FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	158	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 1

Approximate Ground Surface Elevation (feet MSL): 52.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	14	101			59	>4.5				CL	Brown SILTY CLAY, hard, damp to moist (alluvium)
	19				26						grades with black mottling
LL=48 PI=29	17	106			68	>4.5	5				
	15	106			82	>4.5	10			SW	White CORALLINE GRAVELLY SAND with silt, dense, moist (coral formation)
	15				60		15				grades to white and orange
					20/.0' Ref.		20				Boring terminated at 20 feet
							25				* Elevations estimated from Plan and Profile transmitted by R.M. Towill Corporation on September 5, 1997.
							30				
							35				

Date Started:	October 1, 1997	Water Level: ▽	Not Encountered
Date Completed:	October 1, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	20 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG SDOT 3860-30A.GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 2

Approximate Ground Surface Elevation (feet MSL): 60.7 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
										SW	1-inch ASPHALTIC CONCRETE
	14	92			32						Tan GRAVELLY SAND with silt, medium dense to dense, damp (fill)
	23				21	4.0				CL	Brown with black mottling SILTY CLAY, very stiff, moist (alluvium)
	21	101			41	>4.5	5				grades to hard
	21	96			60	>4.5	10				
	19				60		15				grades with coralline sand
					30/.3' Ref.		20				Boring terminated at 20.3 feet
							25				
							30				
							35				

Date Started:	October 1, 1997	Water Level: ▽	Not Encountered
Date Completed:	October 1, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	20.3 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG SDOT 3860-30A.GPJ GEOLABS.GDT 11/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-1

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. *G2.1* OF *27* SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	159	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 3

Approximate Ground Surface Elevation (feet MSL): 64 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Description
	14	97			43	>4.5			CL	Brown SILTY CLAY with coralline sand, hard, damp (alluvium)
	18				38					
	19	112			59	>4.5	5			grades to moist
	19	106			84	>4.5	10			grades with black mottling
	10				87		15		SM	White SILTY CORALLINE SAND with coralline gravel, very dense, damp (coral formation)
	9				20/.0' Ref.		20			
					38		25			Boring terminated at 26.5 feet
							30			
							35			

Date Started:	October 1, 1997	Water Level: ▽	Not Encountered
Date Completed:	October 1, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	26.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 3860-30(4).GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 4

Approximate Ground Surface Elevation (feet MSL): 68.9 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Description
	16	96			37	>4.5			CL	Brown SILTY CLAY, hard, damp (alluvium)
	15				31					
	16	105			76	>4.5	5			grades with black mottling
	21	106			83	>4.5	10			grades to moist
	15				50/.5' Ref.		15			grades with coralline sand
	8				20/.0' Ref.		20		SM	Tan SILTY CORALLINE SAND with coralline gravel, medium dense, damp (coral formation)
					24		25			Boring terminated at 26.5 feet
							30			
							35			

Date Started:	October 1, 1997	Water Level: ▽	Not Encountered
Date Completed:	October 1, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	26.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 3860-30(4).GPJ GEOLABS.GDT 11/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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HIGHWAYS DIVISION

BORING LOGS-2

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.2 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	160	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 5

Approximate Ground Surface Elevation (feet MSL): 75.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Description
									CL	Brown SILTY CLAY, hard, damp (alluvium)
	15	87			66	>4.5				
	15				52					
	15	90			50/.3' Ref.	>4.5	5			grades with black mottling
	20	104			79	>4.5	10			grades to moist
	14				50/.3' Ref.		15			grades with coralline sand and gravel
	16				50/.3' Ref.		20			
	18				50/.5' Ref.		25			Boring terminated at 25.5 feet
							30			
							35			

Date Started:	October 1, 1997	Water Level: ▽	Not Encountered
Date Completed:	October 1, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	25.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 3860-30(A).GPJ GEOLABS.GDT 11/7/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 6

Approximate Ground Surface Elevation (feet MSL): 80.4 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Description
									CL	Brown SILTY CLAY, hard, damp (alluvium)
	16	98			46	>4.5				
	7				39					grades with coralline sand
	16	117			50/.5' +30/.3' Ref.	>4.5	5			
	22	109			59	>4.5	10			grades to moist
	20				42		15			
	18				31/.5' +50/.3' Ref.		20			Boring terminated at 21.3 feet
							25			
							30			
							35			

Date Started:	September 30, 1997	Water Level: ▽	Not Encountered
Date Completed:	September 30, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	21.3 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 3860-30(A).GPJ GEOLABS.GDT 11/7/06

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NOTE BOOK No.
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CHECKED BY "

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LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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HIGHWAYS DIVISION

BORING LOGS-3

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.3 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	161	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 7

Approximate Ground Surface Elevation (feet MSL): 82 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
										CL	Brown SILTY CLAY, hard, damp (alluvium)
	16	90			55	>4.5					
	17				44						grades with black mottling
	19	108			84	>4.5	5				grades with coralline sand
LL=46 PI=30	20	104			78	>4.5	10				grades to moist
	20				58		15				
	18				50/.5' Ref.		20				
	17				50/.5' Ref.		25				Boring terminated at 25.5 feet
							30				
							35				

Date Started:	September 30, 1997	Water Level: ▽	Not Encountered
Date Completed:	September 30, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	25.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 3860-30A.GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 8

Approximate Ground Surface Elevation (feet MSL): 88.6 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
										CL	Brown with black mottling SILTY CLAY, hard, damp (alluvium)
	16	103			92	>4.5					
	16				48/.5' +50/.3' Ref.						grades with a little coralline sand
	17	107			50/.3' Ref.	>4.5	5				
	17	114			48/.5' +50/.3' Ref.	>4.5	10				grades to moist
	19				66		15				
	20				74		20				Boring terminated at 21.5 feet
							25				
							30				
							35				

Date Started:	September 30, 1997	Water Level: ▽	Not Encountered
Date Completed:	September 30, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	21.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 3860-30A.GPJ GEOLABS.GDT 11/17/06

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

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LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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HIGHWAYS DIVISION

BORING LOGS-4

North–South Road
Phase 1B
F.A.I. Proj. No. STP–8930(2)

