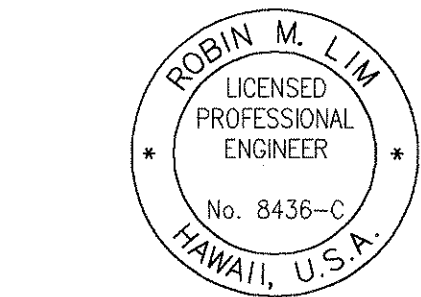


ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	DESIGNED BY	
	CHECKED BY	
NOTE BOOK	NO.	

- LEGEND:**
- APPROXIMATE BORING LOCATION
 - ⊠ APPROXIMATE BULK SAMPLE LOCATION

REFERENCE: SITE PLAN TRANSMITTED BY R. M. TOWILL CORPORATION ON MARCH 25 AND 28, 2003.

RMTC JOB NO.: 1-19369-OE



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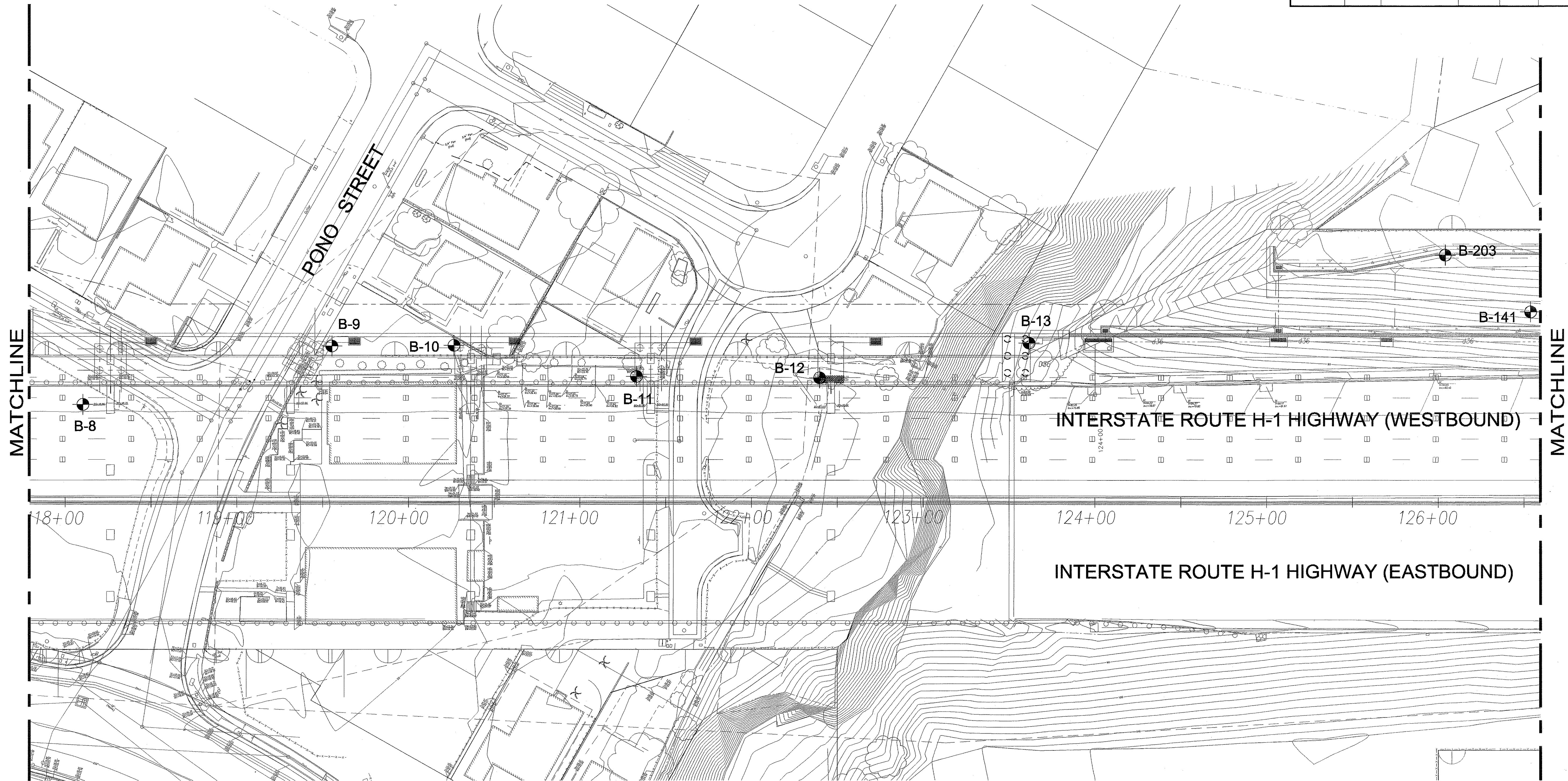
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: 1" = 30' Date: Mar. 31, 2003

SHEET No. AG1.4 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	357	816

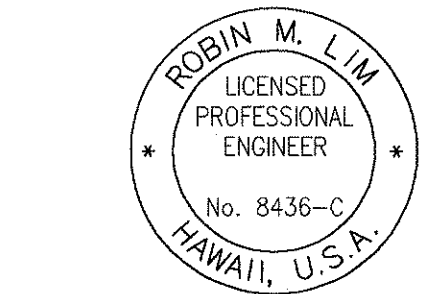


ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	DESIGNED BY	
	CHECKED BY	
NOTE BOOK		
No.		

- LEGEND:**
- APPROXIMATE BORING LOCATION
 - APPROXIMATE BULK SAMPLE LOCATION

REFERENCE: SITE PLAN TRANSMITTED BY R. M. TOWILL CORPORATION ON MARCH 25 AND 28, 2003.

RMTC JOB NO.: 1-19369-OE



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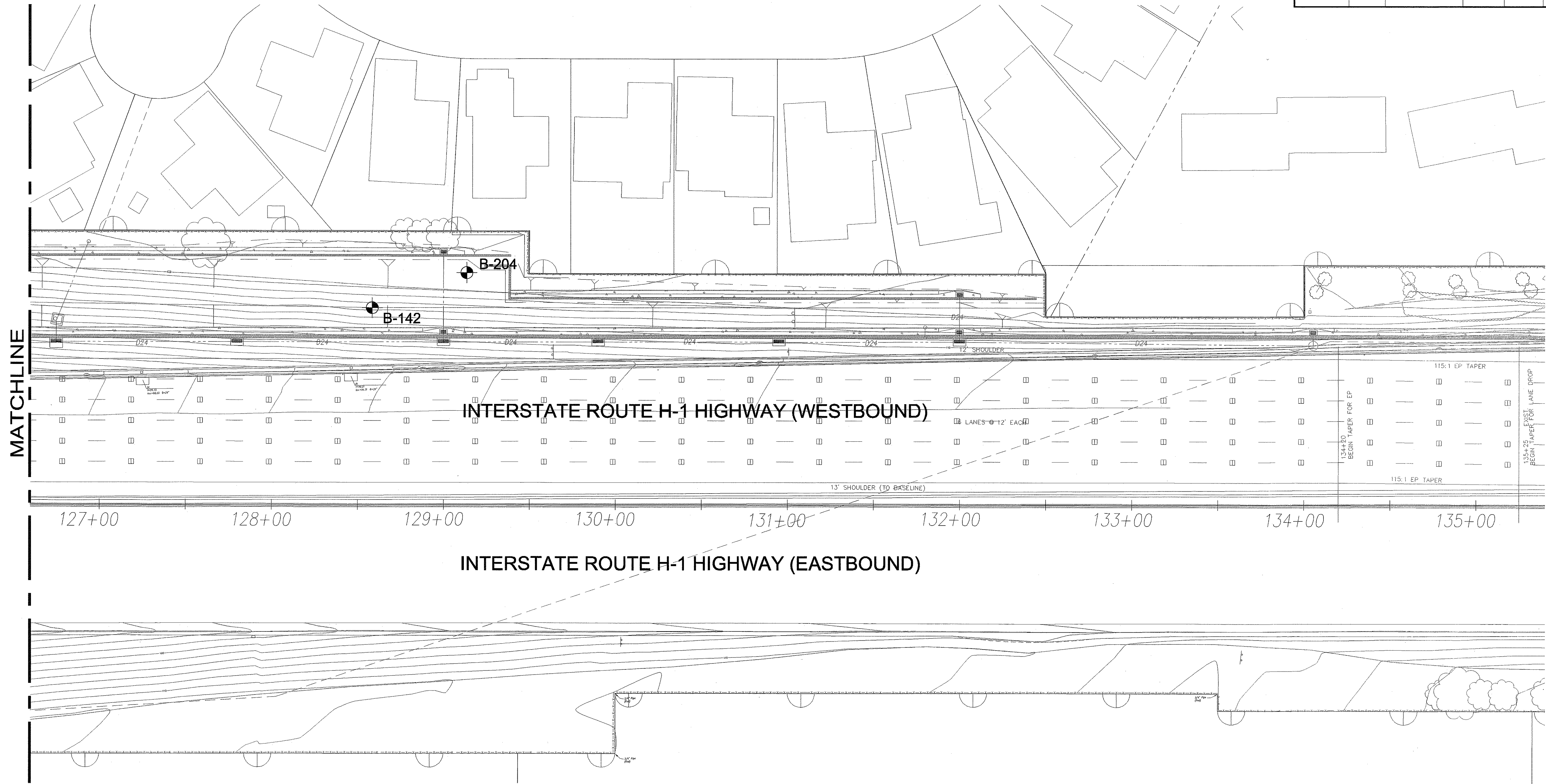
BORING LOCATION PLAN

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

Scale: 1" = 30' Date: Mar. 31, 2003

SHEET No. AG1.5 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	358	816



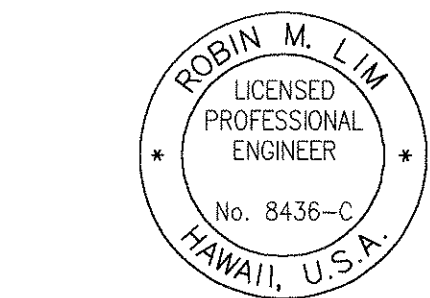
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
	DESIGNED BY	
	CHECKED BY	
NOTE BOOK	No.	

LEGEND:

- ◆ APPROXIMATE BORING LOCATION
- ⊞ APPROXIMATE BULK SAMPLE LOCATION

REFERENCE: SITE PLAN TRANSMITTED BY R. M. TOWILL CORPORATION ON MARCH 25 AND 28, 2003.

RMTC JOB NO.: 1-19369-OE



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOCATION PLAN

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

Scale: 1" = 30' Date: Mar. 31, 2003

SHEET No. AG1.6 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	ADD. 359	816

Boring Log Legend

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS		TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS	GRAVELS	CLEAN GRAVELS		GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		LESS THAN 5% FINES		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES		GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
		MORE THAN 12% FINES		GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY MIXTURES
	SANDS	CLEAN SANDS		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		LESS THAN 5% FINES		SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE		SANDS WITH FINES		SM	SILTY SANDS, SAND-SILT MIXTURES
		MORE THAN 12% FINES		SC	CLAYEY SANDS, SAND-CLAY MIXTURES
FINE-GRAINED SOILS	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE		MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

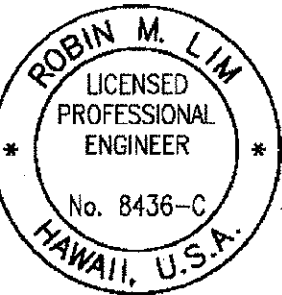
NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

LEGEND

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

GEOTECHNICAL NOTES

1. A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Interstate Route H-1 Widening, Waimalu Viaduct (Westbound), Pearl City Off-Ramp to Kaonohi Street, Pearl City to Aiea, Oahu, Hawaii" dated March 31, 2003 has been prepared by Geolabs, Inc. A copy of the report is on file at the office of the Engineer for review by the Contractor.
2. For boring locations, see Sheet AG0.2 to AG1.6.
3. The information presented in the logs of borings depict the subsurface conditions encountered at that specified location and at the time of the field exploration only. Variations of subsoil conditions from those depicted in the logs of borings may occur between and beyond the borings.
4. The penetration resistance shown on the logs of borings indicate the number of blows required for the specific sampler type used. The blow counts may need to be factored to obtain the Standard Penetration Test (SPT) blow counts.
5. The data given is for general information only. Bidders shall examine the site and the boring data and draw their own conclusions therefrom as to the character of materials to be encountered. The Engineer will not assume responsibility for variations of subsoil quality or conditions other than at the boring locations shown and at the time the borings were taken.



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BORING LOG LEGEND AND NOTES

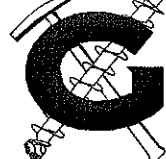
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

Scale: As Shown Date: June 20, 2003

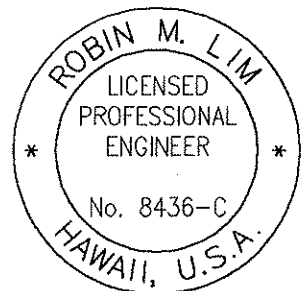
SHEET No. AG2.1 OF 63 SHEETS

6/20/03 Revised Note No. 1
DATE REVISION

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	360	816

		GEOLABS, INC.						INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII						Log of Boring 1	
Geotechnical Engineering															
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 26 *					
										Description					
TV=0.5	27	85			10	4.0			MH	Reddish brown CLAYEY SILT, stiff, damp (fill)					
	31	81	50		28	2.3	5		GW	Gray SANDY GRAVEL, medium dense, damp (fill)					
	39	82	70		11	0.8	10		MH	Brown CLAYEY SILT, stiff, moist (fill)					
									CH	Gray CLAY, stiff, moist (recent alluvium)					
LL=64 PI=34	35	80	33		14	2.8	15		OL	Dark gray ORGANIC SILT with some roots, soft, wet (recent alluvium)					
					11		20		GP	Brownish gray rounded SANDY GRAVEL with silt, medium dense (recent alluvium)					
			85			0.5			OL	Dark gray ORGANIC SILT, soft (recent alluvium)					
									GP	Brownish gray rounded SANDY GRAVEL with silt, medium dense (recent alluvium)					
TV=0.4	14	122	0		34	4.3	25								
	15	111	0		21	4.3	30								
									SM	Dark gray SILTY FINE SAND with traces of gravel, loose (recent alluvium)					
									ML	Dark gray SANDY SILT with shell fragments, soft (recent alluvium)					
TV=0.15	37	80	17		21	2.8	45		CH	Gray CLAY, very stiff (recent alluvium)					
LL=70 PI=40	39	83	100		29	2.8	50		MH	Grayish brown CLAYEY SILT with some rounded gravel, very stiff (recent alluvium)					
										55					
Date Started: March 6, 2002										Water Level: 17.8 ft. 3/7/02 1150 HRS					
Date Completed: March 7, 2002										18.5 ft. 3/7/02 1540 HRS					
Logged By: S. Latronic										Drill Rig: CME-75					
Total Depth: 119.5 feet										Drilling Method: 10" Hollow-Stem Auger & PQ Coring					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 1			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)		
										Description		
UC=738	46	72	100		41	2.5			SM	Brownish gray SILTY SAND with highly weathered rounded rock fragments, dense to very dense (old alluvium)		
	54	63	100		31	4.3	60			grades to dense		
	57		100		18		65			grades to medium dense		
	34		70		37		70			grades to dense		
	43		100	100	16/.5' +50/.0' Ref.		75			grades to very dense		
	UC=197			100	100			80			Brownish gray vesicular BASALT, moderately fractured, moderately weathered, medium hard (basalt formation)	
				100	100			85			grades to slightly fractured, slightly weathered, hard	
				100	100			90			grades to massive, very hard	
			100	85			95			grades to vugular, slightly fractured, slightly to moderately weathered, hard to very hard		
		100	100			100			grades to vesicular, massive, slightly weathered, very hard			
		100	90			105			grades to vugular, moderately fractured, slightly to moderately weathered, hard to very hard			
		100	100			110			grades to massive, slightly weathered, hard			
Date Started: March 6, 2002							Water Level: ∇ 17.8 ft. 3/7/02 1150 HRS					
Date Completed: March 7, 2002							18.5 ft. 3/7/02 1540 HRS					
Logged By: S. Latronic							Drill Rig: CME-75					
Total Depth: 119.5 feet							Drilling Method: 10" Hollow-Stem Auger & PQ Coring					
Work Order: 4850-00(B)							Driving Energy: 140 lb. wt., 30 in. drop					



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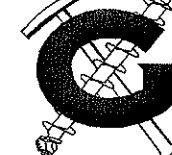
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

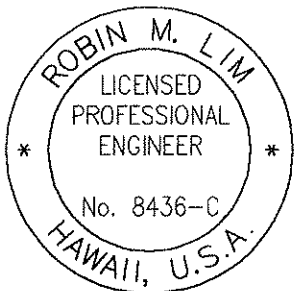
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.2 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	361	816

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 1	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	(Continued from previous plate)		
											Description		
			100	70							grades to vesicular, slightly fractured		
			100	100			115				grades to massive		
							120				Boring terminated at 119.5 feet		
											* Elevations estimated from Site Plans dated January 25, 2002 provided by R.M. Towill Corporation.		
							125						
							130						
							135						
							140						
							145						
							150						
							155						
							160						
							165						
Date Started: March 6, 2002							Water Level: 17.8 ft. 3/7/02 1150 HRS						
Date Completed: March 7, 2002							18.5 ft. 3/7/02 1540 HRS						
Logged By: S. Latronic							Drill Rig: CME-75						
Total Depth: 119.5 feet							Drilling Method: 10" Hollow-Stem Auger & PQ Coring						
Work Order: 4850-00(B)							Driving Energy: 140 lb. wt., 30 in. drop						

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 2		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 19 *	
										Description	
TV=0.2	25	84			16	4.3			MH	Reddish brown CLAYEY SILT, stiff, damp (fill)	
	30	78			17	4.0	5			grades to dark brown, stiff to very stiff	
	36	68			19	3.3	10		MH	Brown CLAYEY SILT with sand, very stiff, moist (recent alluvium)	
	94	49			4	1.0	15			grades to soft to very soft, wet	
									OL	Dark gray ORGANIC SILT with roots, soft (recent alluvium)	
	89	43			12	2.5	20		SM	Dark gray SILTY SAND with rounded gravel, loose to medium dense (recent alluvium)	
	127	32	0							grades to loose	
	44	74			5	1.8	25			grades to loose	
									GW-GM	Grayish brown SILTY ROUNDED GRAVEL with sand, loose to medium dense grades to loose to medium dense	
	17				12		30			grades to loose to medium dense	
	17				24		35			grades to medium dense	
											
	16				17		40				
									MH	Gray CLAYEY SILT with sand and cobbles, very stiff (recent alluvium)	
	42	79			21	3.0	45				
									GP	Gray BOULDERS, COBBLES AND GRAVEL with cemented silty sand, very dense (conglomerate)	
					25/0' Ref.		50				
							55				
Date Started: March 8, 2002									Water Level: 16.9 ft. 3/11/02 0815 HRS		
Date Completed: March 13, 2002									19 ft. 3/13/02 0805 HRS		
Logged By: S. Latronic									Drill Rig: CME-75		
Total Depth: 155.5 feet									Drilling Method: 10" Hollow-Stem Auger & PQ Coring		
Work Order: 4850-00(B)									Driving Energy: 140 lb. wt., 30 in. drop		



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STATE OF HAWAII
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HIGHWAYS DIVISION

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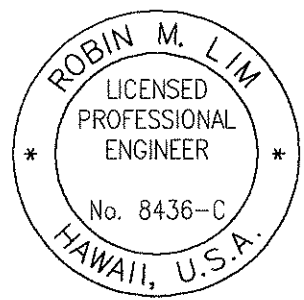
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. A02.3 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	362	816

GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 2	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)
										Description
			17		50/5' Ref.				GP	Gray BOULDERS, COBBLES AND GRAVEL with cemented silty sand, very dense (conglomerate)
	28		50		81		60		MH	Brownish gray CLAYEY SILT with rounded basaltic fragments, very hard (old alluvium)
	23		0		23		65			grades to very stiff
	62	56	100		24	4.0	70			
	49	71	100		41	4.3	75			grades to very stiff to hard
	48		79		23		80			grades to very stiff
	55	65	67		49	3.8	85			grades to hard
	42		50		52		90			
	50		100		31		95			
	40	73	86		54	4.3	100			
	39		67		61		105			grades to very hard
								110		
Date Started: March 8, 2002								Water Level: 16.9 ft. 3/11/02 0815 HRS		
Date Completed: March 13, 2002								19 ft. 3/13/02 0805 HRS		
Logged By: S. Latronic								Drill Rig: CME-75		
Total Depth: 155.5 feet								Drilling Method: 10" Hollow-Stem Auger & PQ Coring		
Work Order: 4850-00(B)								Driving Energy: 140 lb. wt., 30 in. drop		

GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 2	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)
			25	0	25/0' Ref.					Description
	15		64	29	50/.3' Ref.		115			Brownish gray BASALT, severely fractured, highly to extremely weathered, soft (basalt formation)
UC=1618			90	90	30/0' Ref.		120			grades to moderately fractured, highly to moderately weathered, medium hard
UC=714			80	67			125			grades to gray vesicular, slightly fractured, slightly weathered, hard
			90	80			130			grades to moderately fractured
			60	10			135			grades to brownish gray, slightly fractured
			100	75	30/0' Ref.		140			grades to severely fractured, highly weathered, soft to medium hard
			55	45			145			grades to gray, moderately fractured, moderately to slightly weathered, medium hard to hard
			0	0			150			grades to slightly fractured, slightly weathered, hard
							155			Gray CLINKER (basalt formation)
24					25/0' Ref.		155.5			Boring terminated at 155.5 feet
							160			
							165			
Date Started: March 8, 2002							Water Level: 16.9 ft. 3/11/02 0815 HRS			
Date Completed: March 13, 2002							19 ft. 3/13/02 0805 HRS			
Logged By: S. Latronic							Drill Rig: CME-75			
Total Depth: 155.5 feet							Drilling Method: 10" Hollow-Stem Auger & PQ Coring			
Work Order: 4850-00(B)							Driving Energy: 140 lb. wt., 30 in. drop			



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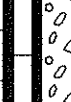
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HIGHWAYS DIVISION

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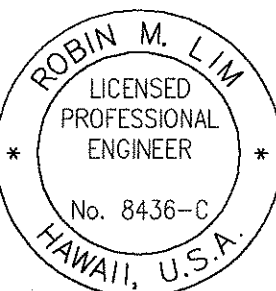
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.4 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	363	816

