FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	124	187

UNIFIED SOIL CLASSIFICATION SYSTEM (USCS)

MAJOR DIVISIONS			USCS	TYPICAL DESCRIPTIONS
COARSE-GRAINED SOILS	GRAVELS	CLEAN GRAVELS LESS THAN 5% FINES	GW	WELL-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
			GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES MORE THAN 12% FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-SILT MIXTURES
MORE THAN 50% OF MATERIAL RETAINED ON NO. 200 SIEVE	SANDS	CLEAN SANDS LESS THAN 5% FINES	SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
			SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
	50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE	SANDS WITH FINES MORE THAN 12% FINES	SM	SILTY SANDS, SAND-SILT MIXTURES
			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
50% OR MORE OF MATERIAL PASSING THROUGH NO. 200 SIEVE	SILTS AND CLAYS	LIQUID LIMIT 50 OR MORE	MH	INORGANIC SILT, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
			CH	INORGANIC CLAYS OF HIGH PLASTICITY
			OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS			PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

LEGEND:

- 2-INCH O.D. STANDARD PENETRATION TEST
- 3-INCH O.D. MODIFIED CALIFORNIA SAMPLE
- SHELBY TUBE SAMPLE
- CORE SAMPLE
- REC CORE RECOVERY
- RQD ROCK QUALITY DESIGNATION
- LL LIQUID LIMIT
- PI PLASTICITY INDEX
- TV TORVANE SHEAR (tsf)
- PEN POCKET PENETROMETER (tsf)
- WATER LEVEL OBSERVED IN BORING
- GRAB SAMPLE

GEOLABS, INC. — Geotechnical Engineering

BORING LOG LEGEND — LIKELIKE HIGHWAY RESURFACING — HONOLULU, OAHU, HAWAII — DACA83-98-R-0001 — PLATE A

WORK ORDER NO. 4022-00(B) Sep 98

Date Started: 6/2/98 — Date Completed: 6/2/98 — Logged By: V. Bounlangsy — Total Depth: 26.5 feet

Drill Rig: Diedrich D-25 — Drilling Method: 4" Auger — Driving Energy: 140 lb. wt., 30 in. drop

Approximate Surface Elevation (ft): 303.3*

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION
		4	54	60				Brownish gray **SILTY CLAY (CH)**, soft, moist to wet
		7		45				
5		12	67	54				grades to medium stiff
		14		46				
10		55	80	41				Brown **SILTY CLAY (MH)**, stiff, moist
		36		43				
15		38		49				grades to reddish brown with sand
20		36		22				Brown with yellowish and reddish brown mottling **CLAYEY SAND (SM)**, very dense, moist
								Grayish brown **SILTY GRAVEL (GP/SP)** with sand, dense, moist
25		75		25				
								Boring terminated at 26.5 feet
								Groundwater not encountered
								*Elevations estimated from Topographic Survey prepared by M&E Pacific, Inc. received on July 2, 1998.
30								
35								

GEOLABS, INC. — Geotechnical Engineering

LOG OF BORING 1 — LIKELIKE HIGHWAY RESURFACING — HONOLULU, OAHU, HAWAII — DACA83-98-R-0001 — PLATE A-1

WORK ORDER NO. 4022-00(B) KHN Sep 98

Date Started: 6/1/98 — Date Completed: 6/1/98 — Logged By: V. Bounlangsy — Total Depth: 15.0 feet

Drill Rig: Diedrich D-25 — Drilling Method: 4" Auger — Driving Energy: 140 lb. wt., 30 in. drop

Approximate Surface Elevation (ft): 324.5*

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION
		15	73	20				Brown **SILTY SAND AND GRAVEL (SP-SM)**, medium dense, moist
		Ref.	83	20				**COBBLE** at 2.5 feet
5		31	63	47				grades with increased silt content
		31		26				
10								grades with cobbles and boulders
		50/.2'	100	17				
15		50/.2' Ref.		13				Boring terminated at 15 feet
								Groundwater not encountered
20								
25								
30								
35								

GEOLABS, INC. — Geotechnical Engineering

LOG OF BORING 2 — LIKELIKE HIGHWAY RESURFACING — HONOLULU, OAHU, HAWAII — DACA83-98-R-0001 — PLATE A-2

WORK ORDER NO. 4022-00(B) KHN Sep 98

Date Started: 6/2/98 — Date Completed: 6/2/98 — Logged By: V. Bounlangsy — Total Depth: 40.0 feet

Drill Rig: Diedrich D-25 — Drilling Method: 4" Auger & NX Coring — Driving Energy: 140 lb. wt., 30 in. drop

Approximate Surface Elevation (ft): 346*

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION
		7	78	23				Reddish brown **CLAYEY SILT (MH)** with sand and gravel, soft, moist
		4		28				
5		9	66	52				Reddish brown and gray **SILTY CLAY (CH)**, soft, moist
		13		44				
10		18	74	46				
		12		44				grades with gravel, medium stiff
15		23	71	46				grades to brown
20						RUN 1 REC=40%		grades with cobbles and boulders
25						RUN 2 REC=90%		
30						RUN 3 REC=80% RQD=60%		Dark gray **BASALT**, moderately fractured, moderately weathered, hard
35								

