GEOTECHNICAL INVESTIGATION
WOMEN'S COMMUNITY CORRECTIONAL CENTER (WCCC) NEW HOUSING AND RELATED IMPROVEMENTS – NEW AC DRIVEWAY
KAILUA, HAWAII
TMK: (1) 4-2-003: 004

for

BOWERS + KUBOTA

HIRATA & ASSOCIATES, INC.
W.O. 25-7178
February 12, 2026

Hirata & Associates
Geotechnical Engineering
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February 12, 2026
W.O. 25-7178

Ms. Heather Cacal
Bowers + Kubota
94-408 Akoki Street, Suite 201-A
Honolulu, Hawaii 96797

Dear Ms. Cacal:

Our report, "Geotechnical Investigation, Women's Community Correction Center (WCCC), New Housing and Related Improvements – New AC Driveway, Kailua, Hawaii, TMK: (1) 4-2-003: 004," dated February 11, 2026, our Work Order 25-7178 is enclosed. This investigation was conducted in general conformance with the scope of services presented in our proposal dated March 20, 2025.

Our borings encountered brown to reddish brown clayey silt in a stiff condition extending to the maximum depths drilled. The clayey silt in boring B3 was mottled brown in color from a depth of about 3 feet. Laboratory testing indicated that the clayey silt has a low expansion potential. Neither groundwater nor seepage water was encountered in the borings.

We assume that vehicular traffic along the new driveway extending from Kalanianaole Highway to the future kitchen will primarily consist of delivery trucks. Based on our laboratory testing, the following flexible pavement section may be used for the proposed driveway.

3.5"	Asphaltic Concrete
6.0"	Aggregate Base Course (CBR = 85 minimum)
9.5"	Total Thickness

We appreciate this opportunity to be of service. Should you have any questions concerning this report, please feel free to call on us.

Very truly yours,

HIRATA & ASSOCIATES, INC.

Rick I.K. Yoshida, P.E. Vice President

RIKY: JC

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WOMEN'S COMMUNITY
CORRECTIONAL CENTER (WCCC)
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INTRODUCTION

This report presents the results of our geotechnical investigations performed for the proposed driveway at the Women's Community Correctional Center (WCCC) in Kailua, Hawaii. Our scope of services for this study included the following:

- A visual reconnaissance of the site and its vicinity to observe existing conditions which may affect the project. The general location of the project site is shown on the enclosed Location Map, Plate A2.1.

- A review of available in-house soils information pertinent to the site and the proposed project.

- Drilling and sampling four exploratory borings to depths ranging from about 5.5 to 6.5 feet. A description of our field investigation is summarized on Plate A1.1. The approximate exploratory boring locations are shown on the enclosed Boring Location Plan, Plate A2.2, and the soils encountered in the borings are described on the Boring Logs, Plates A4.1 through A4.4.

- Laboratory testing of selected soil samples. Testing procedures are presented in the Description of Laboratory Testing, Plates B1.1 and B1.2. Test results are presented in the Description of Laboratory Testing, and on the Unified Soil Classification System Chart (Plate A3.2), Boring Logs (Plates A4.1 through A4.4), Modified Proctor Test report (Plate B4.1), and CBR Test report (Plate B5.1).

- Engineering analyses of the field and laboratory data.

- Preparation of this report presenting the results of our exploratory fieldwork and laboratory testing, and geotechnical recommendations for the design of flexible pavement and site grading.

PROJECT CONSIDERATIONS

Based on the information provided by your office, our scope of services for this project was limited to a new asphaltic concrete (AC) driveway along the western edge of the WCCC property. The new driveway will be approximately 250 feet long and will provide access from Kalanianaole Highway to the future kitchen in WCCC. We assume that the pavement will primarily be subjected to H-20 truck loading with a maximum gross vehicle weight of about 40,000 pounds.

We assume that finish grades will generally match that of the existing and that site grading will consist of relatively shallow cuts and fills.

SITE CONDITIONS

WCCC is located on the north side of Kalanianaole Highway, east of its intersection with Ulupii Street in Kailua, Hawaii. The proposed driveway is located in the southwestern area of the WCCC property. Kalanianaole Highway borders the driveway site on the south, a baseball field borders the site on the east, the Board of Water Supply (BWS) Pohakupu Booster Station borders the site on the west, and an asphaltic concrete paved driveway is located to the north.

The site of the new driveway is generally covered with grass. At the time of our fieldwork, a wooden shed, a portable staircase, and a tree were observed in the eastern area of the proposed driveway.

Based on the topographic survey map prepared by ControlPoint Surveying, Inc., total relief over the site is about 1.5 feet with drainage generally flowing in a northerly direction.

SOIL CONDITIONS

Our borings encountered brown to reddish brown clayey silt in a stiff condition extending to the maximum depths drilled. The clayey silt in boring B3 was mottled brown in color from a depth of about 3 feet. Laboratory testing indicates that the clayey silt has a low expansion potential.