		GEOLABS, INC. Geotechnical Engineering						INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 3	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 13.5 *			
										Description			
LL=64 PI=34	21	75			19	4.3			MH	Brown CLAYEY SILT with gravel and cobbles, very stiff, moist (fill)			
	46				9	4.3	5		CH	Grayish brown SILTY CLAY with sand, medium stiff to stiff, moist (recent alluvium)			
	53	68			15	0.75	10		OL	Gray SANDY ORGANIC SILT with roots, soft (recent alluvium)			
	60				2	0.25	15		OH	grades with fine sand Gray ORGANIC CLAYEY SILT with shell fragments, soft (recent alluvium)			
TV=0.2			80		20		20		SM	Dark gray SILTY SAND with gravel, medium dense (recent alluvium)			
										grades to loose			
	59		48		4	0.0	25		ML	Dark gray fine SANDY SILT with organic debris, very soft (recent alluvium)			
	57		67		3		30		SM	Dark gray SILTY FINE SAND, very loose (recent alluvium)			
										grades to silty coarse sand with rounded gravel			
	45	79	64		13	0.5	35						
	20		81		32		40		GP	grades with cobbles Gray BOULDERS, COBBLES AND GRAVEL with sand and silt, medium dense to dense (conglomerate)			
			70		30/.0' Ref.		45						
			50				50						
							55						
Date Started: April 22, 2002									Water Level: ▽ 8.6 ft. 4/23/02 0903 HRS				
Date Completed: April 24, 2002									7.4 ft. 4/24/02 0815 HRS				
Logged By: S. Latronic									Drill Rig: CME-75				
Total Depth: 160.5 feet									Drilling Method: 5" Auger & PQ Coring				
Work Order: 4850-00(B)									Driving Energy: 140 lb. wt., 30 in. drop				

		GEOLABS, INC. Geotechnical Engineering				INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 3	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)		USCS	(Continued from previous plate)	
										Description	
LL=63 PI=26			70		50/1' Ref.				MH	Grayish brown CLAYEY SILT with sand and weathered rounded rock fragments, hard (old alluvium)	
	52	62			42	4.3	60				
			100			2.2					
	57				22		65			grades to very stiff	
TV=0.5	46	70			32	1.5	70			grades to very stiff to hard	
			81			2.5					
	53				37		75				
			100								
TV=0.5	54	62			40	0.8	80			grades to stiff to very stiff	
			100			1.5					
	56				16		85				
			100								
TV=0.5	63	63			38	0.8	90			grades to hard	
			100								
							95				
			95								
	49	67			75/5' Ref.	2.5	100				
	51		100		74		105				
			100			2.0	110				
Date Started: April 22, 2002										Water Level: ∇ 8.6 ft. 4/23/02 0903 HRS	
Date Completed: April 24, 2002										7.4 ft. 4/24/02 0815 HRS	
Logged By: S. Latronic										Drill Rig: CME-75	
Total Depth: 160.5 feet										Drilling Method: 5" Auger & PQ Coring	
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop	



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HIGHWAYS DIVISION

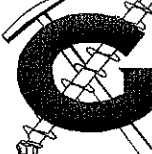
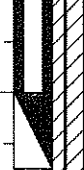
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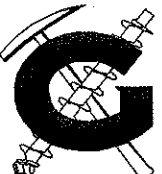
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

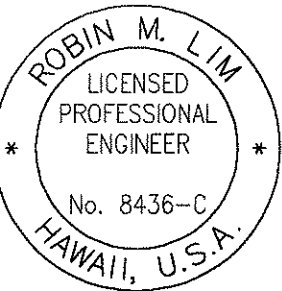
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.5 OF 6.3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	365	816

		GEOLABS, INC. Geotechnical Engineering					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 4	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)			
										Description			
LL=58 PI=25	59		100		16				MH	Orange-brown with black mottling CLAYEY SILT with rounded rock fragments, very stiff (old alluvium)			
	60		50		20		60			grades with small rounded pebbles and cobbles			
	52		0		20		65						
	55		71		9		70			grades to medium stiff to stiff			
	56		93		12		75			grades to stiff			
	64		38		34		80			grades to brown, hard			
	56		95		19		85			grades to very stiff			
	55		100		26		90						
	57		100		24		95						
	48		86		47	0.75	100			grades to hard			
	50		71		36		105			grades to brown with orange and black mottling			
							110						
Date Started: January 7, 2002									Water Level: ∇ 10.5 ft. 1/7/02 1400 HRS				
Date Completed: January 10, 2002									9.1 ft. 1/10/02 1615 HRS				
Logged By: K. Gronseth									Drill Rig: CME-75				
Total Depth: 161.5 feet									Drilling Method: 4" Solid-Stem Auger & PQ Coring				
Work Order: 4850-00(B)									Driving Energy: 140 lb. wt., 30 in. drop				

		GEOLABS, INC.				INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 4		
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)			
										Description			
TV=0.4	57		100		13	0.5			MH	Brown with orange and black mottling CLAYEY SILT, stiff			
	73		100		6		115			grades to soft to medium stiff			
LL=49 PI=12	52		100		43		120		ML	Orange-brown CLAYEY SILT with rounded rock fragments, very stiff (old alluvium)			
	54		100		15	1.5	125			grades to stiff to very stiff			
LL=57 PI=21	54		100		24	1.8	130		MH	Orange-brown with black mottling CLAYEY SILT with basalt, very stiff (old alluvium)			
	54		74		12	1.0	135			grades to stiff			
TV=0.4	52		100		33		140			grades to hard			
	55		100		14	0.8	145			grades to stiff			
	48		100		44	3.3	150			grades to hard			
	54		19		19	1.0	155			grades to very stiff			
	52				28		160						
										Boring terminated at 161.5 feet			



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HIGHWAYS DIVISION

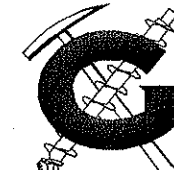
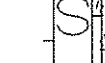
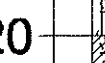
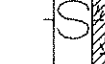
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INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

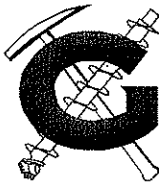
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SHEET No. AG2.7 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	366	816

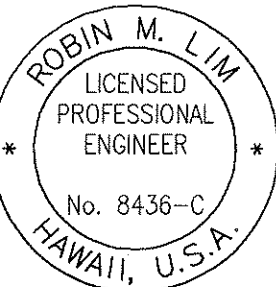
 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 5			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 16 *		
										Description		
TV=0.7 LL=61 PI=27	37	70			8	0.5	5		MH	Brown CLAYEY SILT with traces of roots, medium stiff, damp (fill)		
	42				4				MH	Brown CLAYEY SILT, soft, moist (recent alluvium)		
	65	60			5	2.0	10		ML	Brown CLAYEY SILT with sand and weathered basaltic gravel, soft (recent alluvium)		
TV=0.2 LL=72 PI=34 TV=0.2	69	59			4	2.5	15		ML	Gray SANDY SILT, soft (recent alluvium)		
	71	57				0.5			OL	Dark gray ORGANIC CLAYEY SILT, soft (recent alluvium)		
TV=0.1	60	68					20		OH	Dark gray ORGANIC SILTY CLAY, soft (recent alluvium)		
	64	60				0.3			OH	Dark gray ORGANIC SILT with clay and shell fragments, soft (recent alluvium)		
TV=0.1	63		33				25		OH	Dark gray ORGANIC SILT with clay and shell fragments, soft (recent alluvium)		
	69	58	0		Wt. of Hammer		30			grades with sand, very soft		
TV=0.1	74	56			4		35			grades to soft		
		64				0.3				grades to soft		
TV=0.2	37	85			22	1.0	40		MH	Gray CLAYEY SILT with some rounded gravel and cobbles, very stiff (recent alluvium)		
		71				1.5				grades to stiff		
	55		71		8		45		SM	Dark gray SILTY SAND with rounded gravel and cobbles, loose (recent alluvium)		
										grades to stiff		
	25		43		25		50		GM	Grayish brown SILTY GRAVEL with sand and clay, medium dense (recent alluvium)		
										grades to medium stiff		

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	367	816

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring
Other Tests		Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)	
											Description	
LL=54 PI=18 TV=0.2		51	74			12	4.3			MH	Orange-brown with black mottling CLAYEY SILT, with rounded rock fragments, stiff	
				100								
		54		100		16	2.8	115				
											grades to medium stiff	
		57		100		7	1.0	120				
											grades to stiff	
		60		100		13	1.5	125				
											grades to very stiff	
		48		100		19		130				
				85				135				
		58				14	1.5	140			grades to orange-brown, stiff	
		63	63								Boring terminated at 141.5 feet	
								145				
								150				
								155				
								160				
								165				
Date Started:		February 5, 2002				Water Level: ∇		9.5 ft. 2/5/02 1115 HRS				
Date Completed:		February 7, 2002						9.5 ft. 2/13/02 0715 HRS				
Logged By:		S. Latronic				Drill Rig:		CME-75				
Total Depth:		141.5 feet				Drilling Method:		10" Hollow-Stem Auger & PQ Coring				
Work Order:		4850-00(B)				Driving Energy:		140 lb. wt., 30 in. drop				

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring
Other Tests		Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 17 *	
												Description
LL=72 PI=36 TV=0.3										MH		Brown CLAYEY SILT with traces of gravel, medium stiff, damp (fill)
		33	57			8	3.5	5				grades to moist
		40				6						
		64	62			4	0.5	10		MH		Brown CLAYEY SILT with traces of roots, soft, moist (recent alluvium)
		58	65					15		OL		Dark gray ORGANIC CLAYEY SILT with sand, soft (recent alluvium)
				85								
		51	72			3	0.3	20		OH		Dark gray ORGANIC SILTY CLAY, soft (recent alluvium)
				0						OL		Dark gray ORGANIC CLAYEY SILT with sand, soft (recent alluvium)
								25				grades to soft to medium stiff
TV=0.1		63	65					30				
				0								
												grades with shell fragments
				0				35				grades to very soft
						2	0.3					
		31	82					40				grades to soft to medium stiff
				85								
		53	71			13	3.0	45		SM		Dark gray SILTY SAND with gravel, loose to medium dense (recent alluvium)
				100						MH		Gray CLAYEY SILT with gravel, stiff (recent alluvium)
												grades with boulders
TV=1.1		50	73			9	1.5	50				grades with sand, medium stiff to stiff
				100								
								55				
Date Started:		February 7, 2002				Water Level: ∇		10.5 ft. 2/7/02 1500 HRS				
Date Completed:		February 12, 2002						10.2 ft. 2/13/02 0716 HRS				
Logged By:		S. Latronic				Drill Rig:		CME-75				
Total Depth:		161.5 feet				Drilling Method:		10" Hollow-Stem Auger & PQ Coring				
Work Order:		4850-00(B)				Driving Energy:		140 lb. wt., 30 in. drop				

ORIGINAL PLAN	SURVEY PLATTED BY	DATE
NOTE BOOK	DRAWN BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	
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HIGHWAYS DIVISION

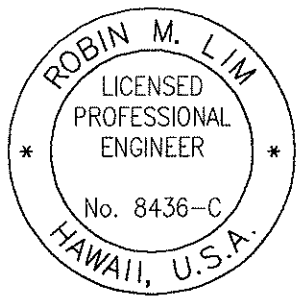
BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003
SHEET No. AG2.9 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	368	816

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring		
Geotechnical Engineering														6
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)		USCS	(Continued from previous plate)				
										Description				
LL=55 PI=20	54	69	64		8	1.3			MH	grades to medium stiff				
							60			Orange-brown with black mottling CLAYEY SILT with sand, medium stiff (old alluvium)				
	65		100		5					grades with weathered rounded rock fragments				
	53	70	88		20	2.5	65			grades to very stiff				
	61		100		6		70			grades to medium stiff				
	59	67	100		14	2.8	75			grades to stiff				
	61		100		7		80			grades to medium stiff				
	59	66	100		13		85			grades to stiff				
	59		50		11		90							
TV=1.0	53	69	100		27	1.8	95			grades to very stiff				
LL=59 PI=22	56		91		13		100			grades to stiff				
	56	71	100		42	4.0	105			grades with extremely weathered basalt rock fragments				
							110							
Date Started: February 7, 2002										Water Level: ∇ 10.5 ft. 2/7/02 1500 HRS				
Date Completed: February 12, 2002										10.2 ft. 2/13/02 0716 HRS				
Logged By: S. Latronic										Drill Rig: CME-75				
Total Depth: 161.5 feet										Drilling Method: 10" Hollow-Stem Auger & PQ Coring				
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop				

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 6	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)			
										Description			
TV=1.0	57		50		9				MH	Orange-brown with black mottling CLAYEY SILT with extremely weathered basaltic rock fragments, stiff			
	57	68			29	2.5	115			grades to very stiff			
			100										
TV=1.0	53				23	3.0	120						
			100										
	54 57	68			21	3.3	125						
TV=1.1													
	23				18	1.5	130						
			100										
LL=63 PI=23	58	67			18	1.3	135			grades to stiff to very stiff			
			100			2.5							
	54				16	1.0	140			grades with weathered rounded rock fragments			
			100										
	37				82		145			Brownish gray with orange mottling BASALT, severely fractured, extremely to highly weathered, soft (basalt formation)			
			100	30									
	38				68		150						
			33										
	51				15		155						
			100										
	42				64		160						
										Boring terminated at 161.5 feet			



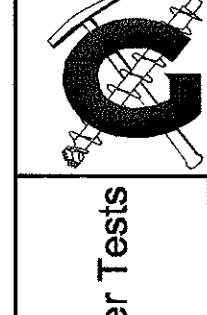
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

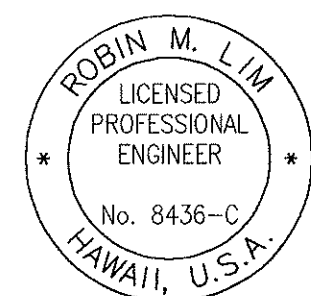
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	369	816

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 7					
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 17 *	
Description											
TV=0.3 TV=0.1	37	75			16	4.0	5		MH	Brown CLAYEY SILT, stiff, moist (fill)	
	39				8	1.5					grades with gravel, medium stiff
	24	95			18	4.3	10		GM	Brown SILTY ROUNDED GRAVEL with sand, medium dense, wet (recent alluvium)	
									SM	Brown SILTY FINE SAND, loose (recent alluvium)	
	65	61			3	0.5	15		MH	Brownish gray CLAYEY SILT, soft (recent alluvium)	
	73		15			0.5			OL	Dark gray ORGANIC CLAYEY SILT with sand, soft (recent alluvium)	
	53	65				1.3	20				
			100								
	66	57				1.3	25				
	93	49				0.8	30				grades to very soft
TV=0.4	51		83			1.3					
	94	47				2.8	35			grades to soft	
			0								
	84	50			3	0.5	40			grades to very soft to soft	
			0								
	TV=0.4	87	46			3	0.5	45			
				0							
	TV=0.3	111	41			8	0.5	50			grades to medium stiff
				71							
							55	SM			

Date Started: February 13, 2002
Date Completed: February 14, 2002
Logged By: S. Latronic
Total Depth: 150 feet
Work Order: 4850-00(B)

Water Level: 11.3 ft. 2/13/02 1010 HRS
10 ft. 2/21/02 0745 HRS
Drill Rig: CME-75
Drilling Method: 10" Hollow-Stem Auger & PQ Coring
Driving Energy: 140 lb. wt., 30 in. drop

	GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 7										
	Other Tests TV=0.2	Moisture Content (%) 133	Dry Unit Weight (pcf) 41	Core Recovery (%) 71	RQD (%) 100	Penetration Resistance (blows/foot) 2	Pocket Pen. (tsf) 4.3	Depth (feet) 0 10 20 30 40 50 60 70 80 90 100 110	Sample Graphic 	USCS SM GP ML	(Continued from previous plate) Description Dark gray SILTY FINE SAND, very loose (recent alluvium) Gray BOULDERS, COBBLES AND GRAVEL with sand, very dense (conglomerate) grades to moderately well cemented conglomerate Brownish gray SANDY SILT with rounded rock fragments, hard (old alluvium) grades to medium stiff to stiff grades to stiff grades to very stiff Brownish gray vesicular BASALT, severely fractured, extremely weathered, soft to friable (basalt formation)(breaks down to sandy gravel with silt) grades to grayish brown basalt, moderately fractured, highly weathered, soft grades to brownish gray vugular basalt, moderately fractured, moderately weathered, medium hard grades to massive, slightly weathered, hard						
UC=2352	40	90	95	63	36	11	15	20	52	68	0	70	100	105	110	110	110
Date Started: February 13, 2002		Date Completed: February 14, 2002		Logged By: S. Latronic		Total Depth: 150 feet		Work Order: 4850-00(B)		Water Level: 11.3 ft. 2/13/02 1010 HRS 10 ft. 2/21/02 0745 HRS		Drill Rig: CME-75		Driving Method: 10" Hollow-Stem Auger & PQ Coring		Driving Energy: 140 lb. wt., 30 in. drop	



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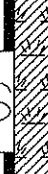
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HIGHWAYS DIVISION

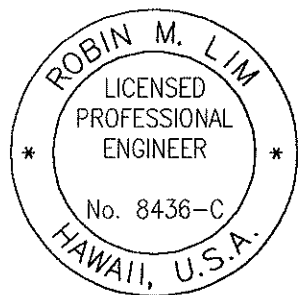
BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003
SHEET No. AG2.11 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	370	816

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 7	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)
										Description
UC=843			100	100						Gray vesicular BASALT, massive, unweathered very hard
			100	100			115			
			100	100			120			
			100	95			125			grades to slightly weathered
			100	80			130			
			100	100			135			
UC=1876			100	95			140			grades to brownish gray vugular basalt, slightly fractured, slightly weathered, hard to very hard
			100	100			145			
							150			Boring terminated at 150 feet
							155			
							160			
							165			
Date Started: February 13, 2002										Water Level: ∇ 11.3 ft. 2/13/02 1010 HRS 10 ft. 2/21/02 0745 HRS
Date Completed: February 14, 2002										
Logged By: S. Latronic										Drill Rig: CME-75
Total Depth: 150 feet										Drilling Method: 10" Hollow-Stem Auger & PQ Coring
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII								Log of Boring 8	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 17 *	
										Description	
	31	78			39	3.5	5		MH	Brown CLAYEY SILT, very stiff, moist (fill)	
	40				12	1.0	grades to stiff				
	35	83			14	4.3	10				
TV=0.2	70	56			7	0.3	15		GW	Grayish brown SANDY ROUNDED GRAVEL with silt, medium dense, wet (recent alluvium)	
							OL			Dark gray ORGANIC SANDY SILT with traces of clay, soft (recent alluvium)	
			100				OH			Dark gray ORGANIC CLAYEY SILT with traces of sand, soft to medium stiff (recent alluvium)	
LL=73 PI=37	65	60				0.3	20		OH	Dark gray ORGANIC CLAYEY SILT with sand, soft (recent alluvium)	
			50								
	TV=0.2	64	59				0.5			25	
			0				30			grades to very soft	
			17							grades with shell fragments and some cemented siltstone	
	TV=0.5	81	51				0.5			35	
	73	58			2	1.0	40			grades to soft to very soft	
			100								
	TV=0.1	118	41				0.5			45	
			50							grades to medium stiff	
										grades with seams of silty fine sand	
	70	60			3	0.25	50				
			0				55			grades to soft to very soft	
Date Started: February 19, 2002										Water Level: 11.5 ft. 2/19/02 1325 HRS	
Date Completed: February 22, 2002										8.5 ft. 2/21/02 1020 HRS	
Logged By: S. Latronic										Drill Rig: CME-75	
Total Depth: 140 feet										Drilling Method: Hollow-Stem Auger & PQ Coring	
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop	



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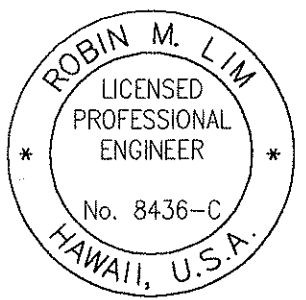
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.12 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	371	816

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate) Description		
TV=0.2	74	53	0		19	1.0			GW	Gray rounded SANDY GRAVEL with silt, medium dense (recent alluvium)		
	62	64	50		59	0.8	60			grades with cobbles, dense		
									SM	Gray SILTY SAND, loose (recent alluvium)		
UC=438	65		33		15		65		GP	Gray BOULDERS, COBBLES AND GRAVEL with sand and silt, very dense (conglomerate)		
			85		50/.1' Ref.		70					
	45		84	42	59		75			Brownish gray vesicular BASALT, moderately fractured, extremely weathered, soft (basalt formation)		
UC=265			100	60			80			grades to vugular, highly weathered, medium hard		
										grades to vesicular, highly fractured, extremely weathered, soft		
	19		100	100	50/.4' Ref.		85			grades to slightly fractured, moderately weathered, hard		
			100	95			90			grades to moderately fractured		
				100			95			grades to highly weathered, medium hard to hard		
			100	100			100			grades to gray moderately weathered, hard		
			100	100			105			grades to vugular, massive, slightly weathered, very hard		
							110					
Date Started: February 19, 2002					Water Level: 11.5 ft. 2/19/02 1325 HRS							
Date Completed: February 22, 2002					8.5 ft. 2/21/02 1020 HRS							
Logged By: S. Latronic					Drill Rig: CME-75							
Total Depth: 140 feet					Drilling Method: Hollow-Stem Auger & PQ Coring							
Work Order: 4850-00(B)					Driving Energy: 140 lb. wt., 30 in. drop							

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate) Description		
UC=565			100	100						Gray vugular BASALT, slightly fractured, moderately weathered, hard		
							115			grades to slightly weathered		
			100	100			120			grades to vesicular, slightly fractured to massive, hard to very hard		
UC=836 UC=1089			100	60			125			grades to brownish gray, moderately fractured, moderately to highly weathered, medium hard		
			100	100			130			grades to gray, slightly fractured to massive, slightly weathered to unweathered, hard		
			100	100			135			grades to massive, unweathered, very hard		
							140			Boring terminated at 140 feet		
							145					
							150					
							155					
							160					
							165					
Date Started: February 19, 2002					Water Level: 11.5 ft. 2/19/02 1325 HRS							
Date Completed: February 22, 2002					8.5 ft. 2/21/02 1020 HRS							
Logged By: S. Latronic					Drill Rig: CME-75							
Total Depth: 140 feet					Drilling Method: Hollow-Stem Auger & PQ Coring							
Work Order: 4850-00(B)					Driving Energy: 140 lb. wt., 30 in. drop							