Date: Feb 21, 2007

SHEET No. G2.4 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	162	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 9

Approximate Ground Surface Elevation (feet MSL): 101.7 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
								CL	Brown SILTY CLAY, hard, damp (alluvium)
	17	90			38	>4.5			
	16				24				
	20	107			83	>4.5	5		grades with black mottling
	19	114			99	>4.5	10		grades with some coralline sand, moist
	20				52		15		
	18				48/.5' +30/.2' Ref.		20		Boring terminated at 21.2 feet
							25		
							30		
							35		

Date Started:	September 30, 1997	Water Level: ▽	Not Encountered
Date Completed:	September 30, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	21.2 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 3860-30A1.GPJ GEOLABS.GDT 1/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 10

Approximate Ground Surface Elevation (feet MSL): 116.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
								CL	Brown SILTY CLAY, very stiff, damp (alluvium)
	14				20	>4.5			
	16				26				
	17				49/.5' +30/.3' Ref.	>4.5	5		grades with black mottling and coral sand, hard
	20				82	>4.5	10		grades to moist
	20				73	>4.5	15		
	18				70		20		Boring terminated at 21.5 feet
							25		
							30		
							35		

Date Started:	September 30, 1997	Water Level: ▽	Not Encountered
Date Completed:	September 30, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	21.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 3860-30A1.GPJ GEOLABS.GDT 1/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-5

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. *G2.5* OF *27* SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	163	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 11

Approximate Ground Surface Elevation (feet MSL): 126.3 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Description
									CL	Brown SILTY CLAY, hard, damp (alluvium)
	16				58	>4.5				
	17				48					grades with black mottling
	21				82		5			grades with coral sand, moist
	21				85	>4.5	10			
	21				83		15			
	19				25/.5' +20/.2' Ref.		20			Boring terminated at 21.2 feet
							25			
							30			
							35			

Date Started:	September 30, 1997	Water Level: ▽	Not Encountered
Date Completed:	September 30, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	21.2 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_3860-30A.GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 12

Approximate Ground Surface Elevation (feet MSL): 132.9 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample Graphic	USCS	Description
									CL	Brown with black mottling SILTY CLAY with sand and gravel, hard, damp (alluvium)
	16				38/.5' +50/.3'	>4.5				
	9				Ref. 50/.5' Ref.					
	16				39/.5' +50/.3' Ref.		5			grades without gravel
	18				46/.5' +30/.3' Ref.		10			grades to moist
	21				57		15			
	23				35		20			
	18				73		25			Boring terminated at 26.5 feet
							30			
							35			

Date Started:	September 29, 1997	Water Level: ▽	Not Encountered
Date Completed:	September 29, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	26.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_3860-30A.GPJ GEOLABS.GDT 11/17/06

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

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No. 8436-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-6

North–South Road
Phase 1B
F.A.I. Proj. No. STP–8930(2)

Date: Feb 21, 2007

SHEET No. G2.6 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	164	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 13

Approximate Ground Surface Elevation (feet MSL): 137.8 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	18				77	>4.5				CL	Reddish brown SILTY CLAY with some sand, hard, damp
	20				34						
	20				32	>4.5	5				
	19				23/.5' +50/.3' Ref.	>4.5	10				grades with gravel and more sand
	18				50/.3' Ref.	>4.5	15				grades without gravel
	19				90		20				
											Boring terminated at 21.5 feet
							25				
							30				
							35				

Date Started:	September 29, 1997	Water Level: ▽	Not Encountered
Date Completed:	September 29, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	21.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG (DOT 3860-30A) (SF) (GEOLABS.GDT 11/17/06)

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 14

Approximate Ground Surface Elevation (feet MSL): 157.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	17				50/.5' Ref.	>4.5				CL	Brown with black mottling SILTY CLAY, hard, damp (alluvium)
	17				98						
	19				79	>4.5	5				grades to damp to moist
	17				50/.3' Ref.	>4.5	10				
	19				50/.5' Ref.	>4.5	15				
	21				50/.5' Ref.		20				
											Boring terminated at 21 feet
							25				
							30				
							35				

Date Started:	September 29, 1997	Water Level: ▽	Not Encountered
Date Completed:	September 29, 1997		
Logged By:	S. Tanaka	Drill Rig:	CME-75
Total Depth:	21 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG (DOT 3860-30A) (GEOLABS.GDT 11/17/06)

ORIGINAL PLAN
NOTE BOOK No.
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ROBIN M. LIM
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HAWAII, U.S.A.

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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-7

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.7 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	165	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 101

Approximate Ground Surface Elevation (feet MSL): 82 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	15	112			58	>4.5		CH	Dark brown with black mottling SILTY CLAY with some black sub-rounded coarse sand, very hard, dry to damp (alluvium)
	16				62	>4.5			
LL=64 PI=44	18	100			54/.5' +10/.0' Ref.	>4.5	5		
									grades with fine sand
	19				31/.5' +30/.3' Ref.	>4.5	10	MH	Dark brown with black mottling CLAYEY SILT with very fine sand and black sub-rounded coarse sand, very hard, dry to damp (alluvium)
	20	111			30/.3' Ref.	>4.5	15		
	24				56	>4.5	20	CH	Dark brown SILTY CLAY with very fine sand, very hard, damp (alluvium)
UC=11	21	92			40/.3' Ref.	>4.5	25	MH	Brown with black and white mottling CLAYEY SILT with fine sand, very hard, dry (alluvium)
	21				52	>4.5	30	ML	Dark brown very fine SANDY SILT, very hard, dry to damp (alluvium)
UC=7	36	63			30/.3' Ref.		35	SM	Whitish orange SILTY CORALLINE SAND, very dense, dry (alluvium/coralline detritus)
								ML	Reddish brown SANDY SILT, very hard, dry to damp (alluvium)
	39				41	>4.5	40		
									grades to brown with black mottling
	25				34/.5' +10/.0' Ref.	>4.5	45		
								CH	Dark brown with black mottling SILTY CLAY, very hard, damp (alluvium)
	23				60/.5' +10/.0' Ref.	>4.5	50		Boring terminated at 51 feet
							55		