Neither groundwater nor seepage water was encountered in the borings.

CONCLUSIONS AND RECOMMENDATIONS

Pavement Design

We assume that the proposed driveway will primarily be subjected to delivery trucks. Pavement design assumed H-20 truck loading with a maximum gross vehicle weight of about 40,000 pounds and an estimated traffic volume of about 20 passes per day. Based on our laboratory testing and a 30-year design life, the following flexible pavement section may be used.

3.5”	Asphaltic Concrete
6.0”	Aggregate Base Course (CBR = 85 minimum)
9.5”	Total Thickness

Prior to placement of the aggregate base course, the exposed subgrade should be scarified to a minimum depth of 6 inches, moisture conditioned to about 2 percent above the optimum moisture content, and compacted to a minimum 95 percent compaction as determined by ASTM D 1557. The aggregate base course should be compacted to a minimum 95 percent compaction as determined by ASTM D 1557.

Site Grading

Site Preparation - The project site should be cleared of all vegetation, demolition debris, asphalt concrete pavement, and other deleterious material. In areas requiring fill placement, the exposed subgrade should be scarified to a minimum depth of 6 inches, moisture conditioned to about 2 percent above the optimum moisture content, and compacted to a minimum 90 percent compaction as determined by ASTM D 1557.

Onsite Fill Material – The onsite clayey silt will be acceptable for reuse in compacted fills and backfills. All rock fragments larger than three inches in maximum dimension should be removed prior to reuse.

Import Fill Material – Imported structural fill should be well-graded, non-expansive granular material. Specifications for imported granular structural fill should indicate a maximum particle size of 3 inches, and state that between 8 and 20 percent of soil by weight shall pass the #200 sieve. In addition, the plasticity index (P.I.) of that portion of the soil passing the #40 sieve shall not be greater than 10. Imported granular structural fill should also have a minimum CBR value of 15 and a CBR expansion value less than 1.0 percent when tested in accordance with ASTM D 1883.

Compaction – Cohesive soils, such as the onsite clayey silt, should be placed in horizontal lifts restricted to 8 inches in loose thickness, and compacted to a minimum 90 percent compaction as determined by ASTM D 1557.

Imported granular structural fill and aggregate base course should be placed in horizontal lifts restricted to 8 inches in loose thickness and compacted to at least 95 percent compaction as determined by ASTM D 1557.

Fill placed in areas which slope steeper than 5H:1V should be continually benched as the fill is brought up in lifts.

ADDITIONAL SERVICES

We recommend that we perform a general review of the final design plans and specifications. This will allow us to verify that the flexible pavement and earthwork recommendations have been properly interpreted and implemented in the design plans and construction specifications.

For continuity, we recommend that we be retained during construction to (1) review and/or perform laboratory testing on import borrow to determine its acceptability for use in compacted fills, (2) observe placement of compacted fill and aggregate

base course, and perform compaction testing, and (3) provide geotechnical consultation as required.

Our services during construction will allow us to verify that our recommendations are properly interpreted and included in construction, and if necessary, to make modifications to those recommendations, thereby reducing construction delays in the event subsurface conditions differ from those anticipated.

LIMITATIONS

The boring logs indicate the approximate subsurface soil conditions encountered only at those times and locations where our borings were made and may not represent conditions at other times and locations.

This report was prepared specifically for Bowers + Kubota and their subconsultants for the design of the proposed driveway at the Women's Community Correctional Center in Kailua, Hawaii. The boring logs, laboratory test results, and recommendations presented in this report are for design purposes only and are not intended for use in developing cost estimates by the contractor.

During construction, should subsurface conditions differ from those encountered in our borings, we should be advised immediately in order to re-evaluate our recommendations and to revise or verify them in writing before proceeding with construction.

Our recommendations and conclusions are based upon the site materials observed, the preliminary design information made available, the data obtained from our site exploration, our engineering analyses, and our experience and engineering judgment.

The conclusions and recommendations in this report are professional opinions which we have strived to develop in a manner consistent with that level of care, skill, and competence ordinarily exercised by members of the profession in good standing, currently practicing under similar conditions in the same locality.

We will be responsible for those recommendations and conclusions, but will not be responsible for the interpretation by others of the information developed. No warranty is made regarding the services performed, either expressed or implied.

Respectfully submitted,

HIRATA & ASSOCIATES, INC.