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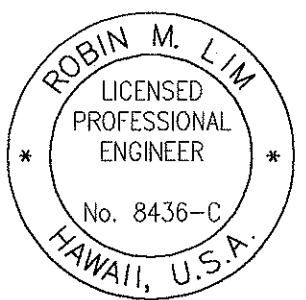
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.13 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	372	816

		GEOLABS, INC.				INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 9	
Geotechnical Engineering												
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 18 *		
										Description		
	24	80			50/4' Ref.	4.3	5		MH	Reddish brown CLAYEY SILT with sand and traces of gravel, very hard, damp (fill)		
LL=78 PI=38	52				7		10		MH	Brown CLAYEY SILT with traces of gravel, medium stiff (recent alluvium)		
TV=0.4	68	54			11	1.0	15		OH	Dark gray ORGANIC SILTY CLAY with roots, stiff (recent alluvium)		
LL=66 PI=31	66				2		20			grades to very soft		
					Push/ 2.0'		25					
	73				Push/ 2.0'		30					
TV=0.1	71				3	0.0				grades to dark gray to black with sand and shell fragments		
TV=0.4	63	60			Push/ 2.0'	0.5	35			grades to gray with shell fragments		
					Push/ 2.0'		40					
LL=93 PI=53	75				3	0.0						
TV=0.4	70	55			10	1.0	45			grades to medium stiff to stiff		
			71							grades with roots and leaves		
					50/1' Ref.		50		GP	Gray BOULDERS, COBBLES AND GRAVEL with sand and silt, very dense (conglomerate)		
			91				55					
Date Started: January 14, 2002											Water Level: ∇ 9.2 ft. 1/14/02 0940 HRS	
Date Completed: January 17, 2002											Drill Rig: CME-75	
Logged By: K. Gronseth											Drilling Method: 4" Solid-Stem Auger & PQ Coring	
Total Depth: 115 feet											Driving Energy: 140 lb. wt., 30 in. drop	
Work Order: 4850-00(B)												

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 9		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)	
										Description	
UC=2179	50		96	24	50/.3' Ref.					Brownish gray vesicular BASALT, closely fractured, slightly weathered, very hard (basalt formation)	
	22		96	52	50/.2' Ref.		60		grades to gray, moderately fractured		
			100	72	30/.0' Ref.		65		grades to slightly fractured		
			37	18	30/.1' Ref.		70				
	78				11		75		Reddish gray CLINKER, breaks down to sandy gravel with clay, closely fractured, extremely weathered, soft (basalt formation)		
			100	36					grades to moderately fractured, highly weathered		
	19		86	78	50/.3' Ref.		80		Dark gray vesicular BASALT, moderately to slightly fractured, slightly weathered, very hard (basalt formation)		
			100	63			85		grades to gray, moderately fractured, moderately weathered, hard to very hard		
			83	76	50/.1'		90		grades to slightly fractured		
	28		100	89	50/.4'		95		grades to slightly fractured to massive, slightly weathered to unweathered		
UC=546			97	92			100	grades to brownish gray, slightly fractured, moderately weathered, hard			
			100	90			105	Reddish gray CLINKER, moderately fractured, highly weathered, medium hard to hard (basalt formation)			
							110				
Date Started: January 14, 2002									Water Level: ∇ 9.2 ft. 1/14/02 0940 HRS		
Date Completed: January 17, 2002											
Logged By: K. Gronseth									Drill Rig: CME-75		
Total Depth: 115 feet									Drilling Method: 4" Solid-Stem Auger & PQ Coring		
Work Order: 4850-00(B)									Driving Energy: 140 lb. wt., 30 in. drop		



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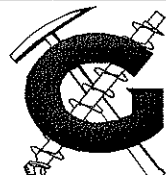
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HIGHWAYS DIVISION

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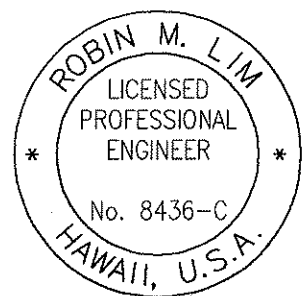
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.14 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	373	816

		GEOLABS, INC. Geotechnical Engineering						INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 9	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)			
										Description			
UC=1572			80	68			115			Reddish gray vugular BASALT, moderately fractured, moderately weathered, hard (basalt formation)			
										Boring terminated at 115 feet			
							120						
							125						
							130						
							135						
							140						
							145						
							150						
							155						
							160						
							165						
Date Started: January 14, 2002							Water Level: ∇ 9.2 ft. 1/14/02 0940 HRS						
Date Completed: January 17, 2002													
Logged By: K. Gronseth							Drill Rig: CME-75						
Total Depth: 115 feet							Drilling Method: 4" Solid-Stem Auger & PQ Coring						
Work Order: 4850-00(B)							Driving Energy: 140 lb. wt., 30 in. drop						

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 10		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 19 *	
										Description	
TV=1.1 LL=57 PI=26	36	83			13	2.0	5		MH	Brown CLAYEY SILT with traces of cobbles and gravel, medium stiff, very moist (fill)	
	41				3				MH	grades with multi-color mottling, stiff Dark reddish brown CLAYEY SILT, very soft, very moist (recent alluvium)	
			36				10				
		102	42		7	0.3				CH	Grayish brown with multi-color mottling SILTY CLAY, medium stiff (recent alluvium)
TV=0.2 TV=0.1			40				15			grades with some organic debris	
	85			4					CL	Gray SILTY CLAY with traces of organic debris, soft (recent alluvium)	
			38				20			grades to very soft	
	58	63			3	0.5			OH	Dark gray ORGANIC SILTY CLAY with some fine sand and organic debris, very soft (recent alluvium)	
	60	65				0.0					
							25			grades to soft	
	68		24						ML	Dark gray SANDY SILT with some highly weathered basalt gravel, soft to medium stiff (recent alluvium)	
					5		30				
	43	76			32	3.8			GC	Grayish brown CLAYEY GRAVEL with seams of weathered subrounded gravel and sand, loose to medium dense (conglomerate)	
			95				35				
	61				10						
			43				40			Brownish gray vesicular BASALT, severely fractured, extremely to highly weathered, soft (basalt formation)	
	65				17						
			45	0			45				
	43	84	75		45/3' Ref.					grades to gray, moderately fractured, moderately weathered, medium hard to hard	
			97	97			50				
							55				
Date Started: January 21, 2002									Water Level: ∇		
Date Completed: January 28, 2002									Not Measured**		
Logged By: E. Shinsato									Drill Rig: CME-55		
Total Depth: 111.5 feet									Drilling Method: 10" Hollow-Stem Auger & PQ Coring		
Work Order: 4850-00(B)									Driving Energy: 140 lb. wt., 30 in. drop		



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HIGHWAYS DIVISION

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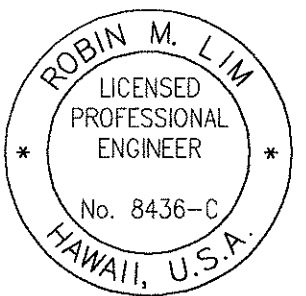
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.15 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	374	816

		GEOLABS, INC.							INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 10	
Geotechnical Engineering															
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)					
										Description					
UC=293			100	97						Reddish brown CLINKER, slightly fractured, highly weathered, medium hard (basalt formation)					
			87	82			60			Gray with multi-color seams vesicular BASALT, moderately fractured, slightly weathered, hard (basalt formation) grades to vugular					
UC=2331			92	87			65								
			33	8			70								
UC=286	55	24			51		75			grades to brownish gray, severely fractured, highly weathered					
			100							Orange-grayish brown CLINKER with clay seams, severely fractured, extremely weathered, soft to medium hard (basalt formation)					
UC=1071			100	95	40/.2' Ref.		80			grades to grayish brown, moderately fractured, highly weathered, medium hard					
			100	100			85								
			100	100			90			Brownish gray vesicular BASALT, moderately to closely fractured, moderately weathered, hard (basalt formation) grades to gray, moderately to slightly fractured, slightly weathered					
			37	20			95			grades to severely fractured					
			100	100	25/.0' Ref.		100			grades to gray vugular, moderately to slightly fractured, very hard					
			100	100			105			grades to vesicular					
										110					
Date Started: January 21, 2002										Water Level: ∇ Not Measured**					
Date Completed: January 28, 2002															
Logged By: E. Shinsato										Drill Rig: CME-55					
Total Depth: 111.5 feet										Drilling Method: 10" Hollow-Stem Auger & PQ Coring					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering						INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 10	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)			
										Description			
UC=162										grades to highly weathered, medium hard			
										Boring terminated at 111.5 feet			
										* **Due to Rotary Wash Drilling Method			
							115						
							120						
							125						
							130						
							135						
							140						
							145						
							150						
							155						
							160						
							165						
	Date Started: January 21, 2002									Water Level: ∅ Not Measured**			
Date Completed: January 28, 2002													
Logged By: E. Shinsato									Drill Rig: CME-55				
Total Depth: 111.5 feet									Drilling Method: 10" Hollow-Stem Auger & PQ Coring				
Work Order: 4850-00(B)									Driving Energy: 140 lb. wt., 30 in. drop				



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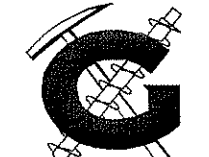
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HIGHWAYS DIVISION

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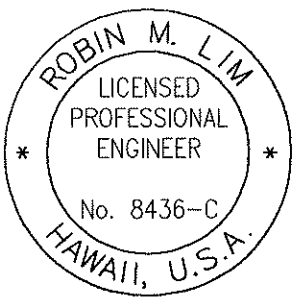
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.16 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	375	816

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 11		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 27 *	
										Description	
LL=64 PI=28 TV=0.75	26 32 45 59 53 41 44	84 70 68 0 100 83 88 100			45 52 47/.5' +30/.2' Ref. 13 11 10 47 25/.0' Ref. 33/.5' +50/.4' Ref.	4.3 4.3 0.5 1.0 1.5	5 10 15 20 25 30 35 40 45 50 55		CL	4-inch CONCRETE	
										Brown SILTY CLAY with some gravel and sand, stiff, moist (fill)	
									CH	Brown SILTY CLAY with some sand, hard, moist (fill)	
									ML	Brown SANDY SILT with some gravel, very hard, very moist (recent alluvium)	
									MH	Grayish brown with orange mottling CLAYEY SILT with sand and gravel, stiff (recent alluvium)	
										grades to medium stiff to stiff	
										grades to dark brown, stiff	
UC=460									GP	Brownish gray BOULDERS, COBBLES AND GRAVEL, very dense (conglomerate)	
										Grayish brown vesicular BASALT, severely fractured, highly to extremely weathered, medium hard (basalt formation)	
										grades to moderately fractured, highly to moderately weathered	
										Date Started: January 28, 2002	
										Date Completed: January 30, 2002	
										Logged By: E. Shinsato	
										Total Depth: 100.5 feet	
										Work Order: 4850-00(B)	
										Water Level: ∇ 11.8 ft. 1/28/02 1610 HRS 9.8 ft. 1/30/02 1342 HRS	
										Drill Rig: CME-75	
										Drilling Method: 10" Hollow-Stem Auger & PQ Coring	
										Driving Energy: 140 lb. wt., 30 in. drop	

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 11		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)	Description
UC=567	49			100	100						grades to slightly fractured, highly weathered
											grades to severely fractured, hard
				92	78				60		grades to dark gray, slightly fractured, slightly weathered
				60	43	20/.0' Ref.			65		Reddish grayish brown CLINKER, severely to moderately fractured, highly weathered, soft (basalt formation)



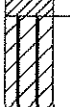
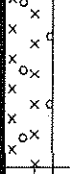
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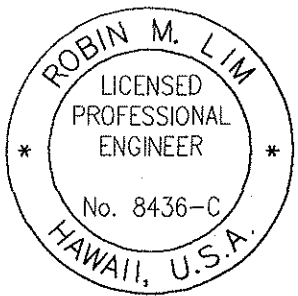
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	376	816

		GEOLABS, INC.						INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII						Log of Boring 12																								
Geotechnical Engineering																																						
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 28 *																												
										Description																												
UC=205	17				10/.0' Ref.		5		GM CH	4-inch ASPHALTIC CONCRETE																												
										Grayish brown SILTY GRAVEL, dense, damp (base course)																												
										Brown SILTY CLAY, very stiff to hard, damp (fill)																												
										UC=156 UC=148	37	55	65	0	51	10		MH	Reddish brown CLAYEY SILT, stiff, moist																			
																			Grayish brown BASALT, severely fractured, extremely weathered, soft (basalt formation)																			
																			UC=474	52		100	100	46	15			Reddish grayish brown CLINKER, severely fractured, extremely to highly weathered, soft (basalt formation)										
																												Brown vesicular BASALT, severely fractured, highly weathered, soft (basalt formation)										
																												grades to vugular, moderately fractured, soft to medium hard										
																															100	100		25			Gray CLINKER, severely fractured, highly weathered, soft (basalt formation)	
																																					Brownish gray vesicular BASALT, severely to moderately fractured, moderately weathered, medium hard (basalt formation)	
grades to moderately fractured																																						
					35			grades to severely to moderately fractured																														
								Reddish brown CLINKER, highly weathered, soft (basalt formation)																														
								Grayish brown vugular BASALT, moderately fractured, highly weathered, medium hard (basalt formation)																														
													45			grades to slightly weathered, hard																						
																grades to slightly fractured, very hard																						
																Reddish brown CLINKER, highly weathered, soft (basalt formation)																						
																					50			Brownish gray vesicular BASALT, slightly fractured, highly to moderately weathered, medium hard (basalt formation)														
																								grades to moderately to slightly weathered, hard														
Date Started: January 30, 2002										Water Level: ▽ Not Measured**																												
Date Completed: February 4, 2002																																						
Logged By: S. Latronic										Drill Rig: CME-75																												
Total Depth: 76 feet										Drilling Method: 10" Hollow-Stem Auger & PQ Coring																												
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop																												

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII						Log of Boring 12			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate) Description	
			100	100							Brownish gray vesicular BASALT, slightly fractured to massive, slightly weathered to unweathered, very hard
			100	100				60			grades to slightly fractured
			100	100				65			grades to massive
			100	100				70			grades to reddish gray, slightly fractured, slightly to moderately weathered, hard
						75				Boring terminated at 76 feet	
						80				* **Due to Rotary Wash Drilling Method	
						85					
						90					
						95					
						100					
					105						
110											
Date Started: January 30, 2002											
Date Completed: February 4, 2002											
Logged By: S. Latronic											
Total Depth: 76 feet											
Work Order: 4850-00(B)											
Water Level: ∇ Not Measured**											
Drill Rig: CME-75											
Drilling Method: 10" Hollow-Stem Auger & PQ Coring											
Driving Energy: 140 lb. wt., 30 in. drop											

SURVEY PLOTTED BY: _____	DATE: _____
DRAWN BY: _____	DESIGNED BY: _____
TRACED BY: _____	CHECKED BY: _____
NOTE BOOK No. _____	



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HIGHWAYS DIVISION

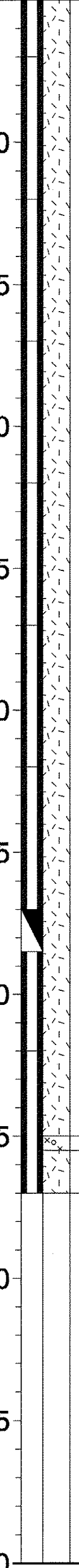
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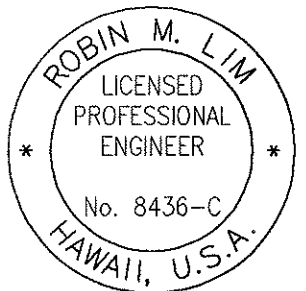
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.18 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	377	816

GEOLABS, INC. Geotechnical Engineering							INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 13	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 75 *		
										Description		
UC=2290	25	100	80	55/.5' Ref.			5		MH	Brown CLAYEY SILT, medium stiff, friable (residual)		
							Gray dense with some vugular BASALT, slightly fractured, slightly weathered, very hard (basalt formation)					
UC=2524		95	60				10			grades to brownish gray vesicular, moderately fractured, moderately weathered, hard		
							grades to gray, slightly fractured					
UC=2015		97	80				15			grades to vugular, moderately fractured, slightly weathered		
							grades to dense					
UC=2144		97	83				20			grades to vugular, slightly fractured, very hard		
							grades to dense, massive					
UC=1352 UC=1602		100	75				25			grades to vugular		
UC=1598 UC=1074		100	100				30					
UC=2053		88	52				35					
		100	78				40			grades to brownish gray vesicular, moderately fractured, moderately to highly weathered, medium hard		
							grades to gray, slightly fractured, slightly weathered, hard					
		100	100				45					
		100	100				50					
		100	100				55					
Date Started: May 3, 2002									Water Level: ∇ 64 ft. 5/6/02 1640 HRS			
Date Completed: May 6, 2002												
Logged By: S. Latronic									Drill Rig: DIEDRICH D-25			
Total Depth: 97 feet									Drilling Method: 4" Auger & 4" Casing			
Work Order: 4850-00(B)									Driving Energy: 140 lb. wt., 30 in. drop			

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 13							
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)									
										Description									
UC=363			95	80			60			Gray vesicular BASALT, slightly fractured, slightly weathered, hard (basalt formation)									
			100	58			grades to brownish gray, moderately to slightly fractured, slightly to moderately weathered, medium hard to hard												
			82	28			65			grades to severely fractured									
			90	38															
UC=938			63	22			75			grades to brown and gray, severely fractured, extremely weathered, soft									
			87	70			grades to gray vugular, slightly fractured, slightly weathered, very hard												
	73			27			85			grades to brown and gray, severely fractured, highly weathered, soft to medium hard									
							100			88	grades to gray vugular, slightly fractured, slightly weathered, very hard								
UC=2775			100	90			90												
							95			CLINKER									
											Gray vesicular BASALT, slightly fractured, slightly weathered, hard								
							100			Boring terminated at 97 feet									
							105												
Date Started: May 3, 2002										Water Level: ∇ 64 ft. 5/6/02 1640 HRS									
Date Completed: May 6, 2002																			
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25									
Total Depth: 97 feet										Drilling Method: 4" Auger & 4" Casing									
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop									



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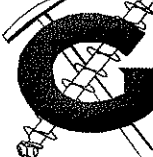
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

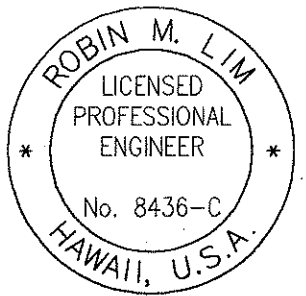
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.19 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	378	816

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 101	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 101 *			
										Description			
	21	85			40	4.3			MH	Reddish brown CLAYEY SILT, very stiff to hard, damp (fill)			
	23				15								
	24	98			69	4.3	5						
	26				82		10						
	39	79			92	4.3	15		MH	Reddish brown CLAYEY SILT with sand and rock fragments, very stiff to hard, moist (residual)			
	29				42		20						
	31	76			106	4.3	25			Brownish gray vesicular BASALT, moderately fractured, highly weathered, soft to medium hard (basalt formation)			
	29				103		30			Boring terminated at 31.5 feet			
							35						
							40						
							45						
							50						
							55						
Date Started: April 18, 2002								Water Level: ∇ Not Encountered					
Date Completed: April 18, 2002													
Logged By: S. Latronic								Drill Rig: CME-75					
Total Depth: 31.5 feet								Drilling Method: 5" Auger					
Work Order: 4850-00(B)								Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 102	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 115 *			
										Description			
	21	82			86	4.3			MH	Reddish brown CLAYEY SILT, stiff, dry (fill)			
	21				65				MH	Reddish brown CLAYEY SILT, hard, damp (residual)			
	20	95			39/.5' +50/.2'	4.3	5						
	25				34		10						
	28				72/.5'		15			Gray vesicular BASALT, moderately fractured, slightly weathered, hard (basalt formation)			
			100	50						Brownish gray BASALT, severely fractured, highly weathered, soft (basalt formation)			
			100	0			20						
			100	50			25			Brownish gray CLINKER, severely fractured, slightly to moderately weathered, medium hard to hard (basalt formation)			
			100	60			30						
			100	100			35			Gray dense BASALT, closely fractured, slightly weathered, very hard (basalt formation)			
			100	100			40			grades to moderately fractured			
			95	80			45			grades to vugular			
							50			Reddish brown CLINKER, severely fractured, slightly weathered, hard (basalt formation)			
										Boring terminated at 50 feet			
							55						
Date Started: April 18, 2002										Water Level: ∇ Not Encountered			
Date Completed: April 18, 2002													
Logged By: S. Latronic										Drill Rig: CME-75			
Total Depth: 50 feet										Drilling Method: 5" Auger & PQ Coring			
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop			



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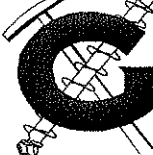
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
E.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

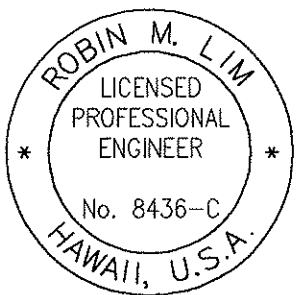
SHEET No. AG2.20 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	379	816

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 103	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 118 *			
										Description			
	28				12				GW	3-inch ASPHALTIC CONCRETE			
	23	83			21	4.3	5		MH	Brown SANDY GRAVEL with silt and clay, medium dense, damp (base course) Reddish brown CLAYEY SILT with sand and gravel, stiff, damp (fill)			
	24				56		10		ML	Yellowish brown SANDY SILT with gravel, hard, damp (residual)			
	36	80			52	4.3	15			grades with multi-color mottling with clay			
	28				50/ 5'		20			Gray with multi-color mottling BASALT, severely fractured, highly weathered, medium hard (breaks down to sandy gravel)(basalt formation)			
	36	79			60/ 5'	4.3	25						
	20				93		30			grades to brown with multi-color mottling			
	14				116		35			grades to grayish brown			
			100	60			40			grades to reddish brown to gray, moderately fractured, slightly weathered, hard			
							45			Boring terminated at 45 feet			
							50						
							55						
Date Started: March 18, 2002									Water Level: ∇ Not Encountered				
Date Completed: March 18, 2002													
Logged By: L. Wang									Drill Rig: CME-75				
Total Depth: 45 feet									Drilling Method: 4" Auger, 6" H. S. Auger & PQ Coring				
Work Order: 4850-00(B)									Driving Energy: 140 lb. wt., 30 in. drop				