Date Started:	July 29, 2004	Water Level: ▽	Not Encountered
Date Completed:	July 29, 2004		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	51 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_3860-30.GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 102

Approximate Ground Surface Elevation (feet MSL): 82 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	16	99			50/.5'			CH	Light brown and gray SILTY CLAY, very hard, dry (alluvium)
	16				56				
	19	102			50/.3'		5	CH	Brown SILTY CLAY with some fine sand, very hard, dry to damp (alluvium)
	20				44		10		grades to hard
	20	108			50/.3'		15		grades to very hard
	21				53		20		
	20	104			30/.1'		25	CH	Reddish brown with gray streaks SILTY CLAY, very hard, dry to damp (alluvium)
	16				55/.5' +10/.0' Ref.	>4.5	30	CH	Brown with white mottling SILTY CLAY, very hard, dry (alluvium)
	24	98			50	>4.5	35	MH	Dark brown CLAYEY SILT with very fine sand, very hard, damp (alluvium)
	25				25	>4.5	40		
									grades to brown, very stiff, dry
	45	66			32	3.0	45	SM	Whitish gray with multi-color mottling SILTY CORALLINE SAND with traces of clay, medium dense, moist (coralline detritus)
								ML	Reddish brown SANDY SILT with traces of clay, very hard, damp (residual soil)
	28				35	>4.5	50		Boring terminated at 51.5 feet
							55		

Date Started:	July 28, 2004	Water Level: ▽	Not Encountered
Date Completed:	July 29, 2004		
Logged By:	F. Meyer	Drill Rig:	CME-75
Total Depth:	51.5 feet	Drilling Method:	4" Auger & T.C. Finger Bit
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_3860-30.GPJ GEOLABS.GDT 11/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-8

North–South Road
Phase 1B
F.A.I. Proj. No. STP–8930(2)

Date: Feb 21, 2007

SHEET No. G2.8 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	166	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 103

Approximate Ground Surface Elevation (feet MSL): 82 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	15	104			60/.5'			CL	Brown SILTY CLAY, very hard, damp (alluvium)
	16				64				
	17	107			50/.5'		5	CH	Brown SILTY CLAY with gray clay, very hard, damp (alluvium)
	19				39		10		grades to hard
	19	94			50/.5'		15	CH	Brown with white mottling SILTY CLAY, very hard, damp (alluvium)
	19				53/.5'		20		
UC=71	19	105			60/.5'		25	CH	Light brown SILTY CLAY, very hard, damp (alluvium)
	19				50/.5'		30		
	18	92			50/.5'		35	CH	Brown SILTY CLAY, very hard, damp (alluvium)
	21				54/.5'		40	SM	Brown SILTY SAND with clay, very dense, damp (alluvium)
	23	73			69		45		
	24				40		50	SM	Reddish tan SILTY SAND, dense, damp (alluvium)
									Boring terminated at 50 feet
							55		

Date Started:	July 28, 2004	Water Level: ▽	Not Encountered
Date Completed:	July 28, 2004		
Logged By:	F. Meyer	Drill Rig:	CME-75
Total Depth:	50 feet	Drilling Method:	4" Auger & T.C. Finger Bit
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 3860-30.GPJ GEOLABS.GDT 11/7/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 104

Approximate Ground Surface Elevation (feet MSL): 82 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	14				32			CL	Brown SILTY CLAY with some roots, very stiff, damp (alluvium)
	16				56			CH	Brown SILTY CLAY with some sand, very hard, damp (alluvium)
	20	88			50/.3'		5		
	18				46/.5' +40/.3'		10		
	18	107			50/.5'		15		
	21				33/.5' +50/.3'		20		
	19	101			55/.5'		25	CH	Brown SILTY CLAY, very hard, damp (alluvium)
	15				50/.4'		30	SM	Brown fine SILTY SAND with some gravel, very dense, damp (alluvium)
	21	80			50/.5'		35		
	23				43/.5' +30/.2'		40		
	52				19		45	MH	Tan-brown CLAYEY SILT with sand and coralline gravel, very stiff, moist (alluvium)
								MH	Light brown CLAYEY SILT with some sand, very hard, damp (residual soil)
	28				41/.5' +25/.1'		50		Boring terminated at 50.6 feet
							55		

Date Started:	July 27, 2004	Water Level: ▽	Not Enountered
Date Completed:	July 27, 2004		
Logged By:	F. Meyer	Drill Rig:	CME-75
Total Depth:	50.6 feet	Drilling Method:	4" Auger & T.C. Finger Bit
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 3860-30.GPJ GEOLABS.GDT 11/7/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-9

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. *G2.9* **OF** *27* **SHEETS**

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	167	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 105

Approximate Ground Surface Elevation (feet MSL): 136.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	18	107			56	>4.5		CL	Dark brown SILTY CLAY with very fine sand, soft, dry (fill/alluvium)
	18				56	>4.5		CH	Dark brown SILTY CLAY with some sand, very hard, dry (alluvium)
LL=55 PI=37	21	110			45	>4.5	5	CH	Brown with black mottling SILTY CLAY, hard to very hard, damp (alluvium)
	20				65	>4.5	10		
	21	113			50/.5' +10/.0' Ref.	>4.5	15	CH	Brown with black and white mottling SILTY CLAY, very hard, damp (alluvium)
	21				68	>4.5	20		
UC=83	21	111			30/.3' Ref.	>4.5	25		
	22				60	4.0	30	CH	Brown with black mottling SILTY CLAY, hard, damp (alluvium)
	23	109			30/.3' Ref.	>4.5	35	CH	Brown with black and tan mottling SILTY CLAY, very hard, damp to moist (alluvium)
	19				45/.3' Ref.		40	SM	Brown with black mottling SILTY SAND, very dense, damp (alluvium)
	17				55/.3' Ref.		45		Brown with black mottling extremely weathered BASALTIC BOULDERS, breaks down to clayey silt with fine sand, very hard, dry to damp (alluvium)
	19				60/.3' Ref.		50		Boring terminated at 49.8 feet
							55		

Date Started:	July 23, 2004	Water Level: ▽	Not Enountered
Date Completed:	July 23, 2004		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	49.8 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 106

