FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	201	230

GEOTECHNICAL NOTES

1. A geotechnical engineering report entitled "Geotechnical Engineering Exploration, Farrington HIghway Intersection Improvements, Nanakuli and Haleakala Intersections, Nanakuli, Oahu, Hawaii" dated August 10, 2010 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 BI-02 and BL-03.

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.

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

T:\DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA\CADD\Sheets\Borings\BL-02.dgn

CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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SIGNATURE 04/30/14 EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

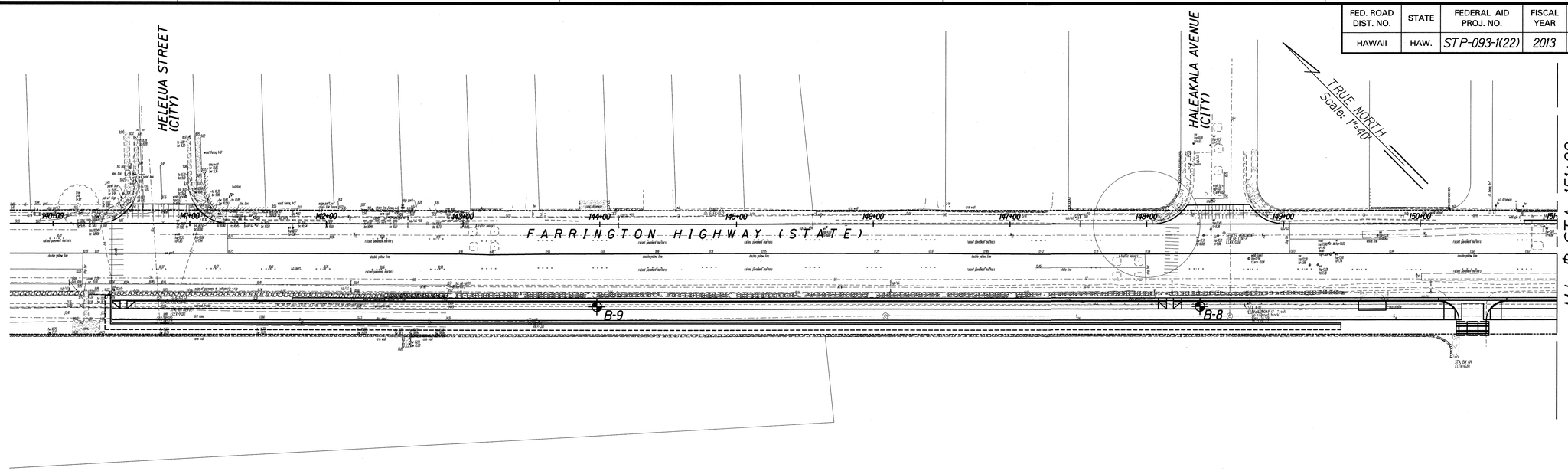
BORING LOGS

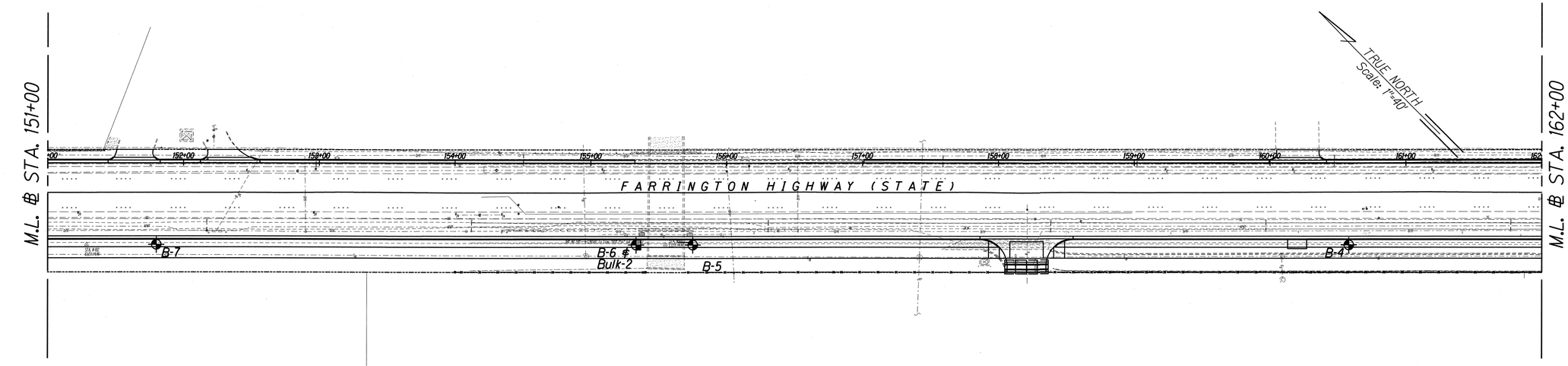
FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. BL-01 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	202	230