Juanito Cajimat, Project Engineer

Rick Yoshida, P.E., Project Manager

This work was prepared by me or under my supervision.
Expiration Date of License:
April 30, 2026

APPENDIX A

FIELD INVESTIGATION

DESCRIPTION OF FIELD INVESTIGATION

GENERAL

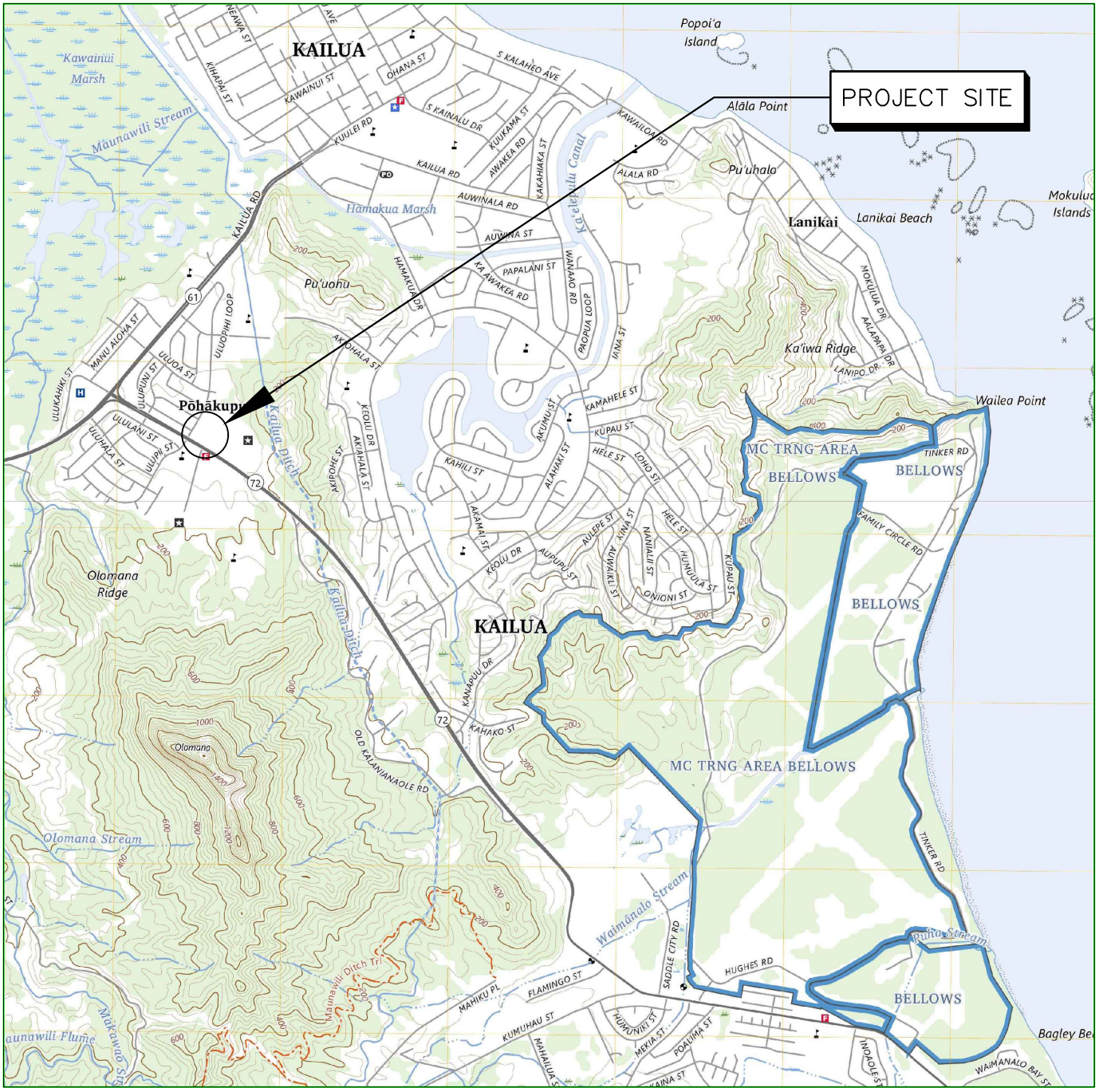
The site was explored on December 5, 2025, by drilling four exploratory borings to depths ranging from about 5.5 to 6.5 feet with a Mobile B-46 truck-mounted drill rig.

During drilling operations, the soils were continuously logged by our field engineer and classified by visual examination in accordance with the Unified Soil Classification System. The boring logs indicate the depths at which the soils or their characteristics change, although the change could actually be gradual. If the change occurred between sample locations, the depth was interpreted based on field observations. Classifications and sampling intervals are shown on the boring logs. A Boring Log Legend is presented on Plate A3.1 while the Unified Soil Classification is shown on Plate A3.2. The soils encountered are logged on Plates A4.1 through A4.4.

The borings were located in the field by measuring/taping offsets from existing site features shown on the plans. Ground surface elevations shown on the boring logs were based on the Topographic Survey Map prepared by ControlPoint Surveying, Inc., dated July 26, 2019. The accuracy of the boring locations shown on Plate A2.2, and the boring elevations shown on the boring logs, Plates A4.1 through A4.4, are therefore approximate, in accordance with the field methods used.