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LOG OF BORING 3 — LIKELIKE HIGHWAY RESURFACING — HONOLULU, OAHU, HAWAII — DACA83-98-R-0001 — PLATE A-3.1

WORK ORDER NO. 4022-00(B) KHN Sep 98

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION (Continued from previous plate)
						RUN 4 REC=100% RQD=90%		Dark gray **BASALT**, moderately fractured, moderately weathered, hard
40								Boring terminated at 40 feet
								Groundwater not encountered
45								
50								
55								
60								
65								
70								
75								

GEOLABS, INC. — Geotechnical Engineering

LOG OF BORING 3 — LIKELIKE HIGHWAY RESURFACING — HONOLULU, OAHU, HAWAII — DACA83-98-R-0001 — PLATE A-3.2

WORK ORDER NO. 4022-00(B) KHN Sep 98

Date Started: 6/3/98 — Date Completed: 6/3/98 — Logged By: V. Bounlangsy — Total Depth: 36.5 feet

Drill Rig: Diedrich D-25 — Drilling Method: 4" Auger — Driving Energy: 140 lb. wt., 30 in. drop

Approximate Surface Elevation (ft): 399.9

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION
								7-inch **ASPHALT CONCRETE**
		37/.2'						Tannish brown **SILTY CORAL SAND AND GRAVEL (SM)**, medium dense, moist
		13	82	13				
5		11		18				Reddish brown **SILTY BASALT SAND AND GRAVEL (SM)**, medium dense, moist
								Tannish brown **SILTY CORAL SAND AND GRAVEL (SM)**, medium dense, moist
								Dark brown to dark gray **SILTY CLAY (CH)**, medium stiff, moist
10		19	74	42				
		7		49		LL=106 PI=80		
15		8/.5' +30/.5'	80	21				grades with sand and weathered gravel
20		25/.0' Ref. 45		41				**COBBLE** at 20 feet
								Tannish brown **SANDY SILT (MH)** with gravel, stiff, moist
25		20		60				
30		35	57	68				
35								

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LOG OF BORING 4 — LIKELIKE HIGHWAY RESURFACING — HONOLULU, OAHU, HAWAII — DACA83-98-R-0001 — PLATE A-4.1

WORK ORDER NO. 4022-00(B) KHN Sep 98

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION (Continued from previous plate)
		20		59				Tannish brown **SANDY SILT (MH)** with gravel, stiff, moist
								Boring terminated at 36.5 feet
40								Groundwater not encountered
45								
50								
55								
60								
65								
70								
75								

GEOLABS, INC. — Geotechnical Engineering

LOG OF BORING 4 — LIKELIKE HIGHWAY RESURFACING — HONOLULU, OAHU, HAWAII — DACA83-98-R-0001 — PLATE A-4.2

WORK ORDER NO. 4022-00(B) KHN Sep 98

ALAN Y. TOMITA — LICENSED PROFESSIONAL ENGINEER NO. 4129-C — HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

PLATE A TO PLATE A-4.2

LIKELIKE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)

Scale: As Shown — Date: December, 2001

SHEET No. 1 OF 2 SHEETS

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

N:\Dist-hwy\02A095 CCS-SPECIAL MAINT PROJECTS\BRDG LIKELIKE HWY RESURF\4Lib124-125_BORING LOGS.dwg December 6, 2001 7:44AM HAGUIT

FED. ROAD DIST. NO.	STATE	PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	CM-STP-063-1(21)	2002	125	187

Date Started: 6/3/98
Date Completed: 6/4/98
Logged By: V. Bounlangsy
Total Depth: 36.5 feet
Drill Rig: CME-75
Drilling Method: H.S. Auger (6.25")
Driving Energy: 140 lb. wt., 30 in. drop

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION
								Approximate Surface Elevation (ft): 396.5*
								7-inch ASPHALT CONCRETE
		31	96	9				Grayish brown BASALT SAND (SW-SM) with silt and gravel, dense, moist
		11						grades loose to medium dense
5		12	95	7				
10		9		5				
15		14	55	30			1.5	Grayish brown SILTY CLAY (CH) with gravel, medium stiff, moist
20		32	77	42			< 0.25	
25		22	53	81			4.0	Reddish brown SILTY CLAY (MH) with sand, stiff, moist to very moist
30		17	55	64			3.0	
35								

geo12 DJ98JB/TEX.F

GEOLABS, INC.
Geotechnical Engineering

LOG OF BORING 4A
LIKELIKE HIGHWAY RESURFACING
HONOLULU, OAHU, HAWAII
DACA83-98-R-0001

PLATE A-5.1

WORK ORDER NO. 4022-00(B) KHN Sep 98

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION
								(Continued from previous plate)
		18	48	73			2.0	Reddish brown SILTY CLAY (MH) with sand, stiff, moist
								Boring terminated at 36.5 feet
								Groundwater not encountered
40								
45								
50								
55								
60								
65								
70								
75								