LEGEND

- APPROXIMATE BORING LOCATION
- APPROXIMATE BULK SAMPLE LOCATION

GRAPHIC SCALE

1"=40' 40' 20' 0 40' 80'

CLAYTON S. MINURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

THIS WORK WAS PREPARED BY ME OR UNDER MY SUPERVISION

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BORING LOCATION MAP

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: 1"=40' Date: April 2013

SHEET No. BL-02 OF 10 SHEETS

202

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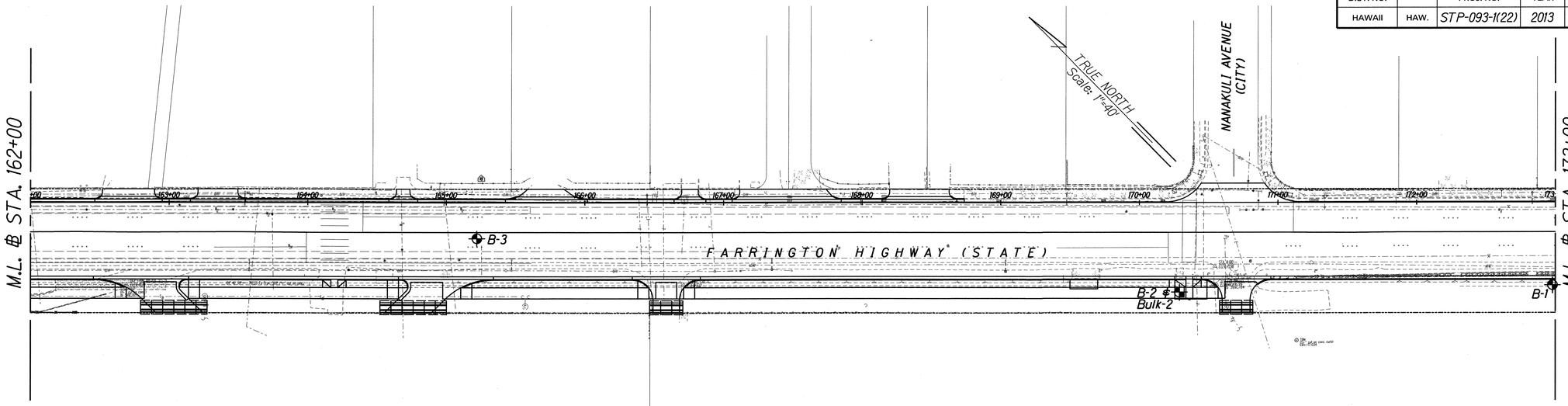
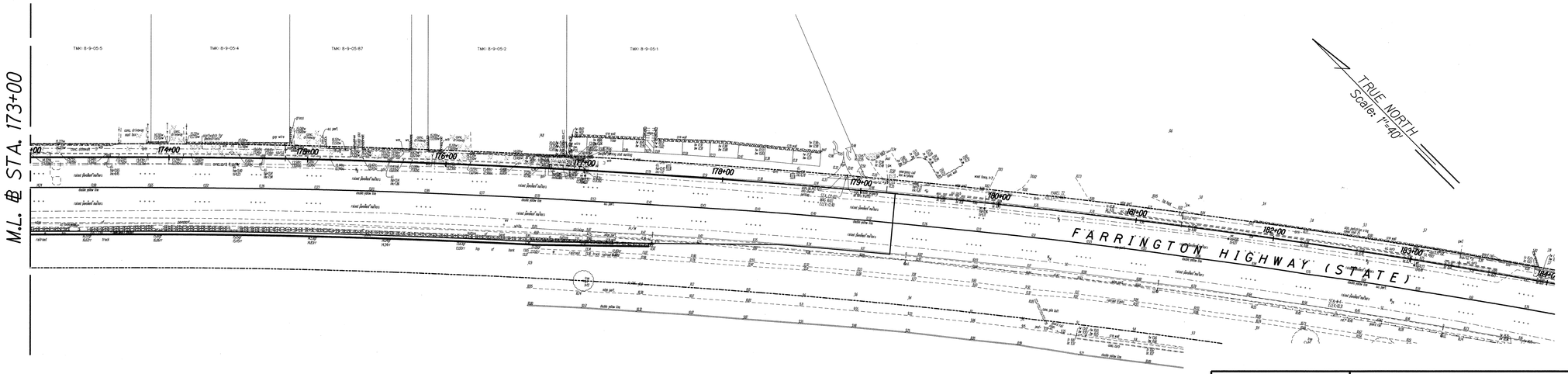
FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	203	230