SOIL SAMPLING

Representative and bulk soil samples were recovered from the borings for selected laboratory testing and analyses. Representative samples were recovered by driving a 3-inch O.D. split tube sampler a total of 18 inches with a 140-pound hammer dropped from a height of 30 inches. The number of blows required to drive the sampler the final 12 inches are recorded at the appropriate depths on the boring logs, unless noted otherwise. A bulk sample was obtained from boring B2 at a depth of about 0.5 feet. The approximate location of boring B2 is shown on Plate A2.2.



Reference: Topographic Quadrangle Map prepared by the U.S. Department of the Interior U.S. Geological Survey Mokapu Point and Koko Head Quadrangles Hawaii-Honolulu Co., Hawaii. 2024

Scale: 1:3000

WCCC New Housing and Related Improvements - New AC Driveway

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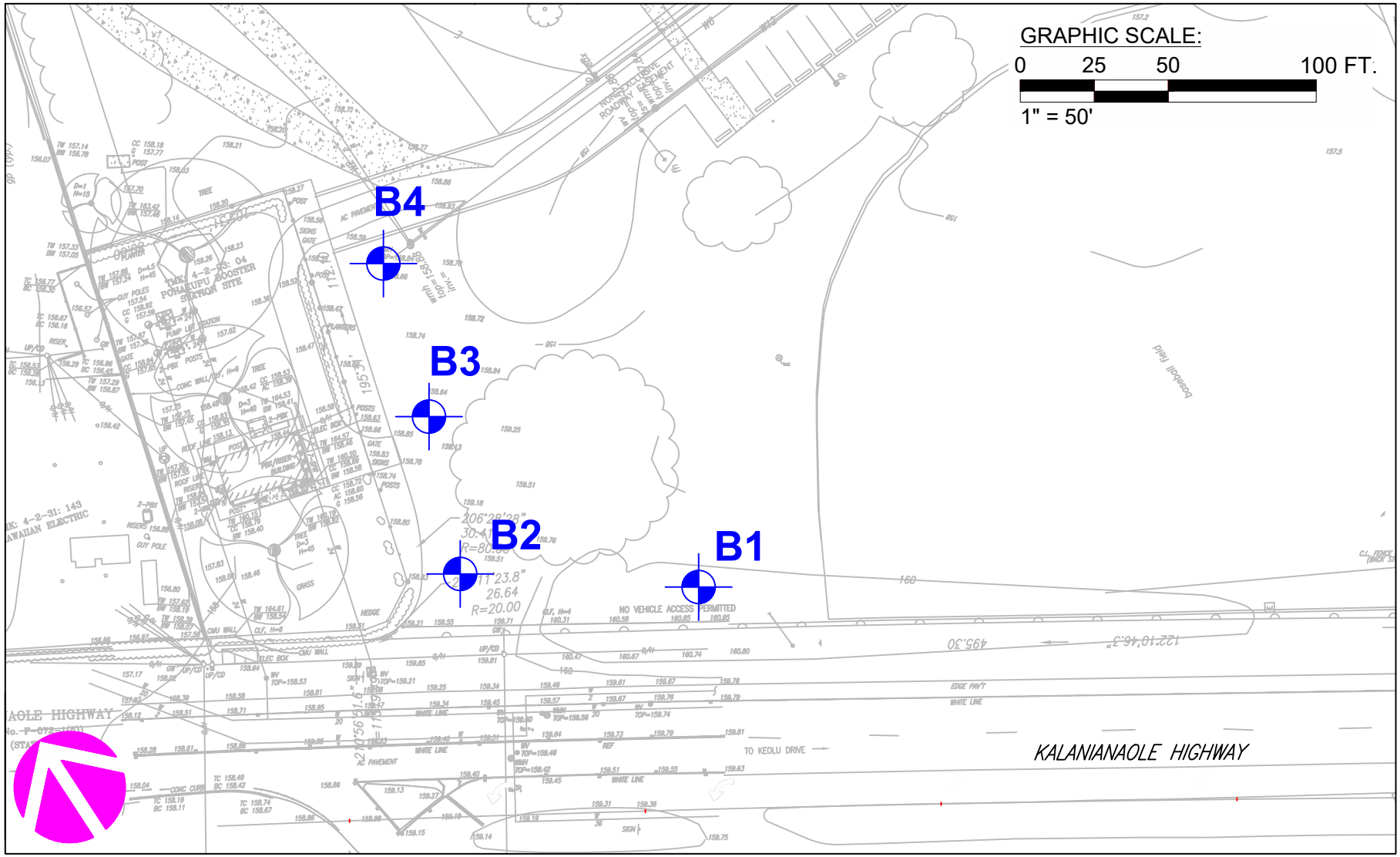
LOCATION MAP

Plate A2.1



LEGEND:

Approximate location of borings

Reference: Topographic Survey Map prepared by ControlPoint Surveying, Inc., dated July 26, 2019.