Approximate Ground Surface Elevation (feet MSL): 135 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	13	107			64			MH	Dark brown CLAYEY SILT with some basaltic gravel and cobbles, hard, damp (fill/alluvium)
	19				51	4.5		CH	Dark brown SILTY CLAY with some basaltic gravel, very hard, damp (alluvium)
	19	107			73	>4.5	5	CH	Brown with black mottling SILTY CLAY, very hard, damp (alluvium)
	20				72	>4.5	10	CH	Brown with black and white mottling SILTY CLAY with some sand, very hard, damp (alluvium)
	22	106			50/.3' Ref.	>4.5	15		
	22				66	>4.5	20		
	21	106			30/.3' Ref.	>4.5	25		grades with some highly weathered basaltic gravel
	24				74	>4.5	30	CH	Brown with reddish brown mottling SILTY CLAY, very hard, damp (alluvium)
UC=9	18	98			30/.3' Ref.	2.5	35	ML	Brown with black mottling fine SANDY SILT, very stiff, damp (alluvium)
	28				10/.0' Ref.		40	SM	Dark brown with black mottling cemented SILTY SAND, very dense, dry (alluvium)
	17				30/.3' Ref.		45		grades to brown
	19				40/.3' Ref.	>4.5	50	MH	Reddish brown with black mottling CLAYEY SILT with very fine sand, very hard, damp (residual soil)
							55		Boring terminated at 50.3 feet

Date Started:	July 22, 2004	Water Level: ▽	Not Enountered
Date Completed:	July 22, 2004		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	50.3 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-10

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.10 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	168	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 107

Approximate Ground Surface Elevation :

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	18	96			47			CH	Brown SILTY CLAY, hard, damp (alluvium)
	20				37				
	22	109			32		5		grades to very stiff
								CH	Brown SILTY CLAY with sand, very hard, damp (alluvium)
LL=52 PI=35	20				75		10		
	20	110			50/.4'		15		
	16				63		20		grades with traces of coralline gravel
UC=85	18	115			50/.4'		25		
	20				50/.5'		30	CH	Light brown with brown, black and gray mottling SILTY CLAY with some coralline gravel, hard, damp (alluvium)
	20	74			50/.5'		35	SM	Light brown SILTY SAND, very dense, dry (alluvium)
	25				50/.3'		40		grades with some gravel
	19				50/.3'		45		
	20				60/.5'		50	MH	Light brown CLAYEY SILT, very hard, damp (alluvium)
									Boring terminated at 50 feet
							55		

BORING LOG.DGT 3860-30.GPJ GEOLABS.GDT 11/7/06

Date Started:	July 26, 2004	Water Level: ▽	Not Enountered
Date Completed:	July 26, 2004		
Logged By:	F. Meyer	Drill Rig:	CME-75
Total Depth:	50 feet	Drilling Method:	4" Auger & T.C. Finger Bit
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 108

Approximate Ground Surface Elevation (feet MSL): 136.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	18	96			66			MH	Dark brown CLAYEY SILT with some basaltic
								CH	gravels, stiff, dry (fill)
	19				52				Dark brown with black mottling SILTY CLAY with some basaltic gravels, very hard, dry to damp (fill/alluvium)
	21	108			48	>4.5	5	CH	Brown with black mottling SILTY CLAY, very hard, damp (alluvium)
	20				40/.5'	>4.5	10		
UC=34	22	106			30/.3' Ref.	>4.5	15	MH	Brown with white and black mottling CLAYEY SILT, very hard, dry to damp (alluvium)
	20				32/.5' +30/.3' Ref.	>4.5	20	CH	Brown with black and white mottling SILTY CLAY with some coarse sand, very hard, damp (alluvium)
	17	112			30/.3' Ref.	>4.5	25		
	20				50/.4'		30		
	21	82			50/.5'		35	MH	Tannish brown CLAYEY SILT, very hard, damp (alluvium)
	23				50/.5'		40	SM	Light brown SILTY SAND, very dense, damp (alluvium)
	15				50/.2'		45		
	19				50/.3'		50	MH	Reddish brown CLAYEY SILT, very hard, damp (alluvium)
									Boring terminated at 49.8 feet
							55		

BORING LOG.DGT 3860-30.GPJ GEOLABS.GDT 11/7/06

Date Started:	July 23, 2004	Water Level: ▽	Not Enountered
Date Completed:	July 23, 2004		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	49.8 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

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

ROBIN M. LIM
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-11

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.11 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	169	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJECT NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 109

Approximate Ground Surface Elevation (feet MSL): 79.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	21	99			50/.5'	4.0				CL	Dark brown with light tan mottling SILTY CLAY, very hard, damp (alluvium)
	25				+25/.3' Ref.	>4.5					grades with black mottling
UC=101	21	109			32 50/.3' Ref.	3.0	5				grades to hard
	26				30	3.0	10				
					35/.3' Ref.	4.0	15				grades to very hard
										CL	Brown with white mottling SILTY CLAY with some sand (coralline), hard, damp
	15		33	15	56		20			ML	Light grayish white SANDY SILT (CORALLINE), hard, dry
							25			ML	Whitish gray with light orange mottling LIMESTONE, closely fractured, highly weathered, medium hard (limestone formation)
	26		12		30/.3' Ref.						Dark reddish brown fine SANDY SILT, very stiff, damp (alluvium)
	23		29	29	52		30			SM	Light orange with white mottling SILTY SAND (CORALLINE), dense, dry
							35				
	18		25		45/.5' +10/.0' Ref.					ML	White with brown mottling SANDSTONE (CORALLINE), moderately weathered, hard (sandstone)
							40			SM	Reddish brown with white mottling SANDY SILT with some sand (coralline), hard, dry
	19		8		18/.5' +10/.0' Ref.					GM	Whitish brown with white mottling SILTY SAND AND GRAVEL (CORALLINE) with some clay, medium dense, dry
							45				Whitish light tan SILTY GRAVEL AND SAND (CORALLINE), medium dense, dry (coralline detritus)
	18		10		11					GW	Whitish tan with brown mottling SANDY (CORALLINE) AND GRAVEL (LIMESTONE) in a silt matrix, medium dense, dry (coralline detritus)
	11				22		50				
											Boring terminated at 53 feet
							55				