LEGEND

- APPROXIMATE BORING LOCATION
- APPROXIMATE BULK SAMPLE LOCATION

GRAPHIC SCALE

1"=40' 40' 20' 0 40' 80'

CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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BORING LOCATION MAP

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: 1"=40' Date: April 2013

SHEET No. BL-3 OF 10 SHEETS

203

ORIGINAL PLAN
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FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	204	230

GEOLABS, INC.
Geotechnical Engineering

Soil Log Legend

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
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE		GP	POORLY-GRADED GRAVELS, GRAVEL-SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES MORE THAN 12% FINES	GM	SILTY GRAVELS, GRAVEL-SAND-SILT MIXTURES
			GC	CLAYEY GRAVELS, GRAVEL-SAND-CLAY 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
	50% OR MORE OF COARSE FRACTION PASSING THROUGH NO. 4 SIEVE		SP	POORLY-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
		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	LL	LIQUID LIMIT (NP=NON-PLASTIC)
	(3-INCH) O.D. MODIFIED CALIFORNIA SAMPLE	PI	PLASTICITY INDEX (NP=NON-PLASTIC)
	SHELBY TUBE SAMPLE	TV	TORVANE SHEAR (tsf)
	GRAB SAMPLE	PEN	POCKET PENETROMETER (tsf)
	CORE SAMPLE	UC	UNCONFINED COMPRESSION (psi)
	WATER LEVEL OBSERVED IN BORING AT TIME OF DRILLING	UU	UNCONSOLIDATED UNDRAINED TRIAXIAL COMPRESSION (ksf)
	WATER LEVEL OBSERVED IN BORING AFTER DRILLING		

Plate
A-0.1

LOG LEGEND FOR SOIL 6260-00.GPJ GEOLABS.GDT 7/6/12

GEOLABS, INC.
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Rock Log Legend

ROCK DESCRIPTIONS

	BASALT		FINGER CORAL
	BOULDERS		LIMESTONE
	BRECCIA		SANDSTONE
	CLINKER		SILTSTONE
	COBBLES		TUFF
	CORAL		VOID/CAVITY

ROCK DESCRIPTION SYSTEM

ROCK FRACTURE CHARACTERISTICS

The following terms describe general fracture spacing of a rock:

Massive:	Greater than 24 inches apart
Slightly Fractured:	12 to 24 inches apart
Moderately Fractured:	6 to 12 inches apart
Closely Fractured:	3 to 6 inches apart
Severely Fractured:	Less than 3 inches apart

DEGREE OF WEATHERING

The following terms describe the chemical weathering of a rock:

Unweathered:	Rock shows no sign of discoloration or loss of strength.
Slightly Weathered:	Slight discoloration inwards from open fractures.
Moderately Weathered:	Discoloration throughout and noticeably weakened though not able to break by hand.
Highly Weathered:	Most minerals decomposed with some corestones present in residual soil mass. Can be broken by hand.
Extremely Weathered:	Saprolite. Mineral residue completely decomposed to soil but fabric and structure preserved.