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BORING LOCATION PLAN

Plate
A2.2

MAJOR DIVISIONS			GROUP DIVISIONS	TYPICAL NAMES
COARSE GRAINED SOILS (More than 50% of the material is LARGER than No. 200 sieve size.)	GRAVELS (More than 50% of coarse fraction is LARGER than the No. 4 sieve size.)	CLEAN GRAVELS (Little or no fines.)	GW	Well graded gravels, gravel-sand mixtures, little or no fines.
			GP	Poorly graded gravels or gravel-sand mixtures, little or no fines.
		GRAVELS WITH FINES (Appreciable amt. of fines.)	GM	Silty gravels, gravel-sand-silt mixtures.
			GC	Clayey gravels, gravel-sand-clay mixtures.
	SANDS (More than 50% of coarse fraction is SMALLER than the No. 4 sieve size.)	CLEAN SANDS (Little or no fines.)	SW	Well graded sands, gravelly sands, little or no fines.
			SP	Poorly graded sands or gravelly sands, little or no fines.
		SANDS WITH FINES (Appreciable amt. of fines.)	SM	Silty sands, sand-silt mixtures.
			SC	Clayey sands, sand-clay mixtures.
FINE GRAINED SOILS (More than 50% of the material is SMALLER than No. 200 sieve size.)	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 high plasticity, lean clays.
			OL	Organic silts and organic silty clays of low plasticity.
	SILTS AND CLAYS (Liquid limit GREATER than 50.)		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts.
			CH	Inorganic clays of high plasticity, fat clays.
			OH	Organic clays of medium to high plasticity, organic silts.
HIGHLY ORGANIC SOILS			PT	Peat and other highly organic silts.
FORMATIONS				FRESH TO MODERATELY WEATHERED BASALT
				VOLCANIC TUFF / HIGHLY TO COMPLETELY WEATHERED BASALT
				CORAL

SAMPLE DEFINITION

2" O.D. Standard Split Spoon Sampler	Shelby Tube	RQD: Rock Quality Designation
3" O.D. Split Tube Sampler	Core Sample	Water Table

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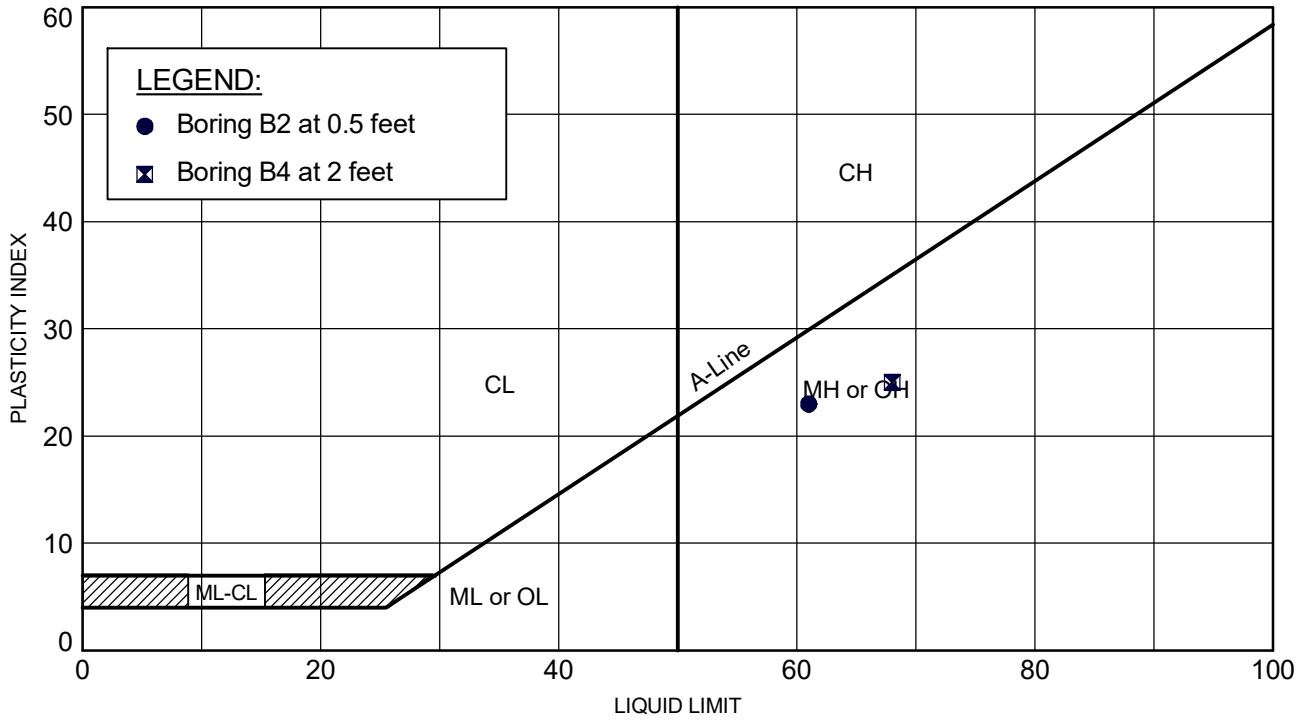
BORING LOG LEGEND