Date Started:	December 14, 2006	Water Level: ▽	Not Enountered
Date Completed:	December 14, 2006		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	53 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 3860-30.GPJ GEOLABS.GDT 1/31/07

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJECT NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 110

Approximate Ground Surface Elevation (feet MSL): 79 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
UC=92	19	111			42/.5'	4.0				CL	Dark brown with white mottling SILTY CLAY, very hard, damp (alluvium)
LL=49	21				+10/.0' Ref.	4.0					
PI=30	21	107			65	>4.5					grades with white and black mottling
UC=65					35/.3' Ref.		5				
	21				28/.5' +20/.3' Ref.	>4.5	10				
										CL	Brown with white mottling SILTY CLAY, very hard, damp (alluvium)
	21				30/.5' +25/.3' Ref.	>4.5	15				
	36		15	7	29/.5' +10/.0' Ref.		20			ML	Whitish gray with light tan and light orange mottling SANDY SILT (CORALLINE) with traces of clay, hard, damp
							25			ML	Whitish tan LIMESTONE (CORALLINE), closely fractured, highly weathered, medium hard (limestone formation)
	27		14		87						Dark brown fine SANDY SILT, very hard, dry (alluvium)
	21		24		25		30			GM	Light orange with white mottling SILTY GRAVEL AND SAND (CORALLINE), medium dense, dry
	32		48		27	2.0	35			CL	Tan with multi-color mottling SANDY CLAY (CORALLINE), very stiff, dry
	21		29		37		40			SM	Light orangish white SILTY SAND (CORALLINE) AND SOME GRAVEL with traces of clay, medium dense, damp
	14		10		32		45				grades to light grayish white with brown mottling
	15				22		50			GW	Light grayish white SANDY GRAVEL (CORALLINE) with silt, medium dense, dry (coralline detritus)
											Boring terminated at 52.5 feet
							55				

Date Started:	December 15, 2006	Water Level: ▽	Not Enountered
Date Completed:	December 15, 2006		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	52.5 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG DOT 3860-30.GPJ GEOLABS.GDT 1/31/07

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-12

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.12 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	170	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 232

Approximate Ground Surface Elevation (feet MSL): 158.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	21	84			33	2.0				CH	Light grayish brown SILTY CLAY, very stiff, damp (alluvium)
	22				18	2.0					grades to brown
LL=42 PI=22	24	100			23	1.5	5			CL	Brown SILTY CLAY with fine sand, very stiff, damp (alluvium)
	20				30/.3' Ref.		10			ML	Orangish brown densely cemented SANDY SILT, very hard, dry (alluvium)
					10/.0' Ref.		15				grades with some gravel and cobbles (basaltic)
	15				26/.3' Ref.						
							20				
	21				40/.3' Ref.		25			SM	Brown SILTY SAND, very dense, dry (alluvium)
			57	40			30				Light gray and reddish brown BOULDERS AND COBBLES (BASALTIC) in a clayey silt matrix, very hard (alluvium)
			28	7			35				
			62	14	20/.2'		40			ML-SM	Reddish brown SANDY SILT with highly weathered gravel, stiff, moist (alluvium)
			62	0		2.0	45				
					72	2.0	50				grades to very hard
											Boring terminated at 50 feet
							55				

Date Started:	April 27, 2006	Water Level: ▽	Not Encountered
Date Completed:	April 28, 2006		
Logged By:	Y. Chiba & D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	50 feet	Drilling Method:	4" Auger & HQ Coring
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 233

Approximate Ground Surface Elevation (feet MSL): 157.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
UC=115	13	91			75	>4.5				CH	Brown SILTY CLAY with traces of sand (coralline and basaltic) and organics. very hard, moist (fill)
	15				37	>4.5					grades to hard
	16	90			29/.5' +25/.3' Ref.	>4.5	5			CH	Dark orangish brown with black mottling SILTY CLAY with traces of organics, very hard, moist (alluvium)
	13				30/.4' Ref.	1.8	10				
	16	99			50/.5' Ref.	3.8	15			CH	Brown and light purplish gray SILTY CLAY AND BOULDERS (BASALTIC), very hard, moist (alluvium)
	17				19/.2' Ref.	1.5	20			ML-SM	Brown with black mottling fine SANDY SILT, very hard, moist (alluvium)
	21				27/.3' Ref.		25			SM	Brown with black mottling SILTY FINE SAND, very dense, moist (alluvium)
	19				37/.5' +28/.3'	2.5	30			MH	Brown CLAYEY SILT with boulders and gravel (basaltic), very hard, moist (alluvium)
	9				23/.2' Ref.		35				
	18				50/.4' Ref.		40			SM	Dark orangish brown SILTY SAND with traces of clay, very dense, moist (alluvium)
	17				28/.3' Ref.		45				
	19				79		50				grades with traces of highly to completely weathered gravel (basaltic)
											Boring terminated at 51.5 feet
							55				

Date Started:	January 25, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 25, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	51.5 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-13

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. *G2.13* OF *27* SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	171	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 233A

Approximate Ground Surface Elevation (feet MSL): 155.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	15	85			40/.3' Ref.	>4.5		CH	Dark brown with black mottling SILTY CLAY, very hard, dry (alluvium)
	16				37	>4.5			
					48	>4.5	5		grades to damp
								CH	Brown SILTY CLAY with very fine sand, hard, damp (alluvium)
	19				26	3.5	10		
									grades with rounded gravel (basaltic)
	12	90			25/.3' Ref.		15	SM	Brown with multi-color mottling SILTY SAND with gravel (basaltic), medium dense, damp (alluvium)
	11				40/.3' Ref.		20	MH	Brown CLAYEY SILT with fine sand and some rounded gravel (basaltic), very hard, dry (alluvium)
	19				53		25		
								ML	Brown SANDY SILT with gravel and cobbles, very hard (alluvium)
					20/.3' Ref.		30		grades with cobbles (basaltic)
	7				30/.5' +10/.0' Ref.		35	GM	Brown SILTY GRAVEL with sand, very dense, dry (alluvium)
	17				30/.3' Ref.	>4.5	40	MH	Orangish brown with black mottling CLAYEY SILT with fine friable sand, very hard, damp (alluvium)
								ML	Orangish brown with black mottling fine SANDY SILT with traces of clay, very hard, dry (alluvium)
	17				30/.3' Ref.	>4.5	45		
	20				35	>4.5	50	ML	Orangish brown with white mottling fine SANDY SILT with traces of clay, very hard, dry (alluvium)
									Boring terminated at 51.5 feet
							55		