HARDNESS

The following terms describe the resistance of a rock to indentation or scratching:

Very Hard:	Specimen breaks with difficulty after several "pinging" hammer blows. Example: Dense, fine grain volcanic rock
Hard:	Specimen breaks with some difficulty after several hammer blows. Example: Vesicular, vugular, coarse-grained rock
Medium Hard:	Specimen can be broked by one hammer blow. Cannot be scraped by knife. SPT may penetrate by ~25 blows per inch with bounce. Example: Porous rock such as clinker, cinder, and coral reef
Soft:	Can be indented by one hammer blow. Can be scraped or peeled by knife. SPT can penetrate by ~100 blows per foot. Example: Weathered rock, chalk-like coral reef
Very Soft:	Crumbles under hammer blow. Can be peeled and carved by knife. Can be indented by finger pressure. Example: Saprolite

Plate
A-0.2

LOG LEGEND FOR ROCK 6260-00.GPJ GEOLABS.GDT 7/6/12

ORIGINAL PLAN
NOTE BOOK
No.
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DATE

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CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. BL-04 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	205	230

GEOLABS, INC.
Geotechnical Engineering

FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **1**

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet): 16 *
										GM	Light tannish brown SILTY GRAVEL (CORALLINE) with some sand, medium dense, dry (fill)
Sieve - #200 = 3.8%	2				38					SP	
	2				17						Light brownish tan poorly graded fine to medium grained SAND with traces of silt, medium dense, dry (coralline detritus)
	2	100			17		5				grades to light orangish white, medium grained at 3.5 feet
											grades to medium to coarse grained, moist
	2				10		10				
											Boring terminated at 11.5 feet
											* Elevations estimated from Topographic Survey Maps transmitted by PB Americas, Inc. on June 16, 2010.
							15				
							20				
							25				
							30				
							35				

BORING_LOG 6260-00.GPJ GEOLABS.GDT 7/6/12

Date Started:	April 20, 2010	Water Level:	Not Encountered
Date Completed:	April 20, 2010		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	11.5 feet	Drilling Method:	4" Auger
Work Order:	6260-00	Driving Energy:	140 lb. wt.,30 in. drop

Plate **A - 1**

GEOLABS, INC.
Geotechnical Engineering

FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **2**

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
											Approximate Ground Surface Elevation (feet): 17 *
										GM	Light tan SILTY GRAVEL (CORALLINE) with some sand, medium dense, dry (fill)
LL=45 PI=22	19	81			29					CL	Orangish brown with white mottling SANDY CLAY (CORALLINE) with some silt, very stiff, damp (fill)
	22				34					SM	Light orangish white SILTY SAND (CORALLINE), medium dense, dry (coralline detritus)
	8	91			45/6" +10/0" Ref.		5			GW	Light orangish white SANDY GRAVEL (CORALLINE) with some silt, dense, dry (coralline detritus)
	7				14		10				
										ML	Whitish tan with dark brown mottling SANDY SILT with traces of clay, very stiff, moist (coralline detritus)
	21	89			13		15				
										SM	Light tannish white with light brown mottling SILTY SAND (CORALLINE) with gravel and traces of clay, loose (coralline detritus)
	39				5		20				
											Boring terminated at 21.5 feet
							25				
							30				
							35				

BORING_LOG 6260-00.GPJ GEOLABS.GDT 7/6/12

Date Started:	April 20, 2010	Water Level: ▽	16.0 ft. 04/20/2010 1038 HRS
Date Completed:	April 20, 2010		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	21.5 feet	Drilling Method:	4" Auger
Work Order:	6260-00	Driving Energy:	140 lb. wt.,30 in. drop

Plate **A - 2**

ORIGINAL PLAN
NOTE BOOK No.
SURVEY PLOTTED BY DATE
DRAWN BY
TRACED BY
DESIGNED BY
QUANTITIES BY
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T:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Borings/BL-05

CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. BL-05 OF 32 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	206	230

GEOLABS, INC.
Geotechnical Engineering

FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **3**

Approximate Ground Surface Elevation (feet): 17 *

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	4				8/0"					GM	Light tan with white mottling SILTY GRAVEL (CORALLINE) with sand, medium dense, dry (fill)
					21	3.0				CL	Orangish brown SANDY CLAY with some silt, very stiff, dry (fill)
LL=47 PI=24	20										
	6	84			35/6" +25/3"		5			GM	White with light orange mottling SILTY GRAVEL (CORALLINE) with cobbles and some sand, dense, dry (coralline detritus)
					25/3"		10				Boring terminated at 10.3 feet
							15				
							20				
							25				
							30				
							35				