Plate A3.1

PLASTICITY CHART



GRADATION CHART

COMPONENT DEFINITIONS BY GRADATION	
COMPONENT	SIZE RANGE
Boulders	Above 12 in.
Cobbles	3 in. to 12 in.
Gravel Coarse Fine Gravel	3 in. to No. 4 (4.76 mm) 3 in. to 3/4 in. 3/4 in. to No. 4 (4.76 mm)
Sand Coarse Sand Medium Sand Fine Sand	No. 4 (4.76 mm) to No. 200 (0.074mm) No. 4 (4.76 mm) to No. 10 (2.0 mm) No. 10 (2.0 mm) to No. 40 (0.42 mm) No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt and Clay	Smaller than No. 200 (0.074 mm)

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UNIFIED SOIL CLASSIFICATION SYSTEM

Plate
A3.2

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Boring No.
B1

BORING LOG

PROJECT NAME WCCC New Housing and Related Improvements - New AC Driveway
WORK ORDER NO. 25-7178 DRIVING WT. 140 lb. START DATE 12/5/25
SURFACE ELEV. 160.0 ±* DROP 30 in. END DATE 12/5/25

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			43	75	28				Clayey SILT (MH) - Brown, moist, stiff.
			71	72	30				
			65	84	31	5			Mottled brown in color from 5 feet.
									End boring at 6.5 feet.
									Neither groundwater nor seepage water encountered.
						10			* Elevations based on Topographic Survey Map prepared by ControlPoint Surveying, Inc. dated July 26, 2019.
						15			
						20			
						25			
						30			
						35			

Plate A4.1

Hirata & Associates, Inc.
GEOTECHNICAL ENGINEERING

Boring No.
B2

BORING LOG

PROJECT NAME WCCC New Housing and Related Improvements - New AC Driveway
WORK ORDER NO. 25-7178 DRIVING WT. 140 lb. START DATE 12/5/25
SURFACE ELEV. 159.5 ± DROP 30 in. END DATE 12/5/25

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			73	85	30				Clayey SILT (MH) - Brown, moist, stiff.
			59	71	34	5			
									End boring at 5.5 feet. Neither groundwater nor seepage water encountered.
						10			
						15			
						20			
						25			
						30			
						35			

Plate A4.2

Hirata & Associates, Inc.
GEOTECHNICAL ENGINEERING

Boring No.
B3

BORING LOG

PROJECT NAME WCCC New Housing and Related Improvements - New AC Driveway
WORK ORDER NO. 25-7178 DRIVING WT. 140 lb. START DATE 12/5/25
SURFACE ELEV. 158.5 ± DROP 30 in. END DATE 12/5/25

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			59	85	32				Clayey SILT (MH) - Brown, moist, stiff.
			61	86	29				Mottled brown in color from 3 feet.
			54	81	27	5			
									End boring at 6.5 feet.
									Neither groundwater nor seepage water encountered.
						10			
						15			
						20			
						25			
						30			
						35			

Plate A4.3

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GEOTECHNICAL ENGINEERING

Boring No.
B4

BORING LOG

PROJECT NAME WCCC New Housing and Related Improvements - New AC Driveway
WORK ORDER NO. 25-7178 DRIVING WT. 140 lb. START DATE 12/5/25
SURFACE ELEV. 158.5 ± DROP 30 in. END DATE 12/5/25

REMARKS/ SAMPLE NO.	CORE RECOVERY (%)	RQD (%)	BLOWS PER FOOT	DRY DENSITY (pcf)	MOISTURE CONTENT (%)	DEPTH (ft)	GRAPHIC LOG	SAMPLE	MATERIAL DESCRIPTION
			34/6" 50/5"	71	35				Clayey SILT (MH) - Brown to reddish brown, moist, stiff.
			68	73	35	5			
									End boring at 5.5 feet. Neither groundwater nor seepage water encountered.
						10			
						15			
						20			
						25			
						30			
						35			

Plate A4.4

APPENDIX B

LABORATORY TESTING

DESCRIPTION OF LABORATORY TESTING

CLASSIFICATION

Field classification was verified in the laboratory in accordance with the Unified Soil Classification System. Laboratory classification was determined by both visual examination and Atterberg Limits tests performed in general accordance with ASTM D 4318. Results of the Atterberg Limits tests are plotted on Plate A3.2. The final classifications are shown at the appropriate locations on the Boring Logs, Plates A4.1 through A4.4.