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII						Log of Boring 104				
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 120 *		
											Description	
	19	110			35	>4.5			GW	3-inch ASPHALTIC CONCRETE		
									MH	Grayish brown SANDY GRAVEL with silt, medium dense, damp (base course)		
	25		0		32		5			Reddish brown CLAYEY SILT, very stiff to hard, damp (fill)		
	30		0		30		10			grades with dark gray mottling with sand, slightly moist		
	30				51		15		SM	Gray SILTY SAND with gravel, dense, moist (residual)		
			100	0			20			Brownish gray BASALT, severely fractured, extremely to highly weathered, medium hard to soft (saprolite)		
			100	0			25			grades to moderately to slightly fractured, highly weathered, soft		
			75	0			30			grades to severely fractured, highly to extremely weathered, soft to medium hard		
			90	85			35			Gray and brown dense BASALT, moderately to closely fractured, moderately weathered, medium hard (basalt formation)		
			100	20			40			grades to gray, moderately fractured, slightly weathered, hard		
			100	20			45			grades to slightly fractured		
			90	45			50			grades to slightly fractured		
			97	80			55			grades to slightly fractured		
Date Started: March 19, 2020											Water Level: ∞ Not Encountered	
Date Completed: March 20, 2002												
Logged By: L. Wang											Drill Rig: CME-75	
Total Depth: 65 feet											Drilling Method: 10" Hollow-Stem Auger & PQ Coring	
Work Order: 4850-00(B)											Driving Energy: 140 lb. wt., 30 in. drop	

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



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

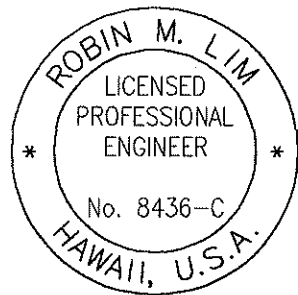
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.21 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	380	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 104	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)					
										Description					
			100	99						Gray dense BASALT, massive, slightly weathered, hard (basalt formation)					
			100	97			60								
							65			Boring terminated at 65 feet					
							70								
							75								
							80								
							85								
							90								
							95								
							100								
							105								
							110								
Date Started: March 19, 2020				Water Level: ∇ Not Encountered											
Date Completed: March 20, 2002															
Logged By: L. Wang				Drill Rig: CME-75											
Total Depth: 65 feet				Drilling Method: 10" Hollow-Stem Auger & PQ Coring											
Work Order: 4850-00(B)				Driving Energy: 140 lb. wt., 30 in. drop											

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 105	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 107 *					
										Description					
	25	79			54/.5' +50/.2'				MH	Reddish brown CLAYEY SILT, very stiff to hard, damp (residual)					
	22				33		5			grades with rock fragments					
										Tannish gray BASALT, highly weathered, soft to medium hard (basalt formation)					
	22		77	36	95/.5'		10			grades to gray vesicular, slightly fractured, slightly weathered, very hard					
							15			grades to brownish gray, closely fractured, moderately weathered, medium hard to hard					
			100	27			20			grades to gray, moderately fractured, slightly weathered, hard					
				48	10		25			Gray and brown cemented CLINKER, dense (basalt formation)					
				60	18		30			grades to red and gray, closely fractured, moderately weathered, medium hard					
				95	50		35			grades to grayish red, moderately fractured					
							40			grades to hard					
							45			Gray dense BASALT, slightly fractured, slightly weathered, very hard (basalt formation)					
							50			Boring terminated at 41.5 feet					
							55								
Date Started: May 15, 2002				Water Level: ∇ Not Encountered											
Date Completed: May 15, 2002															
Logged By: S. Latronic				Drill Rig: DIEDRICH D-25											
Total Depth: 41.5 feet				Drilling Method: 4" Auger & HQ Coring											
Work Order: 4850-00(B)				Driving Energy: 140 lb. wt., 30 in. drop											



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HIGHWAYS DIVISION

BORING LOGS

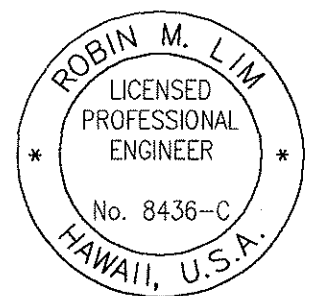
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.22 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	381	816

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII						Log of Boring 106			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 82 *	
										Description	
	42		3	0	95/.5' Ref.		5			Brownish gray BASALT, closely to moderately weathered, highly to moderately weathered, medium hard (basalt formation)	
		100	56	10		Gray and brown well cemented CLINKER, moderately fractured, moderately weathered, medium hard (basalt formation) grades to grayish red, slightly fractured, hard					
		100	80	15		grades to brownish gray, slightly weathered, very hard					
		95	85	20		Gray BASALT, dense, massive, slightly fractured, slightly weathered, very hard (basalt formation)					
		100	100	25							
		100	90	30			35			Boring terminated at 32 feet	
							40				
							45				
							50				
							55				
Date Started: May 14, 2002									Water Level: ∇ Not Encountered		
Date Completed: May 14, 2002											
Logged By: S. Latronic									Drill Rig: DIEDRICH D-25		
Total Depth: 32 feet									Drilling Method: 4" Auger & HQ Coring		
Work Order: 4850-00(B)									Driving Energy: 140 lb. wt., 30 in. drop		

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 107	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 39 *			
										Description			
TV=0.8	28	82			16	4.3			MH	Reddish brown CLAYEY SILT with gravel, stiff, damp (fill)			
	32	76	0		8	4.3	5			grades to medium stiff, slightly moist			
	31	89	0		15	1.5	10			grades to stiff			
	42	76			7	1.8	15			grades to medium stiff, moist			
	46	75	15										
	39	78	0		10	1.5	20		OH	Gray ORGANIC CLAY, medium stiff, moist (recent alluvium)			
	60	62	33		9	0.5	25		MH	Brown CLAYEY SILT with some rounded gravel, medium stiff (recent alluvium)			
	66	63				2.0	30		OH	Gray ORGANIC CLAY, soft to medium stiff (recent alluvium)			
	65	59	17										
	59	69	0			0.5	35			grades with roots			
		67		12	2.0	40			grades with roots				
					1.0								
		40		20/0' Ref.			45		GP	Gray BOULDERS, COBBLES AND GRAVEL in a matrix of brown clayey silt, very dense (conglomerate)			
24				39			50			grades to dense			
	100						55			grades to dense			
Date Started: February 25, 2002										Water Level: ∇ 21 ft. 2/27/02 1225 HRS			
Date Completed: February 26, 2002										21 ft. 2/28/02 0735 HRS			
Logged By: S. Latronic										Drill Rig: CME-75			
Total Depth: 90.5 feet										Drilling Method: 10" Hollow-Stem Auger & PQ Coring			
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop			



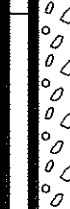
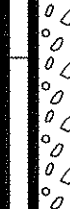
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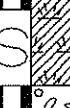
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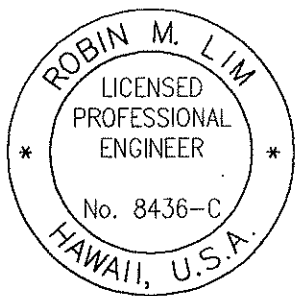
BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
E.A.L. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003
SHEET No. AG2.23 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	382	816

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 107	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)			
										Description			
	30		100		26/.5' +25/0' Ref.				GP	Gray Boulders, Cobbles, and Gravel in a matrix clayey silt, very dense (conglomerate)			
	30		100		54		60						
	39		100		25/.0' Ref.		65						
			100				70			grades to cemented			
			80				75						
			0				80						
	28		50		25/.0' Ref.		85			Brown vesicular BASALT, severely fractured, extremely weathered, friable (basalt formation)			
							90			Boring terminated at 90.5 feet			
							95						
							100						
							105						
							110						
Date Started: February 25, 2002							Water Level: ∇ 21 ft. 2/27/02 1225 HRS						
Date Completed: February 26, 2002							21 ft. 2/28/02 0735 HRS						
Logged By: S. Latronic							Drill Rig: CME-75						
Total Depth: 90.5 feet							Drilling Method: 10" Hollow-Stem Auger & PQ Coring						
Work Order: 4850-00(B)							Driving Energy: 140 lb. wt., 30 in. drop						

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 108	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 35 *
										Description
TV=0.8	24	88			24	4.5			MH	Reddish brown CLAYEY SILT with gravel, very stiff, damp (fill)
	35	73			15	1.9	5			grades to stiff, moist
	38	77			9	1.3	10			grades with sand and traces of gravel, medium stiff
	39	55			24	1.5	15			
TV=0.6			50							BOULDER
	50	76			6	1.8	20		SM	Brown and gray SILTY SAND with gravel, loose (fill)
			100							
	52 57	69 68			7	1.5	25		MH	Grayish brown CLAYEY SILT with sand, medium stiff (recent alluvium)
TV=0.5			100							
	41	67				0.8	30		OH	Gray ORGANIC CLAYEY SILT with sand and gravel, medium stiff (recent alluvium)
			50						GP	Gray BOULDERS, COBBLES AND GRAVEL, medium dense (recent alluvium)
	44				4		35		OH	Gray ORGANIC CLAYEY SILT with sand and gravel, very soft (recent alluvium)
			100							
	58	65			3	1.5	40			
			100							
	89	49			10	2.3	45			grades with sand seams, medium stiff to stiff
			100							grades with shell fragments
	87 99	49 44			7	2.4	50			grades to medium stiff
			100							
							55			
Date Started: February 27, 2002								Water Level: 18.5 ft. 3/1/02 0845 HRS		
Date Completed: February 28, 2002										
Logged By: S. Latronic								Drill Rig: CME-75		
Total Depth: 100.5 feet								Drilling Method: 10" Hollow-Stem Auger & PQ Coring		
Work Order: 4850-00(B)								Driving Energy: 140 lb. wt., 30 in. drop		



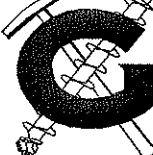
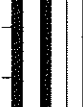
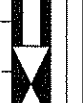
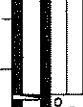
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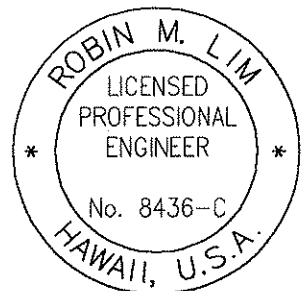
BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
E.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003
SHEET No. AG2.24 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	383	816

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 108	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)			
											Description		
	73	55				3.0			OH	Gray ORGANIC CLAYEY SILT with sand and shell fragments, medium stiff (recent alluvium)			
			100				60						
	105				6								
			100				65			BOULDER			
			60		25/.0' Ref.				OH	Gray ORGANIC CLAYEY SILT, medium stiff (recent alluvium)			
							70		SM	Gray SILTY SAND with gravel and cobbles, medium dense (recent alluvium)			
	29	95			34	4.5							
			33				75						
			73		25/.1' Ref.				GP	Gray BOULDERS, COBBLES AND GRAVEL with sand, very dense (conglomerate)			
							80			Grayish brown BASALT, severely fractured, highly to extremely weathered, friable (basalt formation)			
			100										
	41	81			23/.5' +25/.0' Ref.	2.5							
			100	0			85						
			100	100	25/.0' Ref.		90						
							95			grades to moderately fractured, highly weathered, medium hard			
			100	100			100			Boring terminated at 100.5 feet			
							105						
							110						
Date Started: February 27, 2002							Water Level: 18.5 ft. 3/1/02 0845 HRS						
Date Completed: February 28, 2002													
Logged By: S. Latronic							Drill Rig: CME-75						
Total Depth: 100.5 feet							Drilling Method: 10" Hollow-Stem Auger & PQ Coring						
Work Order: 4850-00(B)							Driving Energy: 140 lb. wt., 30 in. drop						

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII						Log of Boring 109			
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 35 *	
										Description	
TV=0.2									MH	Reddish brown CLAYEY SILT with some roots and traces of cobbles and gravel, stiff to very stiff, damp (fill)	
	25	71			29	3.0	5				
	17		17		27						
							10				
	24	87			41	4.3					
			0								
	38				20						
			100								
	38	79			21	3.5		20		MH	BOULDER
			62								Brown with multi-color mottling CLAYEY SILT with some gravel and sand and traces of organic debris, very stiff (fill)
	60				2			25		OL	Dark gray ORGANIC CLAYEY SILT with some subrounded gravel and traces of organic debris, very soft (recent alluvium)
			21								



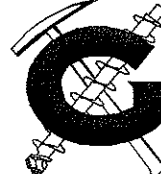
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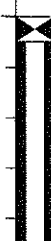
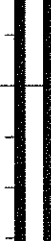
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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

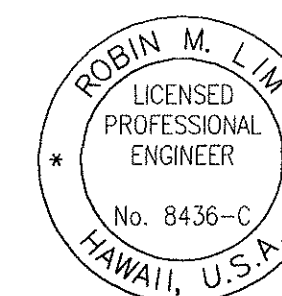
BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003
SHEET No. AG2.25 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	384	816

		GEOLABS, INC. Geotechnical Engineering				INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 109	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)	
	46				44				CH	Grayish brown SILTY CLAY with some cobbles and gravel, very stiff (recent alluvium)	
			100	15			60			Brown vesicular BASALT, severely fractured, moderately weathered, medium hard (basalt formation)	
	36		100	20	50/.4' Ref.					grades to vugular, medium hard to hard	
			100	33			65			grades to grayish brown, highly weathered, soft	
			100	70			70			grades to vesicular, closely fractured, slightly to moderately weathered, hard	
			100	67			75			grades to vugular, moderately fractured, moderately weathered, medium hard	
			100	100			80			grades to gray, slightly weathered, hard	
			100	100			85			grades to very hard	
			100	100			90				
			100	100			95				
							100			Boring terminated at 100.5 feet	
							105				
							110				
Date Started: February 23, 2002							Water Level: ▽ 15.5 ft. 2/28/02 0730 HRS				
Date Completed: February 25, 2002											
Logged By: Shinsato & Latronic							Drill Rig: CME-75				
Total Depth: 100.5 feet							Drilling Method: 10" Hollow-Stem Auger & PQ Coring				
Work Order: 4850-00(B)							Driving Energav: 140 lb. wt., 30 in. drop				

		GEOLABS, INC. Geotechnical Engineering				INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 110	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 38 *	
										Description	
	27	88			16	4.5			MH	Brown CLAYEY SILT with gravel, stiff, damp (fill)	
TV=0.7	32	86	22		25/0' Ref.	2.0	5			grades with concrete debris	
TV=0.6	35	82		33	9	1.8	10			grades to medium stiff, moist	
TV=0.3	43	47		33	21		15			grades to very stiff	
	30	89			32	4.3	20		CH	Brown SILTY CLAY, very stiff, slightly moist (fill)	
	49		100	0	25		25			Brown and gray vesicular BASALT, moderately fractured, highly to extremely weathered, medium hard to soft (basalt formation)	
	33		100	50	25		30				
			100	23			35			grades to gray, dense, massive, unweathered, very hard	
			100	80			40				
			100	70			45			grades to grayish brown vesicular, moderately fractured, highly weathered, medium hard	
							55			Boring terminated at 45 feet	
Date Started: March 1, 2002										Water Level: ▽ 25.5 ft. 3/1/02 1435 HRS	
Date Completed: March 1, 2002											
Logged By: S. Latronic										Drill Rig: CME-75	
Total Depth: 45 feet										Drilling Method: 10" Hollow-Stem Auger & PQ Coring	
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop	



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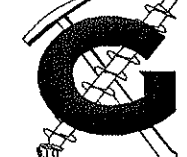
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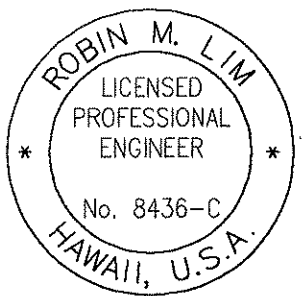
BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	385	816

		GEOLABS, INC.							INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 111
Geotechnical Engineering														
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 36 *				
										Description				
TV=0.5	23	87			26	4.5			MH	Brown CLAYEY SILT with gravel, very stiff, damp (fill)				
	32	75			14	2.8	5			grades to stiff, slightly moist				
	38	78			7	0.8	10			grades to medium stiff, moist				
			50											
	8	84	100	50	25/0' Ref.		15			Gray dense with some vugular BASALT, moderately fractured, slightly weathered, very hard (basalt formation)				
			100	0			20			grades to brown and gray vesicular, severely fractured, extremely weathered, friable				
	93		100	0	7		25							
	61	66			17	4.5	30			grades to brownish gray vugular, moderately fractured, moderately weathered, soft				
			100	33										
			90	75			35			grades to hard				
			100	75			40			grades to vesicular, moderately fractured, medium hard				
			100	100			45			grades to gray, slightly fractured, slightly to moderately weathered, medium hard to hard				
			100	100			50			grades to unweathered to slightly weathered, very hard				
							55							
Date Started: March 4, 2002									Water Level: ∇ 22.5 ft. 3/7/02 0705 HRS					
Date Completed: March 4, 2002									Drill Rig: CME-75					
Logged By: S. Latronic									Drilling Method: 10" Hollow-Stem Auger & PQ Coring					
Total Depth: 60 feet									Driving Energy: 140 lb. wt., 30 in. drop					
Work Order: 4850-00(B)														

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 111	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)
										Description
			100	100						Gray vesicular BASALT, moderately fractured, unweathered to slightly weathered, hard
							60			Boring terminated at 60 feet
							65			
							70			
							75			
							80			
							85			
							90			
							95			
							100			
							105			
							110			
Date Started: March 4, 2002							Water Level: ∇ 22.5 ft. 3/7/02 0705 HRS			
Date Completed: March 4, 2002							Drill Rig: CME-75			
Logged By: S. Latronic							Drilling Method: 10" Hollow-Stem Auger & PQ Coring			
Total Depth: 60 feet							Driving Energy: 140 lb. wt., 30 in. drop			
Work Order: 4850-00(B)										



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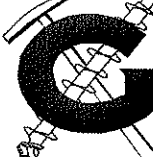
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HIGHWAYS DIVISION

BORING LOGS

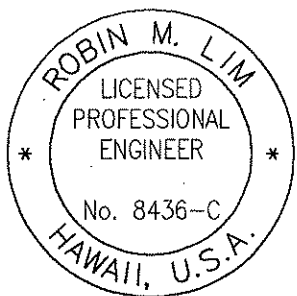
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.27 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	386	816

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 112	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 39 *			
										Description			
	25	82			9	4.3			MH	Reddish brown CLAYEY SILT, medium stiff to stiff, damp (fill)			
	34	76			12	4.3	5			grades with gravel, stiff			
	20	96			45	4.3	10			grades to dark gray with sand and coralline gravel, hard, dry			
	29	88		33	17	4.3	15		CH	Gray CLAY, stiff to very stiff, damp (recent alluvium)			
			85							Brownish gray BASALT, severely fractured, extremely weathered, soft (basalt formation)			
	39				59		20			grades to moderately fractured, highly weathered			
	56				22		25			grades to severely fractured, extremely weathered			
	71	53			24	4.3	30			Gray vugular BASALT, slightly fractured, slightly weathered, hard to very hard (basalt formation)			
			100		25/0' Ref.		35			grades to grayish brown vesicular, moderately fractured, moderately weathered, medium hard			
							40			grades to brownish gray, slightly weathered, hard			
			100		90		45			grades to gray vugular, slightly fractured to massive, slightly weathered to unweathered, very hard			
			100		100		50			grades to gray vugular, slightly fractured to massive, slightly weathered to unweathered, very hard			
							55			grades to gray vugular, slightly fractured to massive, slightly weathered to unweathered, very hard			
Date Started: March 5, 2002										Water Level: ∇ 24 ft. 3/7/02 0710 HRS			
Date Completed: March 6, 2002													
Logged By: S. Latronic										Drill Rig: CME-75			
Total Depth: 90 feet										Drilling Method: 10" Hollow-Stem Auger & PQ Coring			
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop			

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII							Log of Boring 112		
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)	Description
			100	100							Gray vugular BASALT, slightly fractured, to massive, slightly weathered to unweathered, hard to very hard (basalt formation)
			100	100			60				grades to slightly fractured, slightly weathered, hard
			100	70			65				Reddish gray CLINKER, highly weathered
			100	95			70				Gray vugular BASALT, moderately fractured, slightly weathered, hard (basalt formation)
			95	90			75				grades to slightly fractured, very hard
			80	50			80				Reddish gray CLINKER, highly weathered
			70	30			85				Brownish gray vugular BASALT, moderately fractured, slightly weathered, hard (basalt formation)
							90				Boring terminated at 90 feet
							95				
							100				
							105				
							110				
Date Started: March 5, 2002							Water Level: ∇ 24 ft. 3/7/02 0710 HRS				
Date Completed: March 6, 2002											
Logged By: S. Latronic							Drill Rig: CME-75				
Total Depth: 90 feet							Drilling Method: 10" Hollow-Stem Auger & PQ Coring				
Work Order: 4850-00(B)							Driving Energy: 140 lb. wt., 30 in. drop				



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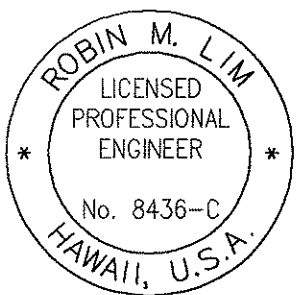
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
E.A.L. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.28 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	387	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 113	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 60 *					
										Description					
										14.5-inch ASPHALTIC CONCRETE					
	12				41				GW	Brown SILTY GRAVEL with sand, dense, slightly moist (base course)					
	37	81			10	1.8			MH	Brown CLAYEY SILT, medium stiff to stiff, moist (fill)					
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: March 5, 2002										Water Level: ∅ Not Encountered					
Date Completed: March 5, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 5 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 114	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 56 *					
										Description					
										10-inch ASPHALTIC CONCRETE					
					31				GW	Brown SILTY GRAVEL with sand, medium dense to dense, moist (base course)					
									MH	Brown CLAYEY SILT, medium stiff, slightly moist to moist (fill)					
	32	79			8	4.3									
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: March 15, 2002										Water Level: ∅ Not Encountered					
Date Completed: March 15, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 5 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					