BORING LOG 6260-00.GPJ GEOLABS.GDT 7/6/12

Date Started:	April 19, 2010	Water Level:	Not Encountered	Plate
Date Completed:	April 19, 2010			
Logged By:	Y. Chiba	Drill Rig:	CME-75	A - 3
Total Depth:	10.3 feet	Drilling Method:	4" Auger	
Work Order:	6260-00	Driving Energy:	140 lb. wt.,30 in. drop	

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FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **4**

Approximate Ground Surface Elevation (feet): 16 *

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	12	77			24					GM	Light tannish brown SILTY GRAVEL (CORALLINE) with some sand, medium dense, dry (fill)
										ML	
										SM	Light tannish brown SANDY SILT with some gravel (coralline), soft, dry (fill)
Sieve - #200 = 25.7%	14				9/6" +18/3"						
	11	79			15/3"		5			SM	Light tan with white mottling SILTY SAND (CORALLINE) with gravel, medium dense, dry (fill)
											Light tannish white SILTY SAND (CORALLINE), very dense, dry (coralline detritus)
	7				18/3"		10				Boring terminated at 10.3 feet
							15				
							20				
							25				
							30				
							35				

BORING LOG 6260-00.GPJ GEOLABS.GDT 7/6/12

Date Started:	April 19, 2010	Water Level:	Not Encountered	Plate
Date Completed:	April 19, 2010			
Logged By:	Y. Chiba	Drill Rig:	CME-75	A - 4
Total Depth:	10.3 feet	Drilling Method:	4" Auger	
Work Order:	6260-00	Driving Energy:	140 lb. wt.,30 in. drop	

ORIGINAL PLAN
NOTE BOOK ____ N. ____
SURVEY PLOTTED BY ____ DATE
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CLAYTON S. MINURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. BL-06 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	207	230

GEOLABS, INC.
Geotechnical Engineering

FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **5**

Approximate Ground Surface Elevation (feet): 13 *

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	USCS	Description
								SM	Brown SILTY SAND with gravel, loose, dry (fill)
	19	85			11				
	17				6			CH	Brown SILTY CLAY with some gravel (coralline), stiff, moist
Direct Shear	36	83			14		5		
	44				8	0.8		CH	Dark brown SILTY CLAY, stiff, moist
UC	29	83			18				grades with some gravel (coralline)
Sieve - #200 = 16.0%	16				4		10	GM	Light tan SILTY GRAVEL (CORALLINE) with sand, loose, moist (coralline detritus)
	44	84			13				
	33				6		15	GW	Light gray SANDY GRAVEL (CORALLINE), loose (coralline detritus)
			33						grades with cobbles
	32				6	3.5	20	CH	Brown SILTY CLAY, soft
			69						Light tan BOULDER (CORALLINE)
			43	40			25		Light tan and gray CORAL, moderately fractured, moderately weathered, hard
			30				30		grades to highly fractured
							35		

Date Started:	April 16, 2010	Water Level: ▽ 11.8 ft. 04/16/2010 1030 HRS	Plate
Date Completed:	April 16, 2010		
Logged By:	M. Nolasco	Drill Rig: CME-75	A - 5.1
Total Depth:	52 feet	Drilling Method: 4" Auger & PQ Casing	
Work Order:	6260-00	Driving Energy: 140 lb. wt.,30 in. drop	

BORING LOG 6260-00.GPJ GEOLABS.GDT 7/6/12

GEOLABS, INC.
Geotechnical Engineering

FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **5**

(Continued from previous plate)

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	USCS	Description
	32	92			44			CH	Reddish brown SILTY CLAY, hard (alluvium)
			30						Light tan COBBLES (CORALLINE) with gravel in a brown clay matrix, medium dense
	21				10		40	GW	Light tan SANDY GRAVEL (CORALLINE), medium dense (coralline detritus)
			23						
	32	89			15		45	GP	Light tan GRAVEL (CORALLINE) in a clayey sand matrix, medium dense (coralline detritus)
			71						grades with cobbles in a clayey sand matrix
	20				46		50	GW	Light tan SANDY GRAVEL (CORALLINE), dense (coralline detritus)
									Boring terminated at 52 feet
							55		
							60		
							65		
							70		