Date Started:	January 9, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 9, 2006		
Logged By:	Y. Chiba	Drill Rig:	MOBILE B-80
Total Depth:	51.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 234

Approximate Ground Surface Elevation (feet MSL): 154 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	14	94			40/.5' +50/.3'	>4.5		CH	Brown SILTY CLAY, very hard, dry (alluvium)
	13				Ref.	>4.5			
LL=50 PI=31	16	80			75 10/.0' Ref.	>4.5	5		
								CH	Brown with white mottling SILTY CLAY with fine sand, very hard, damp (alluvium)
	18				75	>4.5	10		
								MH	Brown CLAYEY SILT with some gravel (basaltic), very hard, damp (alluvium)
	14				25/.3' Ref.	>4.5	15		
	16	86			30/.3' Ref.	>4.5	20	MH	Brown CLAYEY SILT with fine sand, very hard, damp (alluvium)
	20				29/.5' +20/.3' Ref.	>4.5	25	MH	Orangish brown CLAYEY SILT, very hard, damp (alluvium)
									grades with some cobbles (basaltic)
					10/.0' Ref.		30		grades with some boulders (basaltic)
					10/.0' Ref.		35		
	19				50/.5' +10/.0' Ref.	>4.5	40	CH	Orangish brown with black and white mottling SILTY CLAY, very hard, damp (alluvium)
								MH	Orangish brown CLAYEY SILT, very hard, dry (alluvium)
	16				30/.3' Ref.	>4.5	45		
								ML	Orangish brown fine SANDY SILT with some clay, very hard, dry (alluvium)
	20				80	>4.5	50		
									Boring terminated at 51.5 feet
							55		

Date Started:	January 10, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 10, 2006		
Logged By:	Y. Chiba	Drill Rig:	MOBILE B-80
Total Depth:	51.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-14

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.14 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	172	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 235

Approximate Ground Surface Elevation (feet MSL): 136.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
					62	4.0				CH	Orangish brown SILTY CLAY, very hard, dry (alluvium)
					13					MH	Orangish brown with multi-color mottling CLAYEY SILT with highly weathered coarse sand (basaltic), very hard, dry to damp (alluvium)
					43	>4.5	5				
										CH	Orangish brown with gray mottling SILTY CLAY with some rounded gravel (basaltic), very hard, damp (alluvium)
					25	>4.5	10				
					35/.3' Ref.	>4.5	15			ML	Orangish brown with black mottling fine SANDY SILT, very hard, dry (alluvium)
					50	3.5	20			CH	Orangish brown SILTY CLAY, hard, damp (alluvium)
					35/.3' Ref.	>4.5	25			CH	Orangish brown with black mottling SILTY CLAY, very hard, damp (alluvium)
					10/.0' Ref.	>4.5	30				
					20/.3' Ref.		35				
					30/.3' Ref.	>4.5	40			MH	Orangish brown with black mottling CLAYEY SILT with fine sand, very hard, dry (alluvium)
					44/.5' +30/.3' Ref.	>4.5	45			CH	Orangish brown SILTY CLAY with fine sand, very hard, damp (alluvium)
					58	>4.5	50			CH	Orangish dark brown with black and gray mottling SILTY CLAY with some gravel (basaltic), very hard, damp (alluvium)
											Boring terminated at 51.5 feet
							55				

Date Started:	January 10, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 11, 2006		
Logged By:	Y. Chiba	Drill Rig:	MOBILE B-80
Total Depth:	51.5 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG_DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 236

Approximate Ground Surface Elevation (feet MSL): 140.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
					31					MH	Brown CLAYEY SILT, hard, dry (alluvium)
					26	>4.5					
					36		5				
						>4.5				CH	Orangish brown with multi-color mottling SILTY CLAY with highly weathered sand (basaltic), very hard, dry (alluvium)
										MH	Orangish brown CLAYEY SILT with very fine sand, very hard, dry (alluvium)
					54	>4.5	10				
					10/.0' Ref.		15				
					30/.3' Ref.	>4.5	20			CH	Orangish brown with white mottling SILTY CLAY, very hard, damp (alluvium)
					15/.0' Ref.	>4.5	25				
					24/.2' Ref.	>4.5	30				
					50/.5' Ref.	3.0	35			ML	Reddish brown CLAYEY SILT with traces of fine sand, very hard, moist (alluvium)
					30/.2' Ref.	2.0	40				
					53	1.8	45				
					38/.5' +30/.3'	2.0	50				Boring terminated at 51.3 feet
							55				

Date Started:	January 11, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 12, 2006		
Logged By:	Y. Chiba & D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	51.3 feet	Drilling Method:	4" Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG_DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-15

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.15 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	173	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 237

Approximate Ground Surface Elevation (feet MSL): 135 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
					55	>4.5				CH	Dark brown SILTY CLAY with gravel (basaltic) and traces of sand (coralline and basaltic), hard, moist (fill)
					19	>4.5					grades to very stiff
					29	>4.5	5			MH	Brown CLAYEY SILT with traces of sand (coralline), very stiff, moist (fill)
					19	4.0	10			MH	Dark brown CLAYEY SILT with fine sand, very stiff, moist (alluvium)
					30/.3' Ref.	>4.5	15				grades to very hard
					41		20			ML	Dark brown CLAYEY SILT with fine sand, very stiff, damp (alluvium)
					15/.1' Ref.		25				grades to very hard
					45		30			SM	Dark brown and gray SILTY SAND with traces of highly weathered gravel (basaltic), very dense, moist (alluvium)
					25/.2' Ref.	3.0	35			ML	Dark brown CLAYEY SILT with fine sand and cobbles (basaltic), very stiff, moist (alluvium)
					31/.3' Ref.	>4.5	40			CH	Dark brown SILTY CLAY, very hard, moist (alluvium)
					25/.2' Ref.	>4.5	45				
					22/.3' Ref.	>4.5	50				Boring terminated at 50.3 feet
							55				