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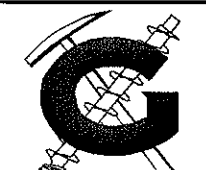
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HIGHWAYS DIVISION

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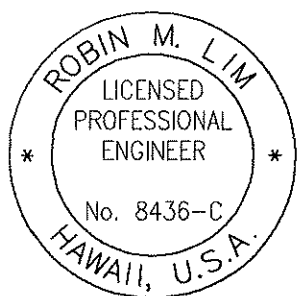
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.29 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	388	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 115	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 53 *					
										Description					
							5			7.5-inch ASPHALTIC CONCRETE					
									GW	BASE COURSE					
										Boring terminated at 1 foot					
							10								
							15								
Date Started: March 15, 2002										Water Level: ∇ Not Encountered					
Date Completed: March 15, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 1 foot										Drilling Method: Concrete Cutter					
Work Order: 4850-00(B)										Driving Energy: N/A					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 116	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 51 *					
										Description					
							5			6.5-inch ASPHALTIC CONCRETE					
									GW	BASE COURSE					
										Boring terminated at 1 foot					
							10								
							15								
Date Started: March 15, 2002										Water Level: ∇ Not Encountered					
Date Completed: March 15, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 1 foot										Drilling Method: Concrete Cutter					
Work Order: 4850-00(B)										Driving Energy: N/A					



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DEPARTMENT OF TRANSPORTATION
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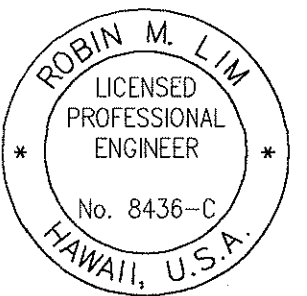
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.30 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	389	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 117	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 47 *					
										Description					
	11				37					7-inch ASPHALTIC CONCRETE					
									GW	Brown SILTY GRAVEL with sand, dense, damp (base course)					
									MH	Brown CLAYEY SILT, very stiff, slightly moist (fill)					
	32	81			21	3.8									
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: March 15, 2002												Water Level: Not Encountered			
Date Completed: March 15, 2002															
Logged By: S. Latronic												Drill Rig: DIEDRICH D-25			
Total Depth: 5 feet												Drilling Method: Concrete Cutter & 4" Solid-Stem Auger			
Work Order: 4850-00(B)												Driving Energy: 140 lb. wt., 30 in. drop			

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 118	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 45 *					
										Description					
	13				20					6-inch ASPHALTIC CONCRETE					
									GW	Brown SILTY GRAVEL with sand, medium dense, slightly moist (base course)					
									MH	Brown CLAYEY SILT, very stiff, slightly moist (fill)					
					50/0' Ref.					Boring terminated at 3.5 feet					
							5								
							10								
							15								
Date Started: March 15, 2002												Water Level: Not Encountered			
Date Completed: March 15, 2002															
Logged By: S. Latronic												Drill Rig: DIEDRICH D-25			
Total Depth: 3.5 feet												Drilling Method: Concrete Cutter & 4" Solid-Stem Auger			
Work Order: 4850-00(B)												Driving Energy: 140 lb. wt., 30 in. drop			



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GEOLABS, INC. 4-30-04

STATE OF HAWAII
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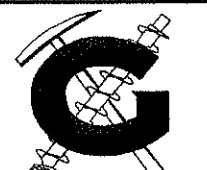
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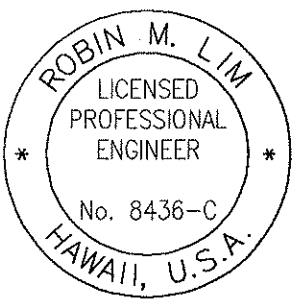
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	390	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 119	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 43.5 *					
										Description					
LL=53 PI=23	13				32				GW	7.5-inch ASPHALTIC CONCRETE					
										Brown SILTY GRAVEL with sand, dense, slightly moist (base course)					
	33	81			14	4.3		MH	Brown CLAYEY SILT, stiff, slightly moist (fill)						
									Boring terminated at 5 feet						
										5					
										10					
										15					
Date Started: March 15, 2002										Water Level: ∅ Not Encountered					
Date Completed: March 15, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 5 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 120	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 42 *					
										Description					
	26				22				GW	7-inch ASPHALTIC CONCRETE					
										Brown SILTY GRAVEL with sand, medium dense, very moist (base course)					
	20	92				20	4.3		MH	Brown CLAYEY SILT with gravel, very stiff, damp (fill)					
										Boring terminated at 5 feet					
										5					
										10					
										15					
Date Started: March 14, 2002										Water Level: ∅ Not Encountered					
Date Completed: March 14, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 5 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					



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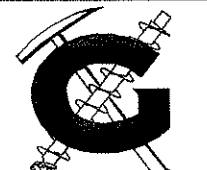
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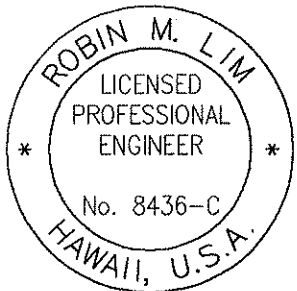
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

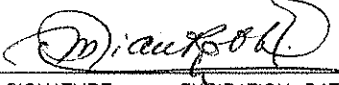
SHEET No. AG2.32 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	391	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 121	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 42 *					
										Description					
	6				31				GW	5-inch ASPHALTIC CONCRETE					
										Brown SILTY GRAVEL with sand, dense, dry to damp (base course)					
	14	110			17	4.3			MH	Brown CLAYEY SILT with gravel, stiff, dry to damp (fill)					
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: March 14, 2002										Water Level: ∇ Not Encountered					
Date Completed: March 14, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 5 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 122	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 61 *					
										Description					
										16.5-inch ASPHALTIC CONCRETE					
	14				29				GW	Brown SILTY GRAVEL with sand, medium dense, moist (base course)					
										Brown CLAYEY SILT with gravel, stiff to medium stiff, slightly moist (fill)					
	30	90			9	4.3			MH						
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: March 15, 2002										Water Level: ∇ Not Encountered					
Date Completed: March 15, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 5 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					



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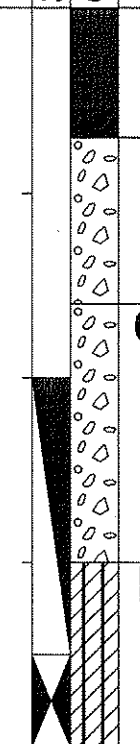
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

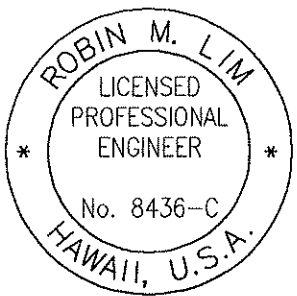
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
E.A.L. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.33 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	392	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 123	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 57 *					
										Description					
	11				18					8.5-inch ASPHALTIC CONCRETE					
										10-inch CEMENT TREATED BASE COURSE					
										GW Brown SILTY GRAVEL with sand, medium dense, slightly moist (base course)					
										MH Brown CLAYEY SILT with gravel, very stiff, damp (fill)					
										Boring terminated at 4 feet					
							5								
							10								
							15								
Date Started: March 15, 2002										Water Level: ∇ Not Encountered					
Date Completed: March 14, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 4 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 124	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 54 *					
										Description					
										4.5-inch ASPHALT					
										9.5-inch PORTLAND CEMENT CONCRETE (PCC)					
										Boring terminated at 1.2 feet					
							5								
							10								
							15								
Date Started: March 15, 2002										Water Level: ∇ Not Encountered					
Date Completed: March 15, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 1.2 feet										Drilling Method: Concrete Cutter					
Work Order: 4850-00(B)										Driving Energy: N/A					



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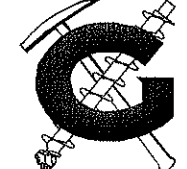
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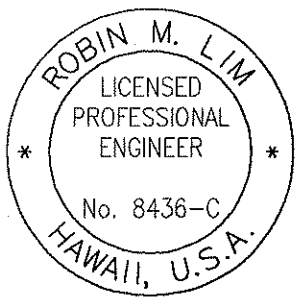
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INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003
SHEET No. AG2.34 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	393	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 125	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 51.5 *					
										Description					
										4.5-inch ASPHALTIC CONCRETE					
										9.5-inch PORTLAND CEMENT CONCRETE (PCC)					
	31				16				GW	Brown SILTY GRAVEL with sand, medium dense, moist to wet (base course)					
									MH	Brown CLAYEY SILT, very stiff, damp (fill)					
	23	87			19	3.8									
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: March 15, 2002										Water Level: Not Encountered					
Date Completed: March 15, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 5 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 126	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 48 *					
										Description					
										3-inch ASPHALTIC CONCRETE					
										9.5-inch PORTLAND CEMENT CONCRETE (PCC)					
									GW	BASE COURSE					
										Boring terminated at 1.5 feet					
							5								
							10								
							15								
Date Started: March 14, 2002										Water Level: Not Encountered					
Date Completed: March 14, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 1.5 feet										Drilling Method: Concrete Cutter					
Work Order: 4850-00(B)										Driving Energy: N/A					



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HIGHWAYS DIVISION

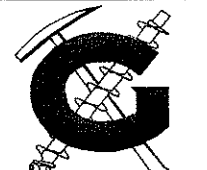
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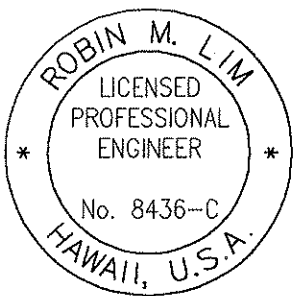
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.35 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	394	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 127	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 46 *					
										Description					
										5-inch ASPHALTIC CONCRETE					
										9.5-inch PORTLAND CEMENT CONCRETE (PCC)					
	27				30				GW	Brown SILTY GRAVEL with sand, dense, damp (base course)					
	27	82			30	4.3			MH	Brown CLAYEY SILT with traces of gravel, very stiff, damp (fill)					
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: March 14, 2002										Water Level: ∅ Not Encountered					
Date Completed: March 14, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 5 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 128	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 44.5 *					
										Description					
										4-inch ASPHALTIC CONCRETE					
										9.5-inch PORTLAND CEMENT CONCRETE (PCC)					
	18				29				GW	3-inch CEMENT TREATED BASE COURSE					
									GW	Brown SILTY GRAVEL with sand, dense, damp (base course)					
	27	76			25/3' Ref.	4.3			MH	Brown CLAYEY SILT with gravel, very stiff, damp (fill)					
										Boring terminated at 4.3 feet					
							5								
							10								
							15								
Date Started: March 14, 2002										Water Level: ∅ Not Encountered					
Date Completed: March 14, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 4.3 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					



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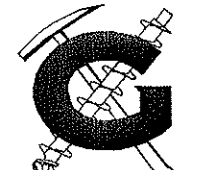
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

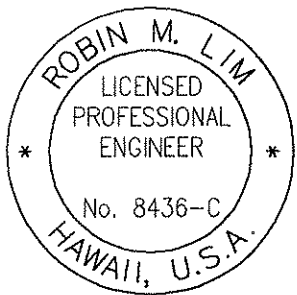
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

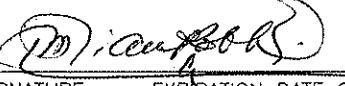
SHEET No. AG2.36 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	395	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 129	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 43 *					
										Description					
										4-inch ASPHALTIC CONCRETE					
										9-inch CONCRETE (approach slab)					
									GW	Brown SILTY GRAVEL with sand, medium dense, damp (base course)					
	30				16				MH	Brown CLAYEY SILT with traces of gravel, very stiff, damp (fill)					
	27	81			23	4.3									
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: March 14, 2002										Water Level: ∇ Not Encountered					
Date Completed: March 14, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 5 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 130	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 43 *					
										Description					
										1-inch ASPHALTIC CONCRETE					
										8.5-inch CONCRETE (approach slab)					
	28	90			19	4.3			GW	1.5-inch VOID Brown SILTY GRAVEL with sand, medium dense, damp (base course)					
	7				16				GW	Gray SANDY GRAVEL with silt, medium dense, damp (fill)					
	7				24										
							5			Boring terminated at 5.5 feet					
							10								
							15								
Date Started: March 14, 2002										Water Level: ∇ Not Encountered					
Date Completed: March 14, 2002															
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25					
Total Depth: 5.5 feet										Drilling Method: Concrete Cutter & 4" Solid-Stem Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					



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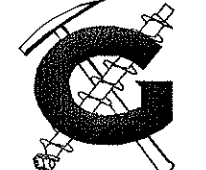
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

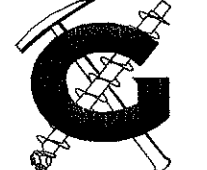
BORING LOGS

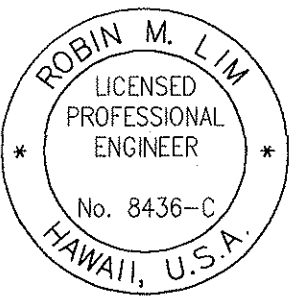
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
E.A.L. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.37 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	396	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 131	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 54 *					
										Description					
										7.5-inch ASPHALTIC CONCRETE					
										9-inch PORTLAND CEMENT CONCRETE (PCC)					
	16				21				GW	Brown SILTY GRAVEL with sand, medium dense, moist (base course)					
	32	92			61	1.3			MH	Brown CLAYEY SILT with gravel, stiff to very stiff, slightly moist (fill)					
							5			Boring terminated at 5.5 feet					
							10								
							15								
Date Started: April 29, 2002										Water Level: Not Encountered					
Date Completed: April 29, 2002															
Logged By: S. Latronic										Drill Rig: CME-75					
Total Depth: 5.5 feet										Drilling Method: 6" Casing & 5" Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 132	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 48 *					
										Description					
										10.3-inch ASPHALTIC CONCRETE					
										9.8-inch PORTLAND CEMENT CONCRETE (PCC)					
										5-inch CEMENT TREATED BASE COURSE					
	11				10				GW	Brown SILTY GRAVEL with sand, medium dense, damp (base course)					
	33	72			11	4.3			MH	Brown CLAYEY SILT with gravel, stiff, slightly moist (fill)					
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: May 1, 2002										Water Level: Not Encountered					
Date Completed: May 1, 2002															
Logged By: S. Latronic										Drill Rig: CME-75					
Total Depth: 5 feet										Drilling Method: 6" Casing & 5" Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					



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GEOLABS, INC.

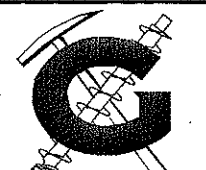
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

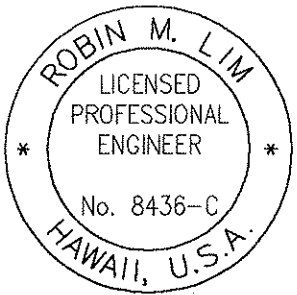
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

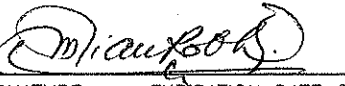
SHEET No. AG2.38 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	397	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 133	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 44 *					
										Description					
										4.8-inch ASPHALTIC CONCRETE					
										9-inch PORTLAND CEMENT CONCRETE (PCC)					
	15				25					5.5-inch CEMENT TREATED BASE COURSE					
									GW	Brown SILTY GRAVEL with sand, medium dense, damp (base course)					
	24	83			44	4.3			MH	Brown CLAYEY SILT with gravel, very stiff, damp (fill)					
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: May 1, 2002										Water Level: ∅ Not Encountered					
Date Completed: May 1, 2002															
Logged By: S. Latronic										Drill Rig: CME-75					
Total Depth: 5 feet										Drilling Method: 6" Casing & 5" Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 134	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 43 *					
										Description					
										5-inch ASPHALTIC CONCRETE					
										9.5-inch CONCRETE (approach slab)					
	12				30				GW	Brown SILTY GRAVEL with sand, dense, damp (base course)					
	27	84			34	4.3			MH	Brown CLAYEY SILT, very stiff, damp (fill)					
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: May 1, 2002										Water Level: ∅ Not Encountered					
Date Completed: May 1, 2002															
Logged By: S. Latronic										Drill Rig: CME-75					
Total Depth: 5 feet										Drilling Method: 6" Casing & 5" Auger					
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop					



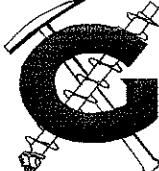
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GEOLABS, INC. 4-30-04

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

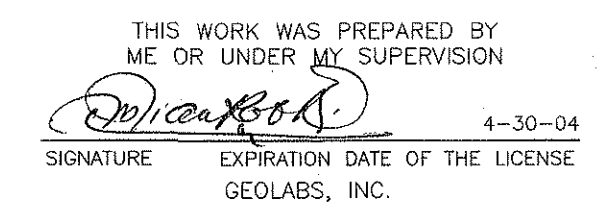
BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.39 OF 63 SHEETS

		GEOLABS, INC. Geotechnical Engineering					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 135
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 43 *	
										Description	
										3-inch ASPHALTIC CONCRETE	
										9-inch CONCRETE (approach slab)	
	13				22						2-inch VOID
									GW	Brown SILTY GRAVEL with sand, medium dense, slightly moist (base course)	
										MH	Brown CLAYEY SILT with gravel, very stiff, damp (fill)
	24	79			46	4.3					
							5			Boring terminated at 5 feet	
							10				
							15				
Date Started: May 1, 2002								Water Level: ∇ Not Encountered			
Date Completed: May 1, 2002											
Logged By: S. Latronic								Drill Rig: CME-75			
Total Depth: 5 feet								Drilling Method: 6" Casing & 5" Auger			
Work Order: 4850-00(B)								Driving Energy: 140 lb. wt., 30 in. drop			

		GEOLABS, INC. Geotechnical Engineering					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 136	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 54 *			
										Description			
										20-inch ASPHALTIC CONCRETE			
	35	81			8	1.0	5		GW	Brown SILTY GRAVEL with sand, medium dense, damp (base course)			
									MH	Brown CLAYEY SILT with gravel, medium stiff to stiff, moist (fill)			
	32				15	1.3	10						
			100				15			BOULDER			
	28	89	44		22/.5' +25/.3' Ref. 18	4.0	20		MH	Brown CLAYEY SILT, very stiff, moist (fill)			
	32		63				25			grades with gravel			
			100				30						
	34	89			26	2.0	35			grades to stiff			
	33		29		37		40						
LL=55 PI=29	32		33		15	1.0	45		CH	Dark brown SILTY CLAY with some organics, stiff, moist (recent alluvium)			
	44	72	90		19	1.0	50			grades with rounded gravel			
			50				55			grades with cobbles			
										Water Level: ∇ 43.8 ft. 4/29/02 0900 HRS			
Date Started: April 26, 2002										Drill Rig: CME-75			
Date Completed: April 29, 2002										Drilling Method: 6" Casing & 5" Auger			
Logged By: S. Latronic										Driving Energy: 140 lb. wt., 30 in. drop			
Total Depth: 100.5 feet													
Work Order: 4850-00(B)													

BORING LOGS

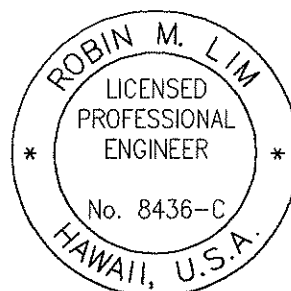
RMTC JOB NO.: 1-19369-OE

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	399	816

		GEOLABS, INC.				INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 136		
Geotechnical Engineering												
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)		
										Description		
LL=73 PI=39	75	50	100		38				OH	Dark gray ORGANIC CLAY with roots, medium stiff to soft (recent alluvium)		
							60			grades with silt		
	56		100		6	0.5				grades with some cobbles		
		62	62	79	17		65			grades to soft to very soft		
							70			grades with shell fragments		
			100									
	64	61					75					
			100									
	49		100	0	38	2.0	80			Gray BASALT, severely fractured, highly weathered, soft to medium hard (basalt formation)		
	50		95	55	18/5' +30/3' Ref.		85			grades to moderately fractured, slightly weathered, hard		
				100	15			90			grades to severely fractured, moderately weathered, soft to medium hard	
			100	15			95			grades to grayish brown, extremely weathered		
							100			Boring terminated at 100.5 feet		
							105					
							110					
Date Started: April 26, 2002							Water Level: ∇ 43.8 ft. 4/29/02 0900 HRS					
Date Completed: April 29, 2002							Drill Rig: CME-75					
Logged By: S. Latronic							Drilling Method: 6" Casing & 5" Auger					
Total Depth: 100.5 feet							Driving Energy: 140 lb. wt., 30 in. drop					
Work Order: 4850-00(B)												

G		GEOLABS, INC. Geotechnical Engineering				INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 137	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 48 *	
										Description	
										20-inch ASPHALTIC CONCRETE	
									GW	Brown SILTY GRAVEL with sand, medium dense, damp (base course)	
	30	83			28	>4.5	5		MH	Brown CLAYEY SILT with gravel, very stiff, damp (fill)	
	26				20		10			grades with cobbles	
	30	80			21	4.0	15				
			29								
									GW	5-inch OLD ASPHALTIC CONCRETE (old roadway)	
	30				11	1.5	20		MH	OLD BASE COURSE	
			83							Brown CLAYEY SILT with gravel, stiff, moist (old fill)	
							2.0				
	41	76			28		25			grades to very stiff	
			86								
	37		100		16		30		CH	Gray SILTY CLAY with some organics, stiff to very stiff, moist (recent alluvium)	
							1.3				
	46	66			25	1.5	35			grades to brown, very stiff	
			100								
	10	78	22		50/.2' Ref.		40			COBBLES AND BOULDERS	
										Gray vesicular BASALT, moderately fractured, moderately to highly weathered, medium hard (basalt formation)	
			90	75			45			grades to slightly fractured, slightly weathered, hard	
			100	35			50			Reddish brown CLINKER, dense, severely fractured, slightly weathered, hard	
										Reddish brown vesicular BASALT with clay seams, moderately fractured, moderately to slightly weathered, medium hard (basalt formation)	
							55				
Date Started: April 30, 2002										Water Level: ∇ 36.5 ft. 5/1/02 0915 HRS	
Date Completed: May 1, 2002										38.4 ft. 5/1/02 1000 HRS	
Logged By: S. Latronic										Drill Rig: CME-75	
Total Depth: 65 feet										Drilling Method: 6" Casing & 5" Auger	
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop	