Date Started:	April 16, 2010	Water Level: ▽ 11.8 ft. 04/16/2010 1030 HRS	Plate
Date Completed:	April 16, 2010		
Logged By:	M. Nolasco	Drill Rig: CME-75	A - 5.2
Total Depth:	52 feet	Drilling Method: 4" Auger & PQ Casing	
Work Order:	6260-00	Driving Energy: 140 lb. wt.,30 in. drop	

BORING LOG 6260-00.GPJ GEOLABS.GDT 7/6/12

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

T:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Borings/BL-07

CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. BL-07 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	208	230

GEOLABS, INC.
Geotechnical Engineering

FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **6**

Approximate Ground Surface Elevation (feet): 14 *

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	5	95			10					SW	Light tan to gray GRAVELLY SAND, medium dense, dry (fill)
	6				9					MH	Reddish brown CLAYEY SILT with sand, medium stiff, moist
Direct Shear LL=59 PI=38 UC	24	86			18		5				grades to very stiff
	23				12	>4.5				CH	Dark brown SILTY CLAY, stiff, moist
	27	94			31						
	42				11	1.5	10				
	30	91			10					SP	Light tan SAND, loose to medium dense, wet (beach sand)
	35				15					GW	Light tan to gray SANDY GRAVEL, medium dense (coralline detritus)
	20	96			29		15				
			20								
	25				12		20			SP	Gray medium grained SAND, medium dense (coralline detritus)
			0								
	28	94			15		25				grades with some gravel (coralline)
			0								
	35				5		30			GP	Gray GRAVEL (CORALLINE) in a clayey sand matrix, loose (coralline detritus)
			28								grades with cobbles (coralline)
							35				

Date Started:	April 15, 2010	Water Level: ▽ 13.0 ft. 04/15/2010 1025 HRS	Plate
Date Completed:	April 15, 2010		
Logged By:	M. Nolasco	Drill Rig: CME-75	A - 6.1
Total Depth:	52 feet	Drilling Method: 4" Auger & PQ Casing	
Work Order:	6260-00	Driving Energy: 140 lb. wt.,30 in. drop	

BORING_LOG 6260-00.GPJ GEOLABS.GDT 7/6/12

GEOLABS, INC.
Geotechnical Engineering

FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **6**

(Continued from previous plate)

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	28	93			16					GP	grades to medium dense
			38								grades with light tan cobbles (coralline)
	33				25		40				
			29			1.3				CH	Dark gray CLAY, very stiff (alluvium)
							45				grades with light tan cobbles and gravel (coralline)
	32	93			27					CH	Brown SILTY CLAY with some gravel (coralline), very stiff (alluvium)
			0				50				
	23				12	3.0					grades to stiff
											Boring terminated at 52 feet
							55				
							60				
							65				
							70				

Date Started:	April 15, 2010	Water Level: ▽ 13.0 ft. 04/15/2010 1025 HRS	Plate
Date Completed:	April 15, 2010		
Logged By:	M. Nolasco	Drill Rig: CME-75	A - 6.2
Total Depth:	52 feet	Drilling Method: 4" Auger & PQ Casing	
Work Order:	6260-00	Driving Energy: 140 lb. wt.,30 in. drop	

BORING_LOG 6260-00.GPJ GEOLABS.GDT 7/6/12

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

T:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Borings/BL-08

CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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04/30/14
SIGNATURE EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS
AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. BL-08 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	209	230

GEOLABS, INC. — Geotechnical Engineering

FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **7**

Approximate Ground Surface Elevation (feet): 14 *

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
										GM	Light tannish brown SILTY GRAVEL (CORALLINE) with some sand, medium dense, dry (fill)
Sieve - #200 = 3.5%	2	96			22					SP	
	2				18						Light brown poorly graded fine to medium grained SAND with traces of silt, medium dense, dry (fill)
	4	98			15		5				
	13				22/3"		10			GM	White with light tan mottling SILTY GRAVEL (CORALLINE) with sand, very dense, moist (coralline detritus)
											Boring terminated at 10.8 feet
							15				
							20				
							25				
							30				
							35				