Date Started:	January 11, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 11, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	50.3 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_3860-30.GPJ GEOLABS.GDT 1/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 238

Approximate Ground Surface Elevation (feet MSL): 138 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
					15/.0' Ref.	>4.5				CH	Dark brown and light gray SILTY CLAY with gravel (basaltic) and traces of sand (basaltic), very hard, moist (fill)
					29	>4.5					grades to very stiff
					50/.4' Ref.	>4.5	5			CH	Dark brown SILTY CLAY with traces of sand (basaltic) and organics, very hard, moist (fill)
					71	>4.5	10			CH	Dark brown SILTY CLAY with some sand and boulders, very hard, moist (alluvium)
					50/.5' Ref.		15			SM	Brown SILTY FINE SAND, very dense, damp (alluvium)
					63		20				
					50/.4' Ref.		25				
					30/.4' Ref.	1.8	30			MH	Brown and orangish brown with black mottling CLAYEY SILT with fine sand, very stiff, moist (alluvium)
					28/.3' Ref.	1.5	35				
					50/.3' Ref.		40				
					32/.2' Ref.		45				
					22/.3' Ref.	1.3	50				Boring terminated at 50.3 feet
							55				

Date Started:	January 16, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 16, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	50.3 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_3860-30.GPJ GEOLABS.GDT 1/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-16

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. *G2.16* OF *27* SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	174	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 239

Approximate Ground Surface Elevation (feet MSL): 64 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	15				34	>4.5		CH	Dark brown SILTY CLAY with tan-white sand (coralline) and traces of gravel, hard, moist (fill)
	17	80			78	>4.5			grades to very hard
	18				38	>4.5	5	CL	Brown SILTY CLAY, hard, moist (alluvium)
LL=46 PI=28	15	102			37/.5' +29/.3'	>4.5	10		grades to very hard
			40	17	13/.0' Ref.		15		Light gray, orangish tan and white CORAL, moderately weathered, hard (coral formation)
UC=470			22	18			20		
	14				46		25		
			0	0					
	4				18		30		Light gray and white CORAL, moderately weathered, medium hard (coral formation)
			0	0					
	8				31		35		grades to tan and white, hard
			0	0					
	5				25		40		White and tan CORAL, moderately weathered, hard (coral formation)
			19	10					
			23	13	13/.0' Ref.		45		
							50		Boring terminated at 50 feet
							55		

Date Started:	January 17, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 17, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	50 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 3860-30.GPJ GEOLABS.GDT 1/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 240

Approximate Ground Surface Elevation (feet MSL): 64.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	17	107			44/.5' +25/.3'	>4.5		CH	Dark brown SILTY CLAY with gravel (coralline), very hard, moist (fill/alluvium)
	14				53	>4.5		CH	Dark brown SILTY CLAY, very hard, moist (alluvium)
	16	93			25/.3' Ref.	>4.5	5		
	18				55	>4.5	10		
							15		White and tan CORAL, moderately weathered, medium hard (coral formation)
	2				18/.1' Ref.				
					12/.0' Ref.		20		
	3				28/.3' Ref.		25		White CORAL, moderately to highly weathered, medium hard (coral formation)
	6				19		30		
	5				26		35		
	5				25		40		
	6				18/.3' Ref.		45		
	6				25		50		Boring terminated at 51.5 feet
							55		

Date Started:	January 12, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 12, 2006		
Logged By:	D. Sjolund	Drill Rig:	MOBILE B-80
Total Depth:	51.5 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT 3860-30.GPJ GEOLABS.GDT 1/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-17

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.17 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	175	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 241

Approximate Ground Surface Elevation (feet MSL): 66 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
					44	2.5		MH	Brown CLAYEY SILT with traces of sand (coralline), hard, moist (fill)
					16	2.0			grades to stiff, damp
					40	>4.5	5	CH	Brown SILTY CLAY with traces of sand, hard, moist (alluvium)
					19	>4.5	10		grades to very stiff
								CH	Brown SILTY CLAY, very hard, moist (alluvium)
			63	18	24/.3' Ref.	>4.5	15		Light tan and white CORAL, moderately weathered, hard (coral formation)
			60	20			20		grades to white
			20	8			25		
			24	10	21		30		White CORAL, moderately weathered, hard (coral formation)
			14	0	44		35		
			0	0	16		40		
			22	12	15/.4' Ref.		45		
							50		Boring terminated at 50.5 feet
							55		

Date Started:	January 17, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 17, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	50.5 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_3860-30.GPJ GEOLABS.GDT 1/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 242

Approximate Ground Surface Elevation (feet MSL): 65 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	USCS	Description
LL=45 PI=26	16	89			55	>4.5		CL	Brown SILTY CLAY with traces of sand (coralline and basaltic), hard, moist (fill)
	15				45	>4.5			
	17	95			50/.4' Ref.	>4.5	5	CH	Brown SILTY CLAY, very hard, moist (alluvium)
	19				47	>4.5	10		
	13				26/.2' Ref.		15	SM	Brown SILTY FINE AND MEDIUM SAND, very dense, damp (alluvium)
	6		38	0	55		20		Tan and white CORAL, moderately weathered, hard (coral formation)
	8		70	56	10/.0' Ref.		25		Grayish white and yellowish tan CORAL, moderately weathered, hard (coral formation)
			23	8			30		
	0		13	0	24/.3' Ref.		35		
	2		5	0	26		40		
	12		29	0	12		45		Grayish tan to light tan CORAL, moderately weathered, hard (coral formation)
	6				16/.3' Ref.		50		Boring terminated at 50.8 feet
							55		

Date Started:	January 18, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 18, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	50.8 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_3860-30.GPJ GEOLABS.GDT 1/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

SIGNATURE 4-30-08 EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-18

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.18 OF 27 SHEETS

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	176	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 243