MOISTURE-DENSITY

Representative samples were tested for field moisture content and dry unit weight. The dry unit weight was determined in pounds per cubic foot while the moisture content was determined as a percentage of dry weight. Representative samples were obtained using a 3-inch O.D. split tube sampler. Test results are shown at the appropriate depths on the Boring Logs, Plates A4.1 through A4.4.

SWELL TESTS

Swell tests were performed on representative soil samples by placing a 90 psf surcharge load on one-inch high specimens. The samples were inundated with water and total expansion recorded after a period of at least 24 hours. Test results were recorded as a percentage of original height and are summarized in the following table.

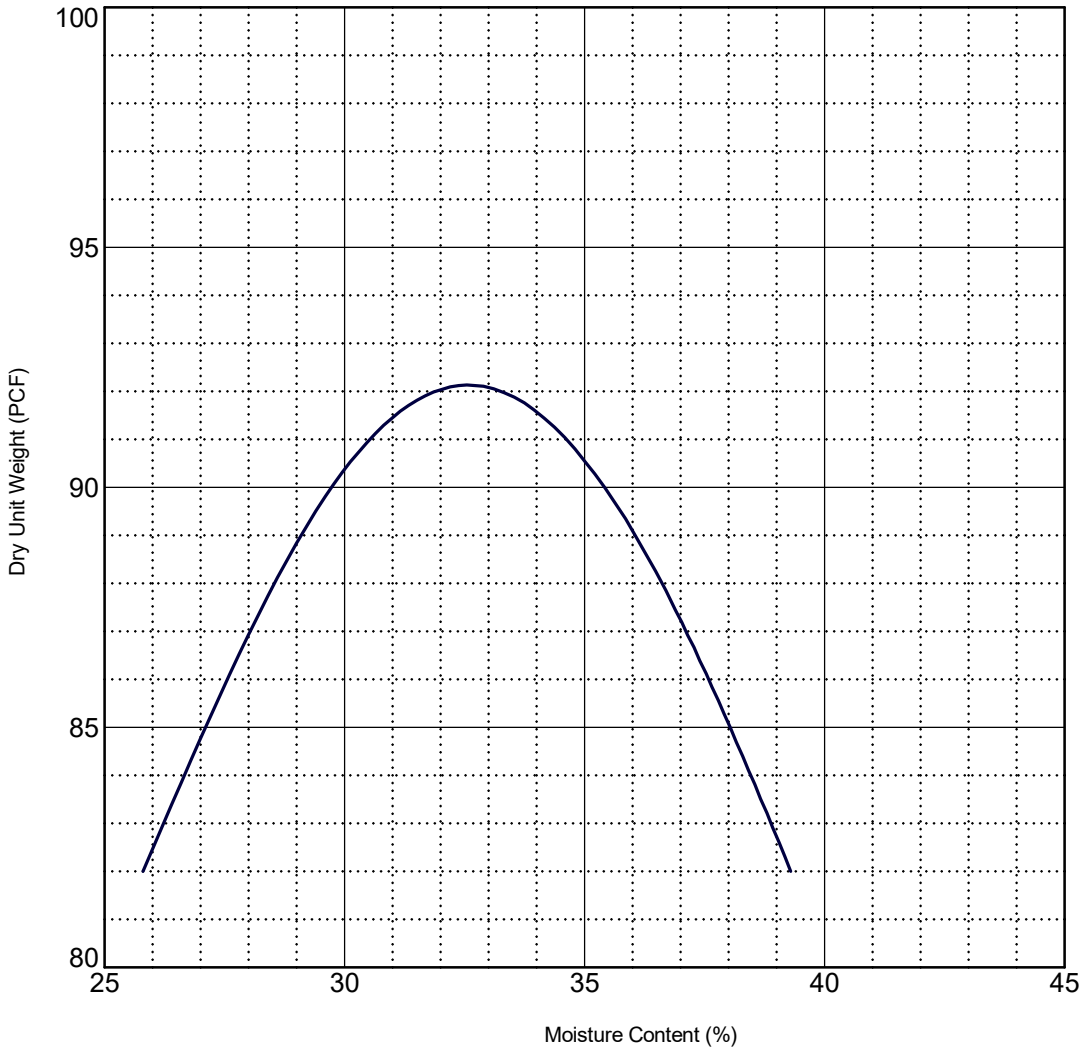
Sample	Sample Type	Recorded Expansion	Moisture Content Prior to Test
B1 at 1 foot	Representative	0.7%	27.5%
B3 at 1 foot	Representative	1.5%	32.0%

MODIFIED PROCTOR TEST

A Modified Proctor test was performed in general accordance with ASTM D 1557 on a bulk sample obtained from boring B2 at a depth of about 0.5 feet. The test is used to determine the optimum moisture content at which the soil compacts to 100 percent density. Results are shown on Plate B2.1.