BORING LOG 6260-00.GPJ GEOLABS.GDT 7/8/12

Date Started:	April 19, 2010	Water Level:	Not Encountered	Plate
Date Completed:	April 19, 2010			
Logged By:	Y. Chiba	Drill Rig:	CME-75	A - 7
Total Depth:	10.8 feet	Drilling Method:	4" Auger	
Work Order:	6260-00	Driving Energy:	140 lb. wt.,30 in. drop	

GEOLABS, INC. — Geotechnical Engineering

FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **8**

Approximate Ground Surface Elevation (feet): 14.5 *

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	4	101			21					GM	Light tannish brown SILTY GRAVEL (CORALLINE) with some sand, medium dense, dry (fill)
	3				8					SP	Light tannish brown fine grained SAND, medium dense, dry (fill)
	4	99			11		5				grades to coarse grained (beach sand)
	19				4		10				grades to light orange, moist
					20/1"		15				grades with cobbles (coralline)
	21				15/3"		20				Boring terminated at 20.8 feet
							25				
							30				
							35				

BORING LOG 6260-00.GPJ GEOLABS.GDT 7/8/12

Date Started:	April 19, 2010	Water Level: ▽	15.7 ft. 04/19/2010 0957 HRS	Plate
Date Completed:	April 19, 2010			
Logged By:	Y. Chiba	Drill Rig:	CME-75	A - 8
Total Depth:	20.8 feet	Drilling Method:	4" Auger	
Work Order:	6260-00	Driving Energy:	140 lb. wt.,30 in. drop	

T:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Borings/BL-09

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

CLAYTON S. MIMURA — LICENSED PROFESSIONAL ENGINEER — No. 4176-C — HAWAII, U.S.A.

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SIGNATURE 04/30/14 EXPIRATION DATE OF THE LICENSE

GEOLABS, INC.

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. BL-09 OF 10 SHEETS

FED. ROAD DIST. NO.	STATE	FEDERAL AID PROJ. NO.	FISCAL YEAR	SHEET NO.	TOTAL SHEETS
HAWAII	HAW.	STP-093-1(22)	2013	210	230

GEOLABS, INC.
Geotechnical Engineering

FARRINGTON HIGHWAY
INTERSECTION IMPROVEMENTS
NANAKULI AND HALEAKALA INTERSECTIONS
NANAKULI, OAHU, HAWAII

Log of Boring **9**

Approximate Ground Surface Elevation (feet): 14.5 *

Laboratory: Other Tests	Laboratory: Moisture Content (%)	Laboratory: Dry Density (pcf)	Field: Core Recovery (%)	Field: RQD (%)	Field: Penetration Resistance (blows/foot)	Field: Pocket Pen. (tsf)	Depth (feet)	Sample	Graphic	USCS	Description
	6	103			22					GM SP	Light tan with white mottling SILTY GRAVEL (CORALLINE) with some sand, loose, dry (fill)
	2				16						Light brown fine grained SAND with traces of silt and some gravel (coralline), medium dense, dry (fill)
	6	104			30		5				grades to orangish brown
	30				15/1"		10			CL	Tan SANDY CLAY with silt, very soft, wet (marsh deposit) grades with cobbles (coralline) Boring terminated at 10.6 feet
							15				
							20				
							25				
							30				
							35				

BORING LOG 6260-00.GPJ GEOLABS.GDT 7/6/12

Date Started:	April 19, 2010	Water Level:	Not Encountered
Date Completed:	April 19, 2010		
Logged By:	Y. Chiba	Drill Rig:	CME-75
Total Depth:	10.6 feet	Drilling Method:	4" Auger
Work Order:	6260-00	Driving Energy:	140 lb. wt.,30 in. drop

Plate
A - 9

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

T:/DOT-FARRINGTON HWY INTERSECTIONS NANAKULI HALEAKALA/CADD/Sheets/Borings/BL-10

CLAYTON S. MIMURA
LICENSED PROFESSIONAL ENGINEER
No. 4176-C
HAWAII, U.S.A.

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DEPARTMENT OF TRANSPORTATION
HIGHWAYS DIVISION

BORING LOGS

FARRINGTON HIGHWAY INTERSECTION IMPROVEMENTS AT NANAKULI AVENUE AND HALEAKALA AVENUE
Federal-Aid Project No. STP-093-1(22)

Scale: None Date: April 2013

SHEET No. BI-10 OF 10 SHEETS