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



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

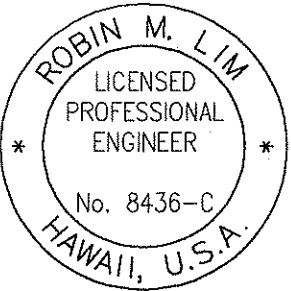
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.41 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	400	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 137	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	(Continued from previous plate)					
										Description					
			100	70						Reddish brown vesicular BASALT with clay seams, moderately fractured, moderately to slightly weathered, medium hard (basalt formation) grades to hard grades to light brownish gray, slightly to moderately fractured, slightly weathered					
			100	85			60								
							65			Boring terminated at 65 feet					
							70								
							75								
							80								
							85								
							90								
							95								
							100								
							105								
							110								
Date Started:			April 30, 2002			Water Level:			36.5 ft. 5/1/02 0915 HRS						
Date Completed:			May 1, 2002						38.4 ft. 5/1/02 1000 HRS						
Logged By:			S. Latronic			Drill Rig:			CME-75						
Total Depth:			65 feet			Drilling Method:			6" Casing & 5" Auger						
Work Order:			4850-00(B)			Driving Energy:			140 lb. wt., 30 in. drop						

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 138	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 44 *					
										Description					
										7.5-inch ASPHALTIC CONCRETE					
									GW	Brown SILTY GRAVEL with sand, medium dense, damp (base course)					
	27	78			30/5' Ref.	4.3			MH	Brown CLAYEY SILT with gravel, very stiff, damp (fill)					
	24				24		5								
							10								
							15			Boring terminated at 6 feet					
Date Started:			May 1, 2002			Water Level:			Not Encountered						
Date Completed:			May 1, 2002												
Logged By:			S. Latronic			Drill Rig:			CME-75						
Total Depth:			6 feet			Drilling Method:			6" Casing & 5" Auger						
Work Order:			4850-00(B)			Driving Energy:			140 lb. wt., 30 in. drop						



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

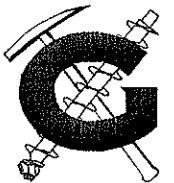
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

Scale: As Shown Date: Mar. 31, 2003

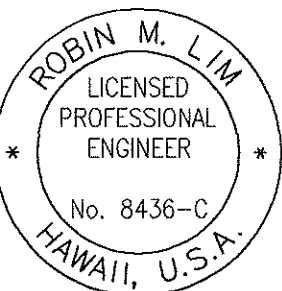
SHEET No. AG2.42 OF 63 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	401	816

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 139	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 43 *					
										Description					
										8.3-inch ASPHALTIC CONCRETE					
	12				41				GW	Brown SILTY GRAVEL with sand, dense, slightly moist (base course)					
									MH	Brown CLAYEY SILT, very stiff, damp (fill)					
	29	90			48	4.3									
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: May 1, 2002												Water Level: ∇ Not Encountered			
Date Completed: May 1, 2002															
Logged By: S. Latronic												Drill Rig: CME-75			
Total Depth: 5 feet												Drilling Method: 6" Casing & 5" Auger			
Work Order: 4850-00(B)												Driving Energy: 140 lb. wt., 30 in. drop			

		GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII										Log of Boring 140	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 43 *					
										Description					
										9.5-inch ASPHALTIC CONCRETE					
	14				53				GW	Brown SILTY GRAVEL with sand, dense, slightly moist (base course)					
									MH	Brown CLAYEY SILT with gravel, stiff to very stiff, damp (fill)					
	18	86			37	4.0									
							5			Boring terminated at 5 feet					
							10								
							15								
Date Started: May 1, 2002												Water Level: ∇ Not Encountered			
Date Completed: May 1, 2002															
Logged By: S. Latronic												Drill Rig: CME-75			
Total Depth: 5 feet												Drilling Method: 6" Casing & 5" Auger			
Work Order: 4850-00(B)												Driving Energy: 140 lb. wt., 30 in. drop			



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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

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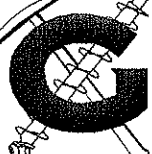
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

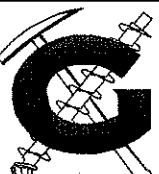
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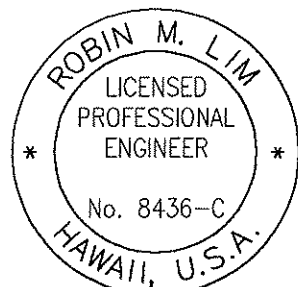
SHEET No. AG2.43 OF 63 SHEETS

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	
NOTE BOOK	DESIGNED BY	
	QUANTITIES BY	
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FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	402	816

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 141	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 110 *			
										Description			
	34	82			30	>4.5			MH	Reddish brown CLAYEY SILT, very stiff, damp (residual)			
	22				23				MH	Grayish brown BASALT extremely weathered, soft (break down to clayey silt with rock fragments) (basalt formation)			
	29	80			29	>4.5	5						
	32		23	0	73		10			Reddish brown with gray mottling BASALT, severely fractured, highly weathered, soft to medium hard (basalt formation)			
	45				87		15						
		100	45				20			grades to gray vugular, moderately fractured, slightly weathered, hard to very hard			
		100	65				25						
		100	53				30						
		100	78				35			grades to massive			
							40			Boring terminated at 37 feet			
							45						
							50						
							55						
Date Started: May 9, 2002										Water Level: ∇ Not Encountered			
Date Completed: May 9, 2002													
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25			
Total Depth: 37 feet										Drilling Method: 4" Auger & HQ Coring			
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop			

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 142	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 117 *			
										Description			
	31	90			107	>4.5			MH	Reddish brown CLAYEY SILT, very stiff, damp (fill)			
	27				27				MH	Brown CLAYEY SILT, very stiff, damp (residual)			
	36	81			52	>4.5	5			grades with orange and gray mottling			
	28				63		10						
	26	82	39	22	100/.4' Ref.		15			Reddish brown with gray mottling BASALT, severely fractured, highly weathered, soft to medium hard (basalt formation)			
		80	27				20			grades to gray vugular, moderately to closely fractured, slightly weathered, hard to very hard			
			100	60			25						
			95	60			30			grades to moderately to slightly fractured			
			100	67			35			grades to moderately fractured			
							40			Boring terminated at 37 feet			
							45						
							50						
							55						
Date Started: May 10, 2002										Water Level: ∇ Not Encountered			
Date Completed: May 10, 2002													
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25			
Total Depth: 37 feet										Drilling Method: 4" Auger & 4" Casing & HQ Coring			
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop			



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SIGNATURE: *[Signature]* EXPIRATION DATE OF THE LICENSE: 4-30-04
GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

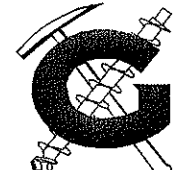
BORING LOGS

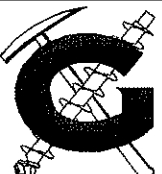
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

Scale: As Shown Date: Mar. 31, 2003

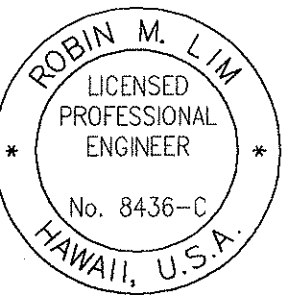
SHEET No. AG2.44 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	403	816

 GEOLABS, INC. Geotechnical Engineering		INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII								Log of Boring 201	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 118 *	
										Description	
	22	103			63				MH	Reddish brown CLAYEY SILT, very stiff, damp (residual)	
	20				78	>4.5				grades to hard	
	23	100			86	>4.5	5			grades to light orange-brown	
	25				82		10			grades to light orange-brown	
	26	93			75	>4.5	15		MH	Reddish brown BASALT extremely weathered, soft (break down to clayey silt with weathered rock fragments) (basalt formation)	
	38				25	4.5	20			Grayish brown vesicular BASALT, closely to severely fractured, moderately to highly weathered, medium hard (basalt formation)	
	38	57	81	21	70/5' Ref.		25			grades to gray, severely fractured	
			85	15			30			Boring terminated at 34 feet	
							35				
							40				
							45				
							50				
							55				
Date Started: May 17, 2002									Water Level: ∇ Not Encountered		
Date Completed: May 20, 2002											
Logged By: S. Latronic									Drill Rig: DIEDRICH D-25 & MOBILE B-80		
Total Depth: 34 feet									Drilling Method: 4" Auger & HQ Coring		
Work Order: 4850-00(B)									Driving Energy: 140 lb. wt., 30 in. drop		

		GEOLABS, INC.					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII					Log of Boring 202	
Geotechnical Engineering													
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 115 *			
										Description			
	23	85			50	3.0			MH	Reddish brown CLAYEY SILT, very stiff, damp (residual)			
	20				39	>4.5				grades to hard			
	22	81			60/4' Ref.		5			grades to orange-brown			
	24				37	>4.5	10			grades to orange-brown			
	40	79			57	2.0	15		MH	Brown BASALT extremely weathered, soft (break down to clayey silt with rock fragments) (basalt formation)			
	35				64		20			Gray BASALT, moderately to slightly fractured, slightly to moderately weathered, hard to very hard (basalt formation)			
	32	78	95	60	50/3' Ref.		25			grades to dense, closely to severely fractured, moderately weathered			
			64	21			30			Boring terminated at 35 feet			
							35						
							40						
							45						
							50						
							55						
Date Started: May 17, 2002										Water Level: ∇ Not Encountered			
Date Completed: May 17, 2002													
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25			
Total Depth: 35 feet										Drilling Method: 4" Auger & HQ Coring			
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop			

ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
	DRAWN BY	" "
	DESIGNED BY	" "
	CHECKED BY	" "
NOTE BOOK	NOTED BY	" "
	QUANTITIES BY	" "
	NO.	" "



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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

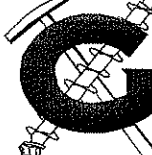
BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

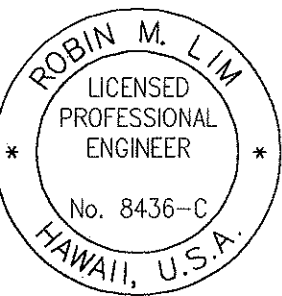
Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.45 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	404	816

		GEOLABS, INC. Geotechnical Engineering						INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 203	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 120 *			
										Description			
	20	101			53				MH	Reddish brown CLAYEY SILT, very stiff, damp (fill)			
	25				65	>4.5			MH	grades to hard			
	25	88			54/.5' +50/.3' Ref.	>4.5	5			Brown BASALT extremely weathered, soft (break down to clayey silt with some rock fragments) (basalt formation)			
	19				31		10						
	27	86			79		15			grades to gray			
	29				53		20			grades to brownish gray			
	26	88			50/.3' Ref.		25			Gray BASALT, severely fractured, moderately to highly weathered, medium hard (basalt formation)			
	10		14	0	50/.1' Ref.		30						
	35		85	13	100/.5' Ref.		35						
										Boring terminated at 37.5 feet			
							40						
							45						
							50						
							55						
Date Started: May 20, 2002								Water Level: ∇ Not Encountered					
Date Completed: May 21, 2002													
Logged By: S. Latronic								Drill Rig: DIEDRICH D-25					
Total Depth: 37.5 feet								Drilling Method: 4" Auger & HQ Coring					
Work Order: 4850-00(B)								Driving Energy: 140 lb. wt., 30 in. drop					

		GEOLABS, INC. Geotechnical Engineering					INTERSTATE ROUTE H-1 WIDENING WAIMALU VIADUCT WESTBOUND PEARL CITY TO AIEA, OAHU, HAWAII				Log of Boring 204	
Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Approximate Ground Surface Elevation (feet MSL): 123 *		
										Description		
	21	97			55	>4.5			MH	Reddish brown CLAYEY SILT, very stiff to hard, damp (fill)		
	23				60		5		MH	Reddish brown BASALT extremely weathered, soft (break down to clayey silt) (basalt formation)		
	27	89			50/.3' Ref.							
	29				58		10			grades with orange mottling		
	25	86			55/.5' +50/.3' Ref.		15			grades with rock fragments		
	25		100	22	50/.3' Ref.		20			Brownish gray BASALT, severely fractured, moderately to highly weathered, medium hard		
			83	50			25			grades to moderately fractured, slightly weathered, hard to very hard		
			100	88			30			grades to vugular		
							35			Boring terminated at 35 feet		
							40					
							45					
							50					
							55					
Date Started: May 21, 2002										Water Level: ∇ Not Encountered		
Date Completed: May 21, 2002												
Logged By: S. Latronic										Drill Rig: DIEDRICH D-25		
Total Depth: 35 feet										Drilling Method: 4" Auger & HQ Coring		
Work Order: 4850-00(B)										Driving Energy: 140 lb. wt., 30 in. drop		



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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

Scale: As Shown Date: Mar. 31, 2003

SHEET No. AG2.46 OF 63 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	405	816

A. GENERAL REQUIREMENTS:

1. All jet grouting work required for this project shall be performed in accordance with Section 657 of the Technical Specifications entitled "Soil Stabilization by Jet Grouting."
2. The Contractor shall compare all the contract requirements with each other and report in writing to the Engineer all inconsistencies and/or omissions.
3. The Contractor shall take field measurements and verify the field conditions and compare such field measurements and conditions with the plans before commencing with the work.
4. All site preparation to provide access for the jet grouting operation will be the responsibility of the Contractor and will be considered incidental to the jet grouting work.
5. The Contractor shall be responsible for coordinating the work of all trades in order to produce the jet grout columns for support of the embankment and to reduce ground settlement as shown on the plans.
6. The Contractor shall be responsible for providing a safe working environment on the highway including traffic control measures meeting all applicable federal, state and local requirements while performing jet grouting work.
7. The Contractor shall be responsible for protection of the highway, adjacent properties, structures, streets, and utilities during the construction period.
8. Excavation into the existing embankment shall comply with all applicable safety requirements. The adequacy and safety of the temporary excavation shall be the responsibility of the Contractor. The Contractor shall hire a Civil Engineer experienced in Geotechnical Engineering and a Structural Engineer licensed in the State of Hawaii to evaluate and design the excavation and/or shoring system used. Plans and calculations shall be submitted to the Engineer for review.
9. Deep Soil Stabilization work shall be completed prior to construction of the reinforced soil slope (RSS), segmental retaining wall (SRW-2), and new approach slab at Abutment "A".

B. JET GROUTING REQUIREMENTS:

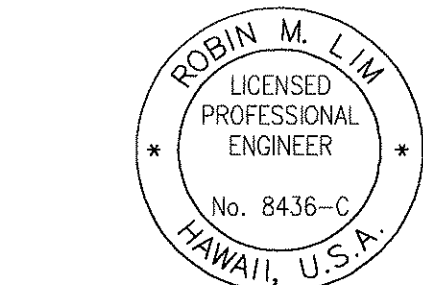
1. Jet grouting shall be performed by a qualified contractor or specialty subcontractor approved by the Engineer. Personnel for the Contractor who will be in charge of supervising the jet grouting operations shall have experience on at least five similar jet grouting projects with project requirements similar to those required for this project.
2. A jet grout test program shall be successfully completed before commencement of the jet grouting work. Written approval shall be obtained from the Engineer before proceeding with the jet grouting work.
3. Jet grout columns for support of the highway embankment have been designed based on an allowable bearing capacity of 350 kips.
4. Jet grout columns for support of the highway embankment shall have a minimum unconfined compressive strength of 200 psi and 400 psi at 7 days and 28 days, respectively.
5. Jet grout columns for support of the highway embankment shall have a minimum diameter of 60 inches.
6. The jet grout columns shall be arranged in an equilateral triangular grid pattern as shown on the plans.

7. A "Feeler" pipe consisting of a minimum 1-inch diameter steel pipe shall be installed in one out of 10 jet grout columns (full depth of column). Feeler pipes shall be installed at the maximum radius of the jet grout column to evaluate the radial extent of the jet grout column installed during construction. The Engineer may require any of the jet grout columns to be constructed to have a "Feeler" pipe installed to check for the diameter of the jet grout columns.
8. The Contractor shall keep the ground surface and the highway clean from leakage of grout at all times during the jet grouting operations.
9. Measurement for payment of the stabilized soil by jet grouting will be based on the lengths shown on the plans, modified in the submittals, or when directed by the Engineer only. Additional lengths of jet grouting required by the contractor in the execution of his work will not be measured and paid for based on the unit prices shown in the bid proposal.

C. JET GROUT TEST PROGRAM:

1. As part of the test program, the Contractor shall drill the test probes, as shown on the contract drawings, in the presence of the Engineer. Each of the test probes shall extend to the approximate depths shown on the contract drawings. The Engineer may also direct the deepening or shortening of the borings. The test probes shall be for the purpose of obtaining additional subsurface information as to the vertical and lateral extent of the deep soil stabilization area. Soil samples (or continuous core samples) shall be obtained from the test probes at 5-foot intervals in accordance with ASTM 1586. The test probes shall be performed in the presence and continuous monitoring of the Engineer. The Contractor shall provide the Engineer a minimum of 7 days advance notice to schedule the observation and logging of the test probes by the Engineer.
2. A minimum of one test section shall be performed at the location shown on the contract drawings. The test section shall consist of a minimum of three grout columns each of about 80 feet deep constructed using the same procedures proposed for the production jet grouting work.
3. The jet grout columns for the test section shall be installed from near the existing ground surface extending to the full depth required to allow for later excavation for physical inspection. Excavation to expose the jet grout columns of the test section shall not be sooner than 7 days after the jet grout columns have been constructed.
4. Continuous core samples of the jet grout columns, as shown on the contract drawings, shall be obtained in the presence of the Engineer of the columns of the test section (full depth of the columns) using the methods described in the specifications. The Engineer will check the core samples for segregation. A minimum of four samples from each test column cored shall be selected for unconfined compression tests. Compression tests shall be performed in accordance with ASTM D 1633 or ASTM D 2850.
5. The minimum unconfined compressive strength of the jet grout columns shall be 200 and 400 psi at 7 and 28 days, respectively, for the soil-cement material for jet grout columns.

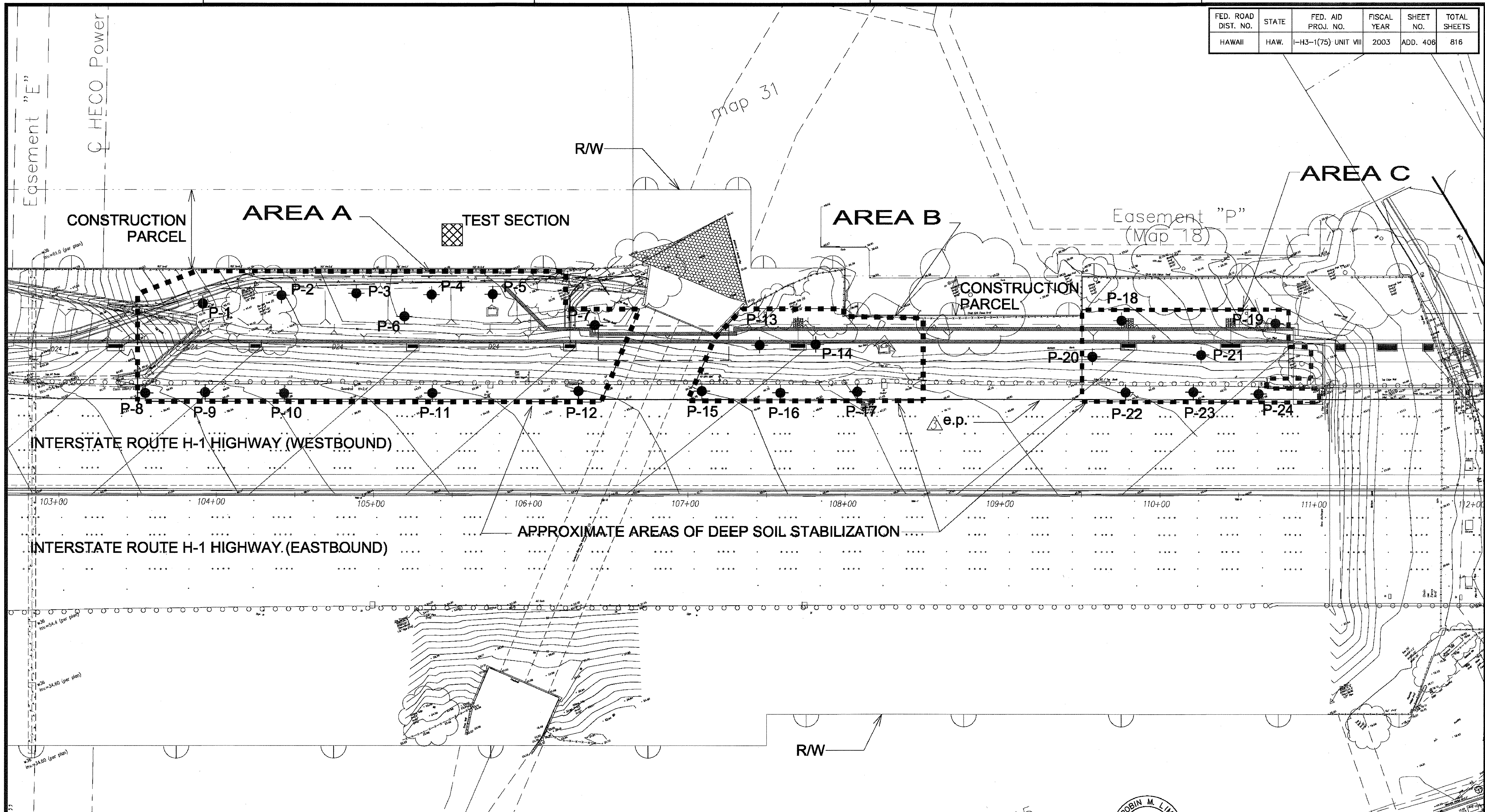
ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
No.	DESIGNED BY	
	CHECKED BY	



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GEOLABS, INC.