CALIFORNIA BEARING RATIO TEST

A CBR test was performed in general accordance with ASTM D 1883 on a bulk sample obtained from boring B2 at a depth of about 0.5 feet. The test is used to evaluate the relative quality of subgrade soils to be used in the design of flexible pavements. Results are shown on Plate B3.1.



Soil Data

Location: Boring B2 at 0.5 feet

Description: Brown clayey silt

Test Results

Maximum Dry Density: 92.1 PCF

Optimum Moisture Content: 32.6 %

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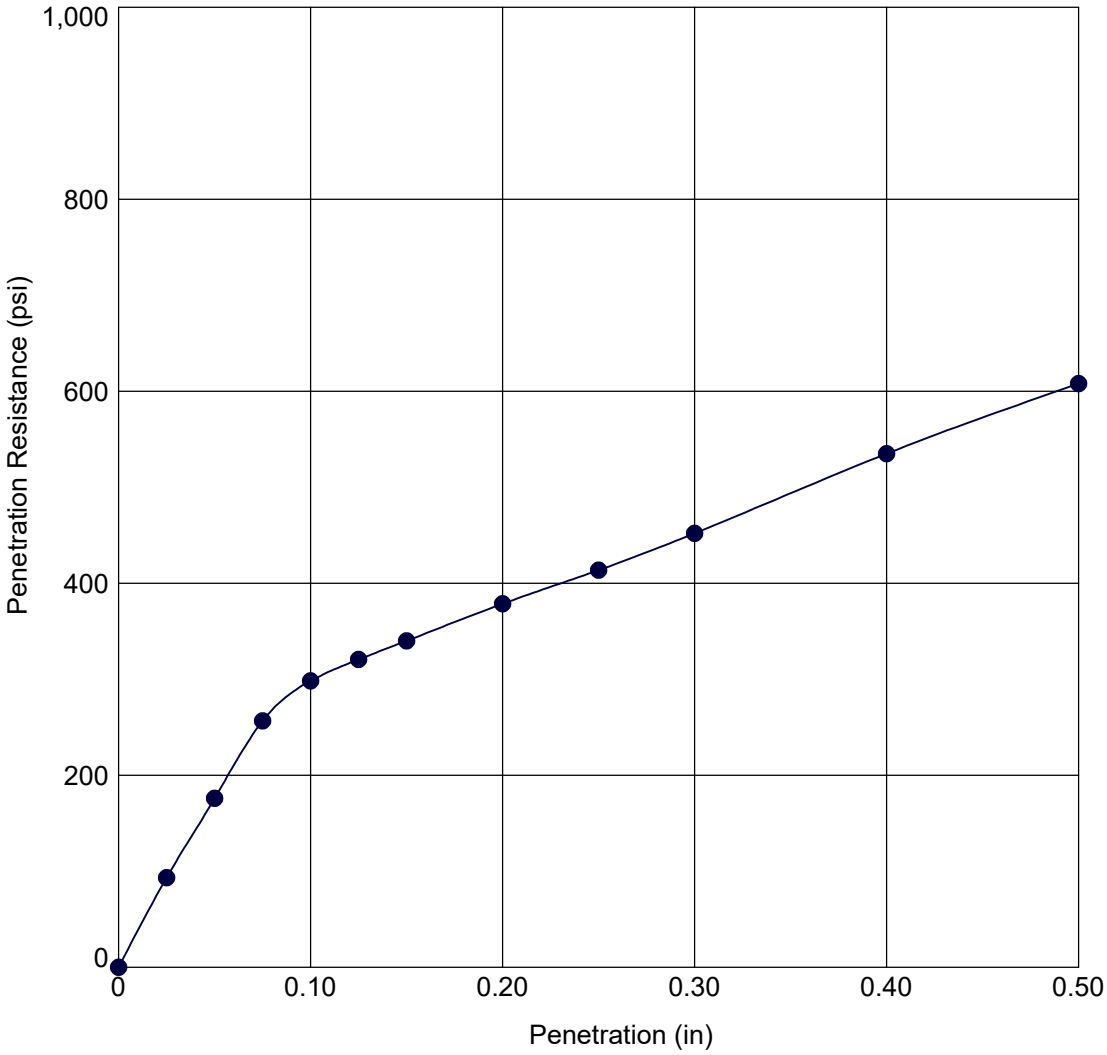
MODIFIED PROCTOR CURVE

ASTM D1557

Plate B2.1



Soil Data

Location:	Boring B2 at 0.5 feet
Description:	Brown clayey silt
Sample Dry Density	91.2 pcf
Sample Moisture Content	33.3 %

Test Results

CBR Value:	29.8 %
Expansion:	1.0 %

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CBR STRESS PENETRATION CURVE

ASTM D1883

Plate B3.1