Approximate Ground Surface Elevation (feet MSL): 66.5 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
					34	>4.5				CH	Brown SILTY CLAY with traces of sand (coralline) and organics, very stiff, moist (fill/alluvium)
					29	>4.5					
					50/.5' Ref.	>4.5	5			CH	Dark brown SILTY CLAY with traces of fine sand, very hard, moist (alluvium)
					48	>4.5	10				
					20/.1' Ref.	>4.5	15				Light tan CORAL, moderately weathered, hard (coral formation)
			25	0	32/.5' +12/.0' Ref.		20				
			53	27	14/.0' Ref.		25				White CORAL, slightly to moderately weathered, hard (coral formation)
			12	8			30				
					37		35				
			0	0							
					19		40				
			0	0							
					19		45				
			0	0							
					23		50				Grayish tan CORAL, moderately weathered, hard (coral formation)
											Boring terminated at 51.5 feet
							55				

Date Started:	January 20, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 20, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	51.5 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 244

Approximate Ground Surface Elevation (feet MSL): 68 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
					79	>4.5				CH	Brown with black mottling SILTY CLAY, very hard, moist (alluvium)
					44	>4.5					grades to hard
					50/.5' Ref.	>4.5	5				grades to very hard
					40	>4.5	10			CH	Brown SILTY CLAY, very stiff, moist (alluvium)
					50/.4' Ref.	>4.5	15				grades to very hard
			53	23	14/.0' Ref.		20				White and light tan CORAL, moderately weathered, hard (coral formation)
			27	10			25				
					18		30				
			43	17							White SILTY GRAVEL (CORALLINE), loose to medium dense, moist (coralline detritus)
					10		35				
			0	0							
					20		40				Light tan CORAL, moderately weathered, hard (coral formation)
			0	0							
					16		45				White CORAL, moderately weathered, hard (coral formation)
			5	0							
					19		50				Boring terminated at 51.5 feet
							55				

Date Started:	January 18, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 18, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	51.5 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-19

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. *G2.19* **OF** *27* **SHEETS**

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	177	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 245

Approximate Ground Surface Elevation (feet MSL): 68 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
					26	>4.5				CH	Brown SILTY CLAY with traces of organics, very stiff, dry to moist (alluvium)
					18	>4.5					
					50/.4' Ref.	>4.5	5				grades to very hard
					39	>4.5	10			CH	Brown SILTY CLAY, hard, moist (alluvium)
					10/.0' Ref.	>4.5	15				grades to very hard
											Orangish brown and tan CORAL, moderately weathered, hard (coral formation)
					39		20				
					25		25				
					20		30				grades to grayish white
					35		35				Tannish white CORAL, moderately weathered, hard (coral formation)
					26/.3' Ref.		40				grades to grayish white
					29		45				
					26		50				Boring terminated at 51.5 feet
							55				

Date Started:	January 20, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 20, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	51.5 feet	Drilling Method:	4" Solid-Stem Auger
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring 246

Approximate Ground Surface Elevation (feet MSL): 68 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
					27	>4.5				CH	Brown SILTY CLAY with traces organics, very stiff, moist (alluvium)
					36	>4.5					grades to hard
					35/.3' Ref.	>4.5	5				grades to very hard
					38	>4.5	10			CH	Brown SILTY CLAY, hard, moist (alluvium)
										SM	Dark orangish brown SILTY FINE SAND, very dense, damp (alluvium)
					35/.5' Ref.		15				Tan and white CORAL, moderately weathered, hard (coral formation)
			29	0	22		20				
					34		25				
			43	14							White CORAL, moderately weathered, hard (coral formation)
			19	10	33		30				
			0	0	14		35				
			0	0	12		40				
			11	0	18/.4' Ref.		45				grades to light grayish white
											Grayish white and tan CORAL, moderately weathered, hard (coral formation)
					27		50				Boring terminated at 51.5 feet
							55				

Date Started:	January 19, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 19, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	51.5 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING LOG.DOT 3860-30.GPJ GEOLABS.GDT 11/17/06

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-20

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. G2.20 OF 27 SHEETS

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

FED. ROAD DIST. NO.	STATE	FED. AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-8930(2)	2007	178	331

GEOLABS, INC.
Geotechnical Engineering

NORTH-SOUTH ROAD, PHASE 1B
F.A.I. PROJ. NO. STP-8930(2)
EWA, OAHU, HAWAII

Log of Boring **247**

Approximate Ground Surface Elevation (feet MSL): 71 *

Other Tests	Moisture Content (%)	Dry Unit Weight (pcf)	Core Recovery (%)	RQD (%)	Penetration Resistance (blows/foot)	Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
					50/.5' Ref.	>4.5				CH	Brown SILTY CLAY with traces of sand (coralline and basaltic) and organics, very hard, moist (fill)
					36	>4.5					grades to hard
					30/.2' Ref.	>4.5	5				grades to very hard
					40	>4.5	10			CH	Brown SILTY CLAY, very stiff, moist (alluvium)
					30/.3' Ref.	>4.5	15				grades to very hard
			20	8	18/.0' Ref.		20				Tan CORAL, moderately weathered, hard (coral formation)
			31	9	38.5' Ref.		25				grades from tan to white
			9	0	20/.3' Ref.		30				White CORAL, moderately weathered, hard (coral formation)
			0	0	16		35				grades to tan
			0	0	17		40				
			0	0	14		45				
					16		50				Boring terminated at 51.5 feet
							55				

Date Started:	January 19, 2006	Water Level: ▽	Not Encountered
Date Completed:	January 19, 2006		
Logged By:	D. Sjolund	Drill Rig:	CME-75
Total Depth:	51.5 feet	Drilling Method:	4" Solid-Stem Auger & HQ Coring
Work Order:	3860-30	Driving Energy:	140 lb. wt., 30 in. drop

BORING_LOG_DOT_3860-30.GPJ GEOLABS.GDT 1/17/06

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

ROBIN M. LIM
LICENSED PROFESSIONAL ENGINEER
No. 8436-C
HAWAII, U.S.A.

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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS-21

North-South Road
Phase 1B
F.A.I. Proj. No. STP-8930(2)

Date: Feb 21, 2007

SHEET No. *G2.21* **OF** *27* **SHEETS**