STATE OF HAWAII DEPARTMENT OF TRANSPORTATION HIGHWAYS DIVISION	
<u>JET GROUTING NOTES</u>	
INTERSTATE ROUTE H-3 H-3 FINISH (UNIT VIII) F.A.I. Proj. No. I-H3-1(75) Unit VIII	
Scale: None	Date: Mar. 31, 2003
SHEET No. AG3.1 OF 6.3 SHEETS	

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VII	2003	ADD. 406	816

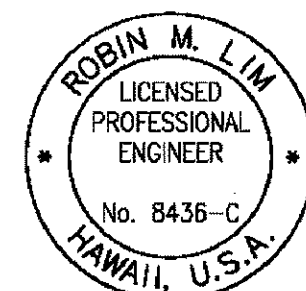
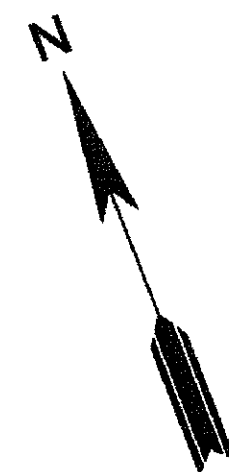


DATE	SURVEY PLANNED BY
DATE	DRAWN BY
DATE	DESIGNED BY
DATE	CHECKED BY

LEGEND:

-  APPROXIMATE TEST PROBE LOCATION
-  APPROXIMATE TEST SECTION LOCATION

REFERENCE: SITE PLAN TRANSMITTED BY R.M. TOWILL CORPORATION ON MARCH 25 AND 28, 2003.



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EXPIRATION DATE OF THE LICENSE:
GEOLABS, INC.

6/20/03
DATE

Revised Abbreviation
REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

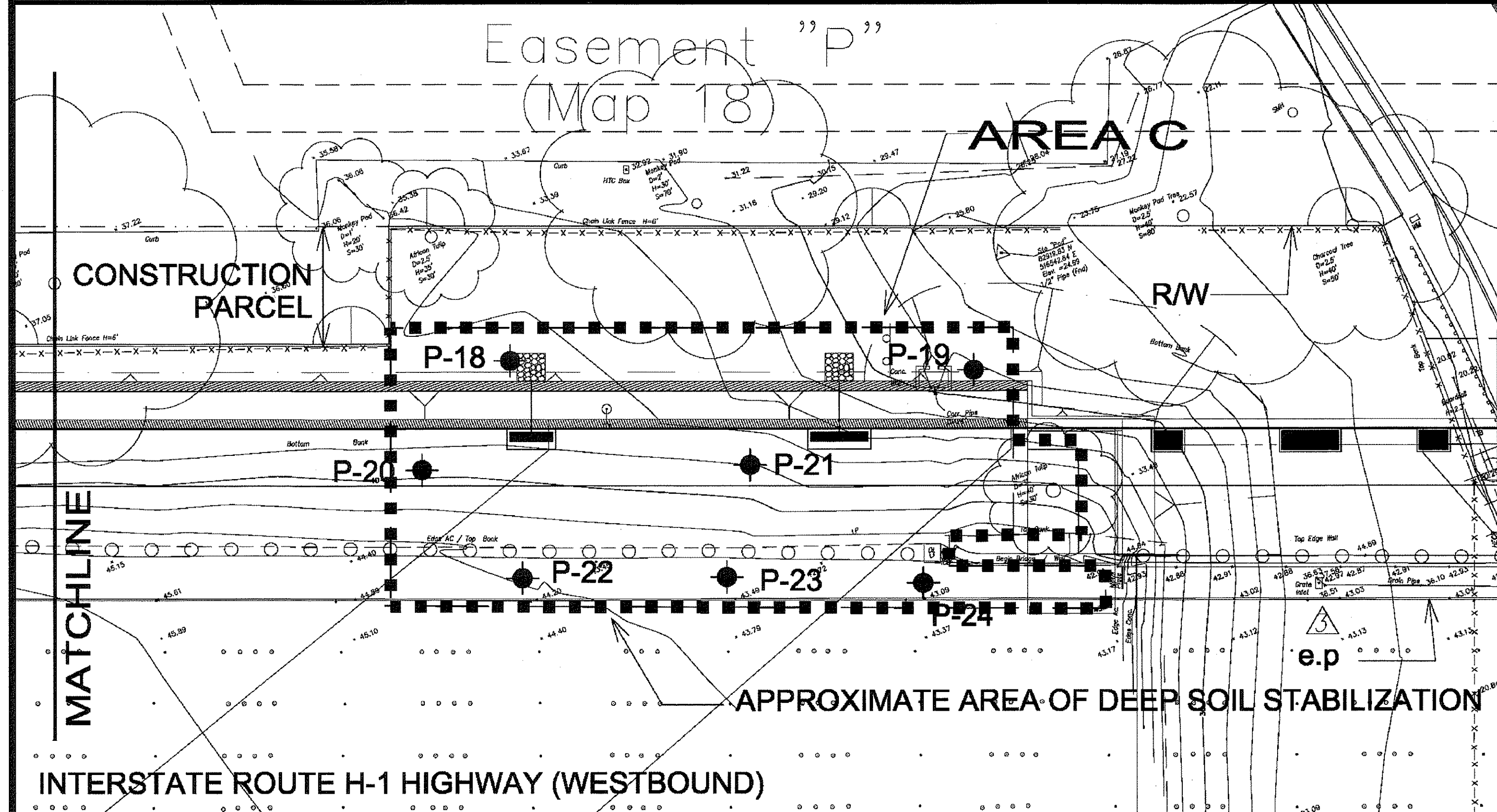
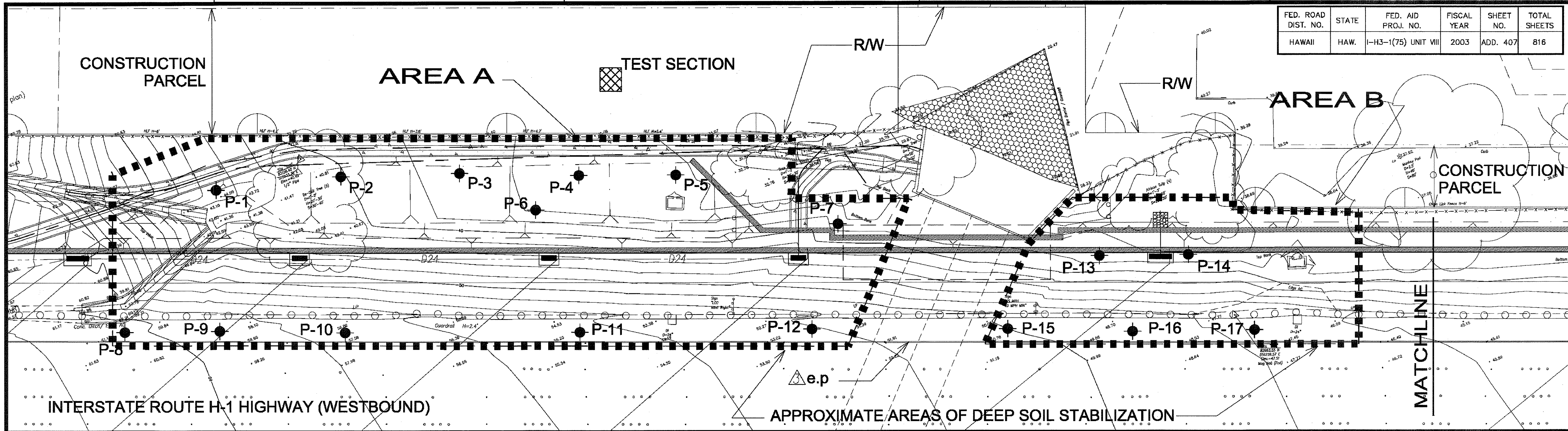
DEEP SOIL STABILIZATION PLAN

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: 1" = 30' Date: June 20, 2003

SHEET No. AG3.2 OF 63 SHEETS

ADD 406

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VII	2003	ADD. 407	816



LEGEND:

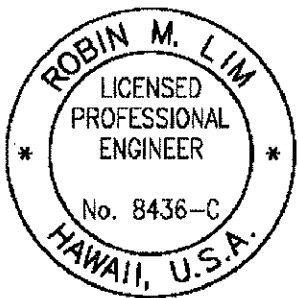
-  APPROXIMATE TEST PROBE LOCATION
-  APPROXIMATE TEST SECTION LOCATION

REFERENCE: SITE PLAN TRANSMITTED BY R.M. TOWILL CORPORATION ON MARCH 25 AND 28, 2003.

AREA A	
TEST PROBE NO.	APPROX. DEPTH (FT.)
P-1	40
P-2	45
P-3	60
P-4	70
P-5	70
P-6	60
P-7	60
P-8	50
P-9	60
P-10	65
P-11	90
P-12	90

AREA B	
TEST PROBE NO.	APPROX. DEPTH (FT.)
P-13	30
P-14	30
P-15	50
P-16	50
P-17	50

AREA C	
TEST PROBE NO.	APPROX. DEPTH (FT.)
P-18	40
P-19	40
P-20	40
P-21	40
P-22	60
P-23	60
P-24	60



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 SIGNATURE: *Robin M. Lim* EXPIRATION DATE OF THE LICENSE: 4-30-04
 GEOLABS, INC.

DATE	_____
DESIGNED BY	_____
CHECKED BY	_____
DATE	_____
DESIGNED BY	_____
CHECKED BY	_____

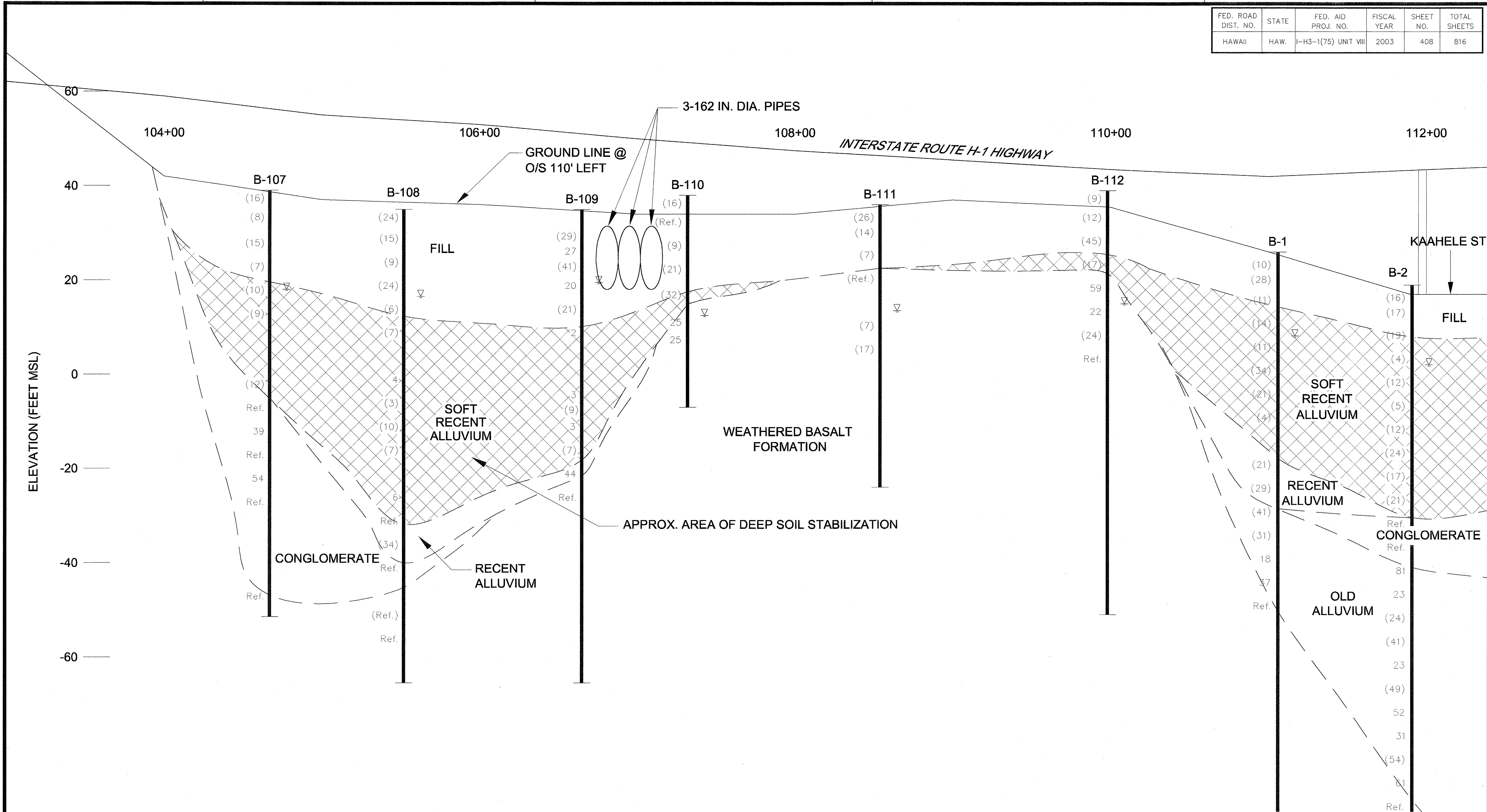


6/20/03	Revised Abbreviation
DATE	REVISION

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
DEEP SOIL STABILIZATION
AREAS DETAIL
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: 1" = 20' Date: June 20, 2003
SHEET No. AG3.3 OF 63 SHEETS

ADD. 407

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	408	816

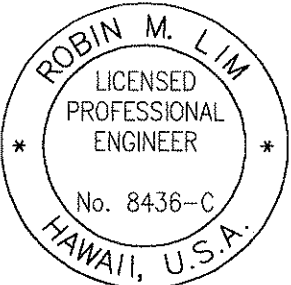


LEGEND:

- 20 BLOW COUNT REQUIRED FOR 12 INCHES OF PENETRATION OF A 2-INCH O.D. STANDARD PENETRATION SAMPLER
- (20) BLOW COUNT REQUIRED FOR 12 INCHES OF PENETRATION OF A 3-INCH O.D. MODIFIED CALIFORNIA SAMPLER

NOTE: THE CONDITIONS ILLUSTRATED ARE BASED ON OUR BORINGS AND GEOLOGICAL INTERPRETATIONS. WHILE THESE ARE BELIEVED TO BE GENERALLY CORRECT, THE CONDITIONS MAY VARY LOCALLY FROM THOSE INDICATED.

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

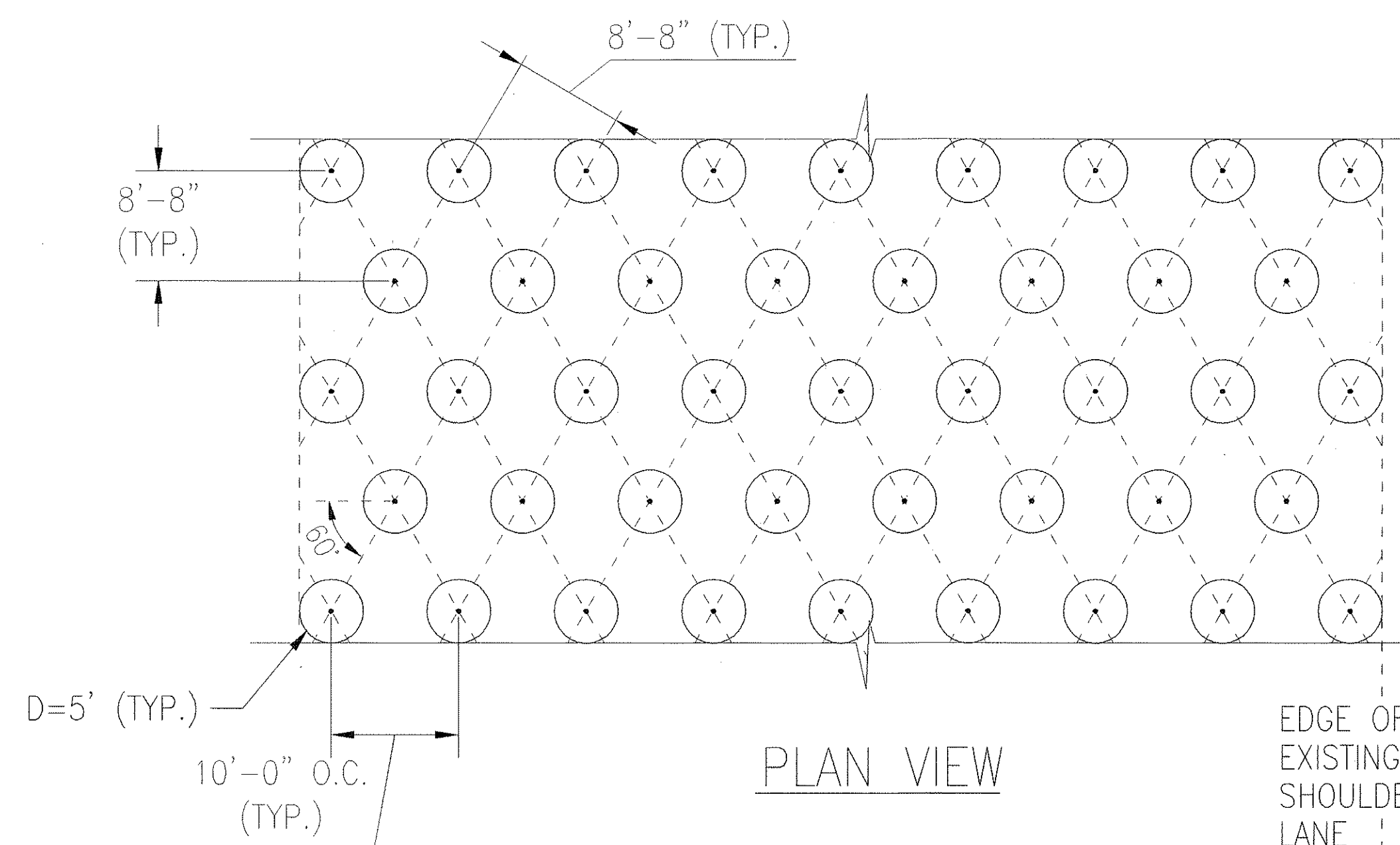


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Robin M. Lim
SIGNATURE EXPIRATION DATE OF THE LICENSE
GEO LABS, INC. 4-30-04

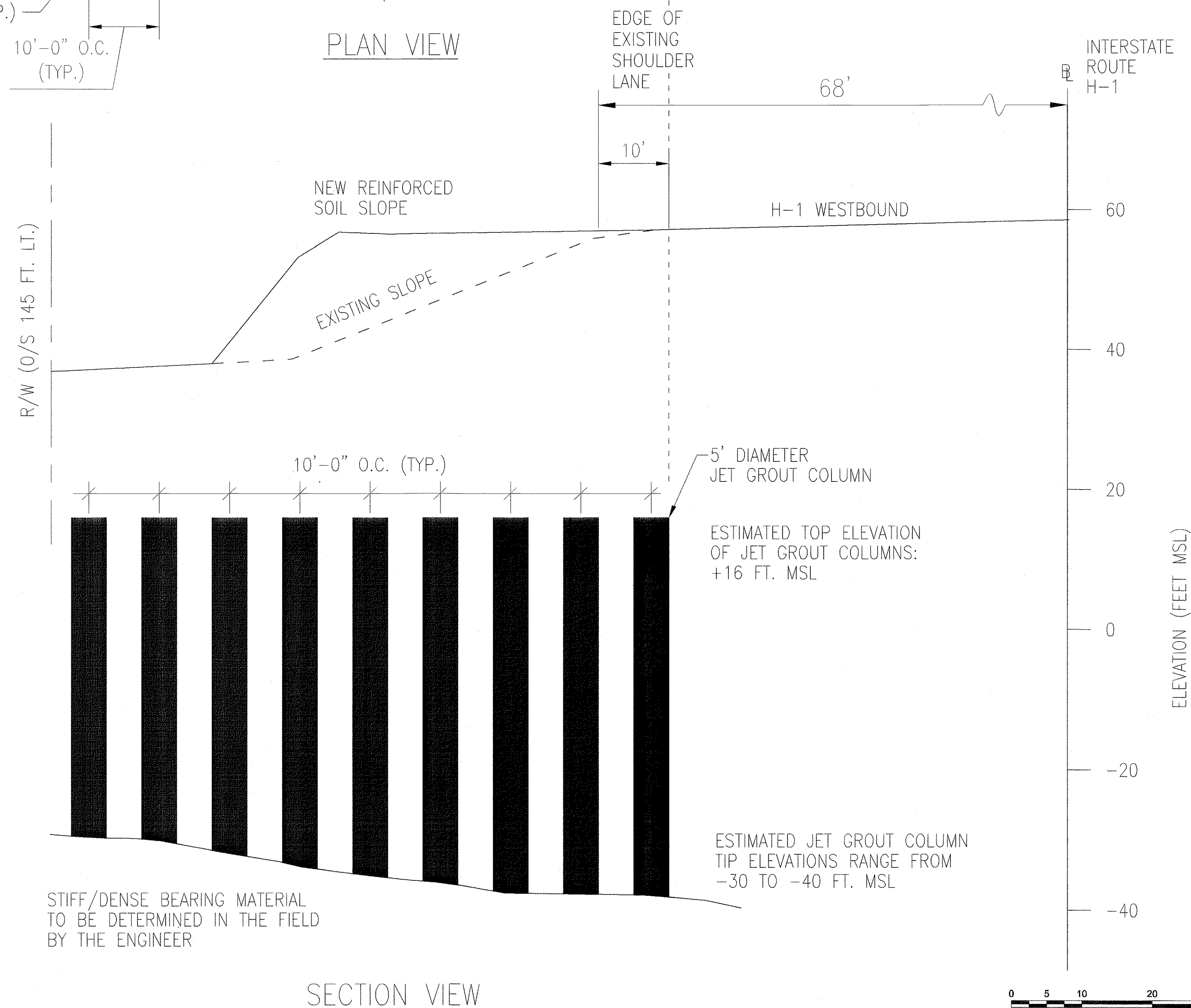
STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
IDEALIZED GEOLOGIC PROFILE ALONG
BASELINE, O/S 110 FEET LT.