GEOLABS, INC.
Geotechnical Engineering

LOG OF BORING 4A
LIKELIKE HIGHWAY RESURFACING
HONOLULU, OAHU, HAWAII
DACA83-98-R-0001

PLATE A-5.2

WORK ORDER NO. 4022-00(B) KHN Sep 98

Date Started: 6/4/98
Date Completed: 6/4/98
Logged By: F. Beall
Total Depth: 26.0 feet
Drill Rig: Diedrich D-25
Drilling Method: 4" Auger
Driving Energy: 140 lb. wt., 30 in. drop

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION
								Approximate Surface Elevation (ft): 385.6*
		17/.2'	97	16				Grayish brown SILTY CLAY (CH) with gravel, cobbles and boulders, medium stiff to stiff, moist
5		14	95	19			< 0.25	grades to medium stiff
		18		36				
		14	81	29			1.0	
10		11		33				
		19	71	46			1.25	
15		55		43				COBBLE at 15 feet
		45	71	47			4.0	grades to stiff
20		39		46			4.0	
		43	64	56			>4.5	Reddish brown SILTY CLAY (MH), very stiff, moist
25		33		58				
								Boring terminated at 26 feet
								Groundwater not encountered
30								
35								

geo12 DJ98JB/TEX.F

GEOLABS, INC.
Geotechnical Engineering

LOG OF BORING 5
LIKELIKE HIGHWAY RESURFACING
HONOLULU, OAHU, HAWAII
DACA83-98-R-0001

PLATE A-6

WORK ORDER NO. 4022-00(B) KHN Sep 98

Date Started: 6/5/98
Date Completed: 6/8/98
Logged By: V. Bounlangsy
Total Depth: 61.5 feet
Drill Rig: Diedrich D-25
Drilling Method: 4" Auger
Driving Energy: 140 lb. wt., 30 in. drop

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION
								Approximate Surface Elevation (ft): 491.2*
		36	71	33				Grayish brown SILTY CLAY (CH) with gravel, stiff, moist
		25		34				
5		37	76	36				
		24		38				
10		42	78	28				
		25		34				
15		74	73	39				
20		11		35		LL=72 PI=49		grades to medium stiff
								Dark grayish brown SILTY CLAY (CH) with some gravel, very stiff, moist to very moist
25		44	75	47				
30		35	83	36				seepage water observed at 30.5 feet
35								

geo12 DJ98JB/TEX.F

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Geotechnical Engineering

LOG OF BORING 6
LIKELIKE HIGHWAY RESURFACING
HONOLULU, OAHU, HAWAII
DACA83-98-R-0001

PLATE A-7.1

WORK ORDER NO. 4022-00(B) KHN Sep 98

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION
								(Continued from previous plate)
		12		50				Dark grayish brown SILTY CLAY (CH) with some gravel, soft to medium stiff, moist to very moist
40		17	72	53				
		17		48				
45		22		68				grades with silty sand
50		24/.5' +50/.2'	72	48				
								Grayish brown SANDY SILT (ML) with gravel, very stiff, moist
55		36/.5' +30/.2'		51				
60		33		65				
								Boring terminated at 61.5 feet
								Groundwater not encountered
65								
70								
75								

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Geotechnical Engineering

LOG OF BORING 6
LIKELIKE HIGHWAY RESURFACING
HONOLULU, OAHU, HAWAII
DACA83-98-R-0001

PLATE A-7.2

WORK ORDER NO. 4022-00(B) KHN Sep 98

Date Started: 6/5/98
Date Completed: 6/5/98
Logged By: V. Bounlangsy
Total Depth: 24.0 feet
Drill Rig: Diedrich D-25
Drilling Method: 4" Auger
Driving Energy: 140 lb. wt., 30 in. drop

Depth, ft	Sample	Penetra. Resist. Blows/ft	Dry Density pcf	Moisture Content %	Compress. Strength ksf	Other Data	Pen, tsf	DESCRIPTION
								Approximate Surface Elevation (ft): 465.3*
		32	78	34				Grayish brown SILTY SAND (SM) with gravel, dense, moist
		22		34				
5		51	67	33				
		22		37				grades to medium dense
10		54	52	54				Tannish brown SILTY SAND (SM) with cobbles, dense, moist
		41		46				
15		50/.5'		25				
20		34/.5' +50/.2'		34				grades to gray and brown with gravel
								Boring terminated at 24 feet
								Groundwater not encountered
25								
30								
35								

geo12 DJ98JB/TEX.F

GEOLABS, INC.
Geotechnical Engineering

LOG OF BORING 7
LIKELIKE HIGHWAY RESURFACING
HONOLULU, OAHU, HAWAII
DACA83-98-R-0001

PLATE A-8

WORK ORDER NO. 4022-00(B) KHN Sep 98

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

DATE

ALAN Y. TOMITA
LICENSED PROFESSIONAL ENGINEER
NO. 4129-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

PLATE A-5.1 TO PLATE A-8

LIKELIKE HIGHWAY RESURFACING
Emmeline Place to the Wilson Tunnel
F. A. Project No. CM-STP-063-1(21)

Scale: As Shown Date: December, 2001

SHEET No. 2 OF 2 SHEETS

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