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: As Shown Date: Mar. 31, 2003
SHEET No. AG3.4 OF 63 SHEETS

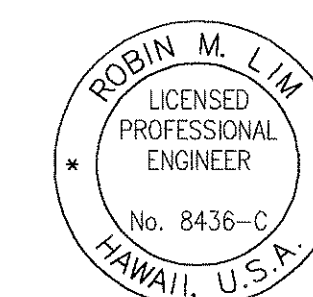
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	409	816



TYPICAL JET GROUT COLUMN LAYOUT
(APPROX. STA. 105+00)



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
NOTE BOOK	DRAWN BY	
	DESIGNED BY	
	QUANTITIES BY	
	CHECKED BY	



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ME OR UNDER MY SUPERVISION
SIGNATURE EXPIRATION DATE OF THE LICENSE
GEOLABS, INC. 4-30-04

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

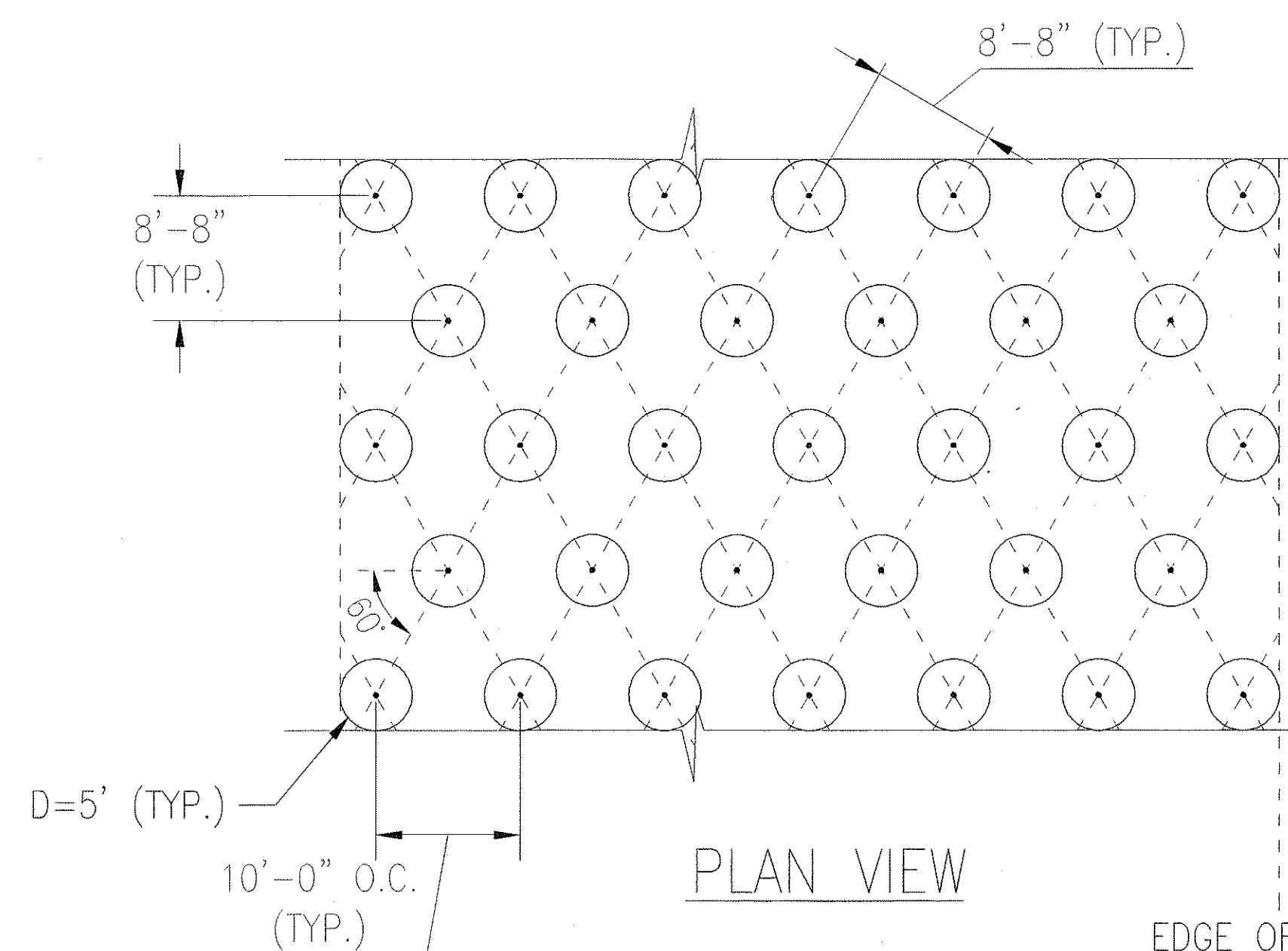
**JET GROUTING TYPICAL
LAYOUT AND SECTION (AREA A)**

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

Scale: 1" = 10' Date: Mar. 31, 2003

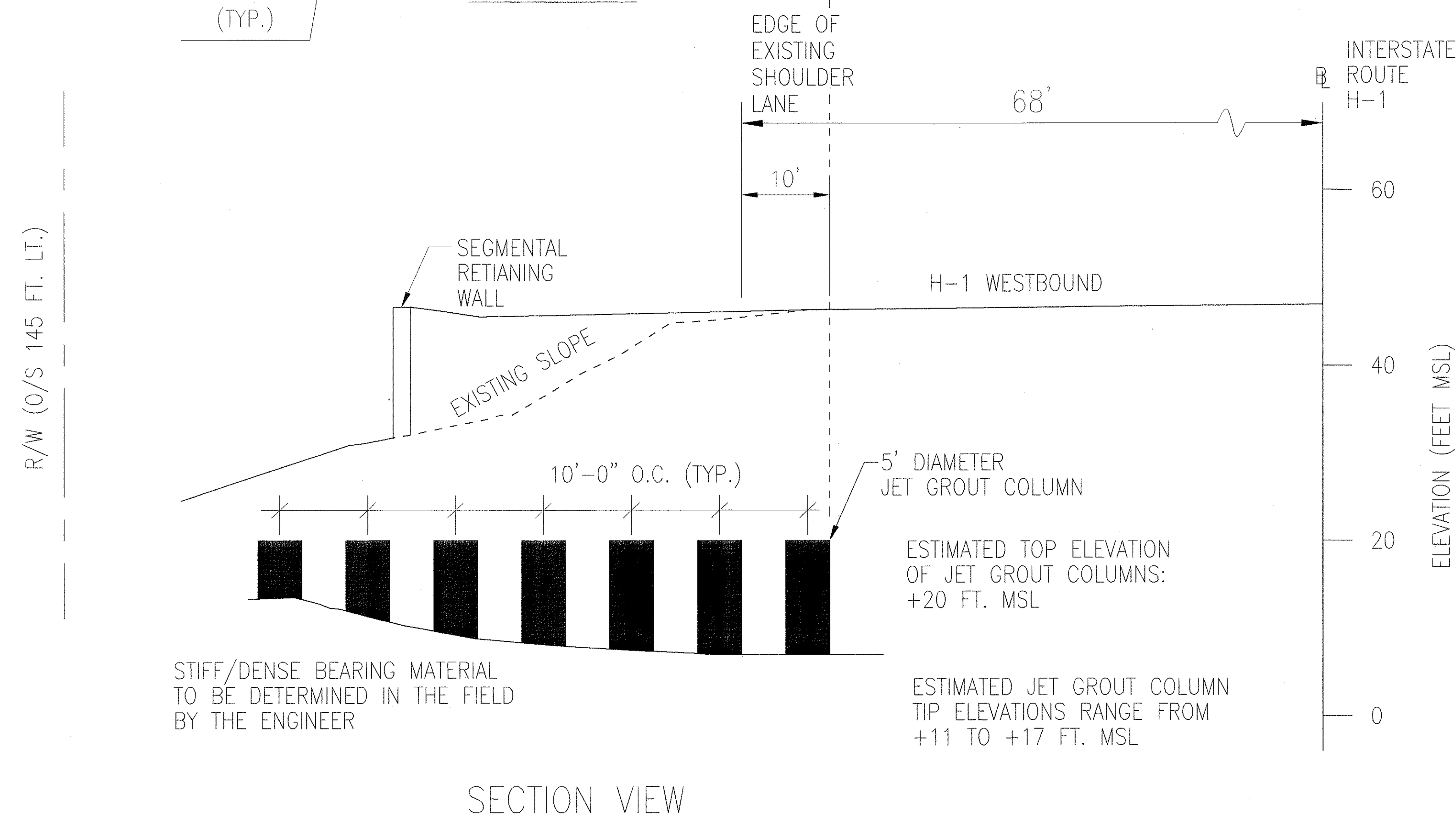
SHEET No. AG3.5 OF 6.3 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	410	816

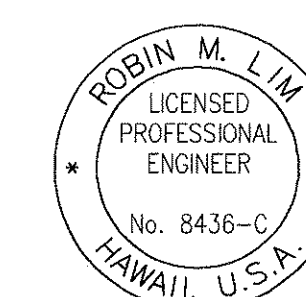


TYPICAL JET GROUT COLUMN LAYOUT

(APPROX. STA. 107+50)



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



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SIGNATURE EXPIRATION DATE OF THE LICENSE
GEOLABS, INC.

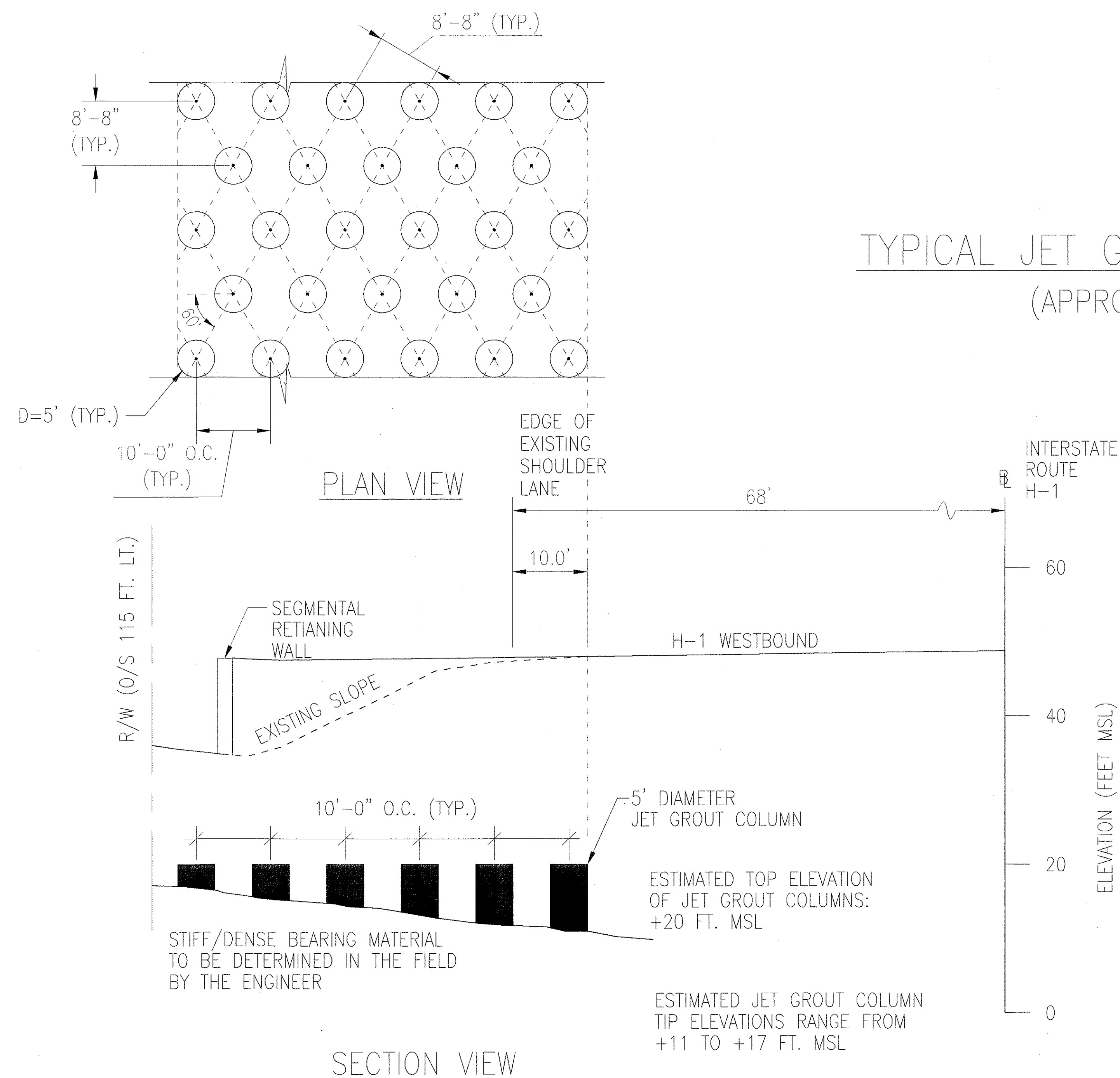
0 5 10 20 30 FT.
GRAPHIC SCALE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION
**JET GROUTING TYPICAL LAYOUT AND
SECTION (AREA B NEAR STA. 107+50)**

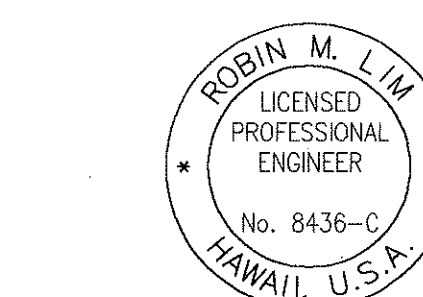
INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: 1" = 10' Date: Mar. 31, 2003

SHEET No. AG3.6 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	411	816



ORIGINAL PLAN	SURVEY PLOTTED BY	DATE
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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

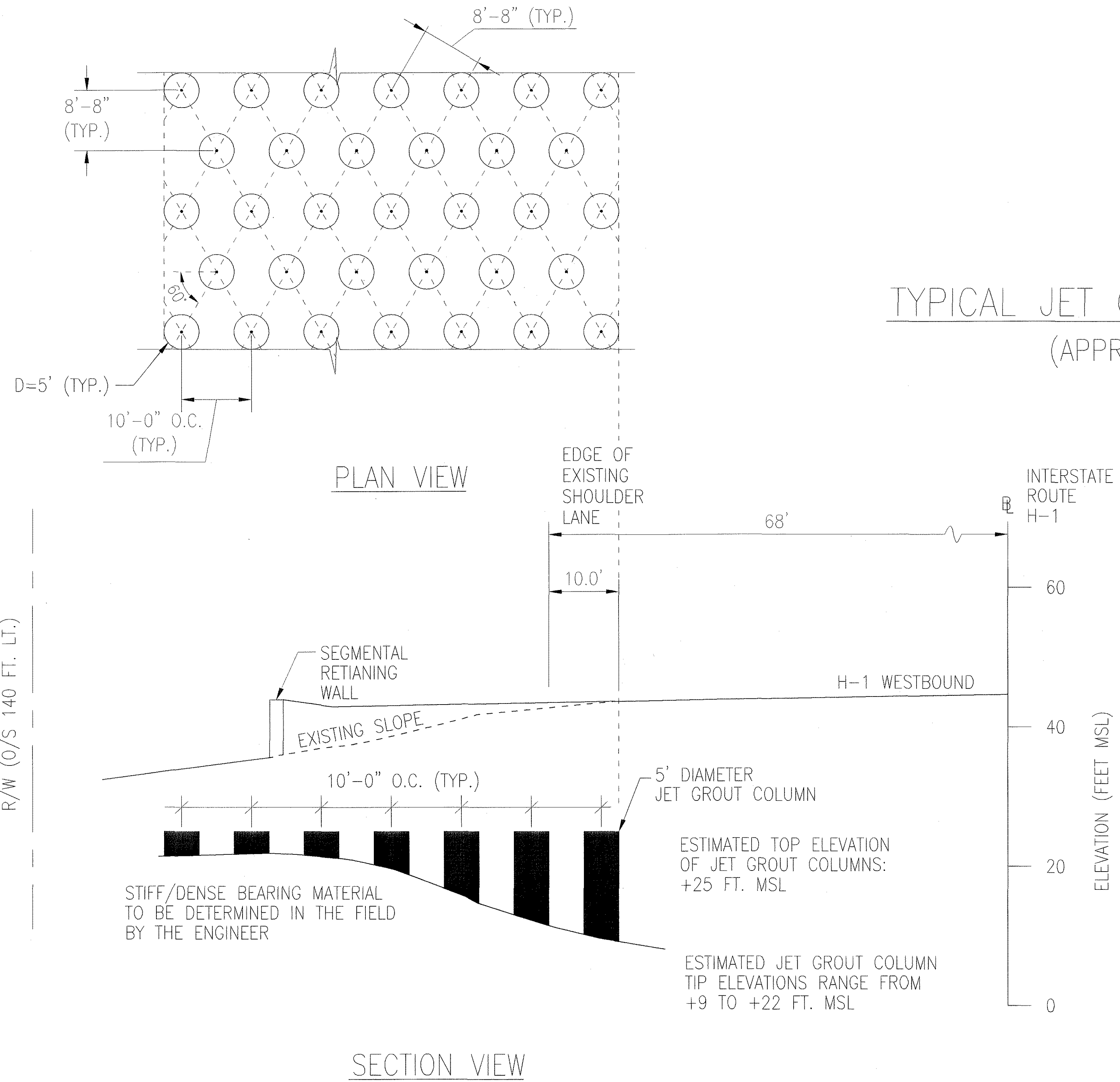
JET GROUTING TYPICAL LAYOUT AND SECTION (AREA B NEAR STA. 108+100)

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

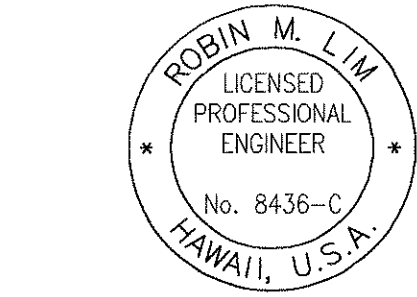
Scale: 1" = 10' Date: Mar. 31, 2003

SHEET No. AG3.7 OF 63 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	412	816



ORIGINAL PLAN	NO.	DATE
SURVEY PLOTTED BY		
DRAWN BY		
DESIGNED BY		
CHECKED BY		



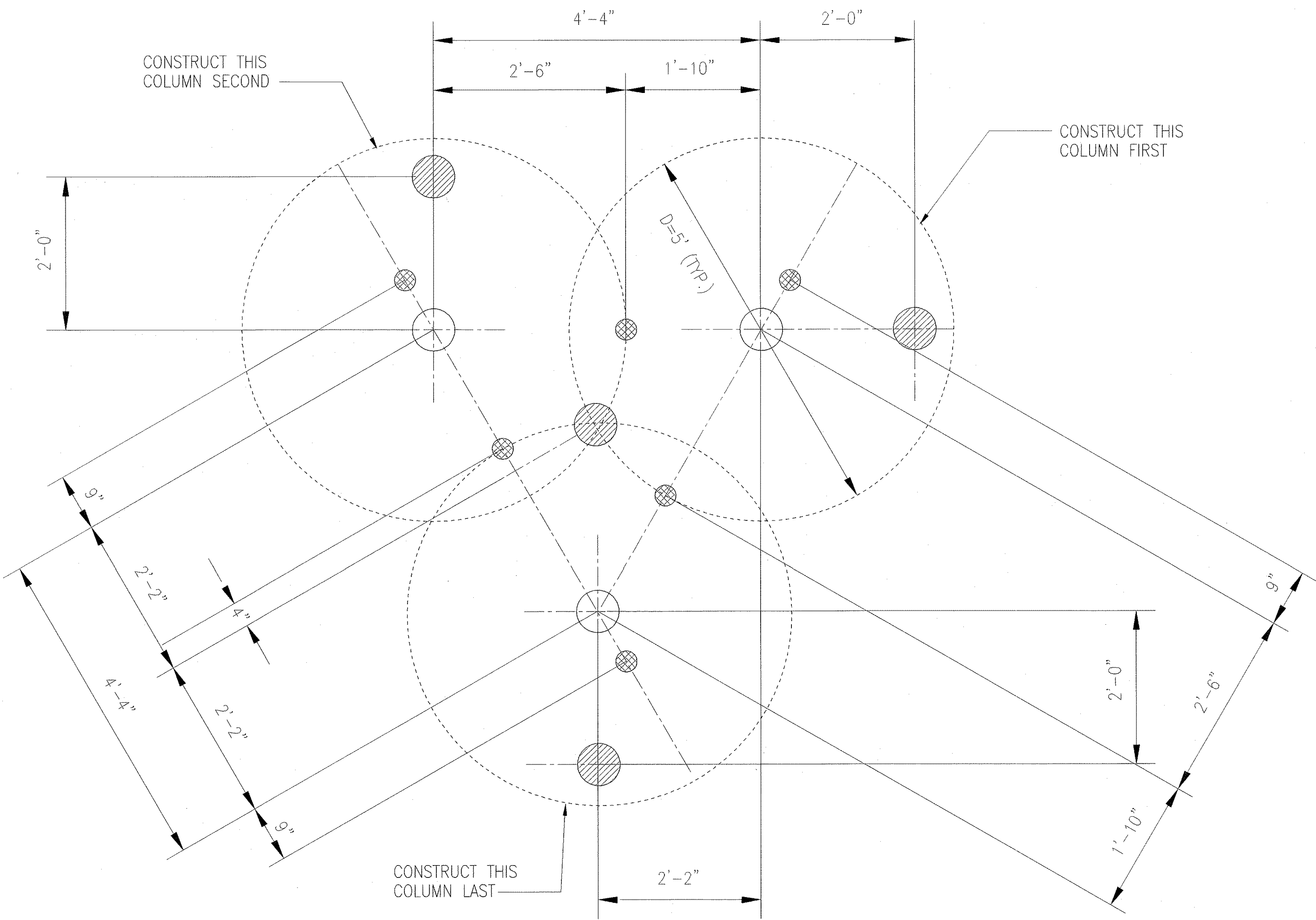
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**JET GROUTING TYPICAL
LAYOUT AND SECTION (AREA C)**

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII
Scale: 1" = 10' Date: Mar. 31, 2003
SHEET No. AG3.8 OF 63 SHEETS

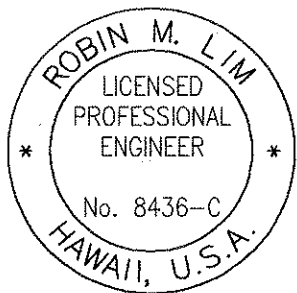
FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	I-H3-1(75) UNIT VIII	2003	413	816



PLAN VIEW OF TEST SECTION

- STEEL "FEELER" PIPE
- CORE SAMPLE LOCATION

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



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

**DEEP SOIL STABILIZATION
TEST SECTION DETAIL**

INTERSTATE ROUTE H-3
H-3 FINISH (UNIT VIII)
F.A.I. Proj. No. I-H3-1(75) Unit VIII

Scale: 1" = 1' Date: Mar. 31, 2003

SHEET No. AG3.9 OF 63 SHEETS