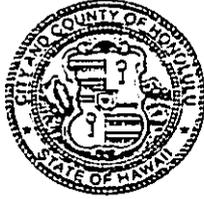


DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA-711 KAPIOLANI BOULEVARD, SUITE 1200-HONOLULU, HAWAII 96813
TELEPHONE: (808)523-4529-FAX: (808)523-4730-INTERNET: www.cc.honolulu.hi.us

JEREMY HARRIS
MAYOR



CHERYL D. SOON
DIRECTOR

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

RECEIVED

01 JUL 24 P2:36

OFF. OF ENVIRONMENTAL
QUALITY CONTROL

July 23, 2001

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
State Office Tower, Room 702
235 South Beretania Street
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Finding of No Significant Impact (FONSI) for Honolulu Bicycle Master
Plan Improvements, College Access Project No. 28, Pearl Harbor History
Trail to Leeward Community College
Tax Map Keys: 9-06-003: 039, 038 (por.), 048 (por.) and 9-04-08: 23 (por.)

The Department of Transportation Services of the City and County of Honolulu has reviewed the comments received during the 30-day public comment period which began on February 23, 2001. The agency has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the August 8, 2001 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the Final Environmental Assessment. Please call Mike Kikuchi of my staff at 527-5026 if you have any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Cheryl D. Soon".

CHERYL D. SOON
Director

Enclosures

92

AUG -- 8 2001

FILE COPY

2001-08-08-0A-FEA-Leeward Community
College Bike Path

**FINAL
ENVIRONMENTAL ASSESSMENT**

*Honolulu Bicycle Master Plan Improvements
College Access Project No. 28*

*Pearl Harbor Historic Trail
to Leeward Community College*

CITY AND COUNTY OF HONOLULU
DEPARTMENT OF TRANSPORTATION SERVICES
MAYOR JEREMY HARRIS



July 2001

**FINAL
ENVIRONMENTAL ASSESSMENT
and
FINDING OF NO SIGNIFICANT IMPACT**

*Honolulu Bicycle Master Plan Improvements
College Access Project No. 28*

*Pearl Harbor Historic Trail
to Leeward Community College*

Prepared for:
CITY AND COUNTY OF HONOLULU
DEPARTMENT OF TRANSPORTATION SERVICES
MAYOR JEREMY HARRIS

Prepared by:



KIMURA INTERNATIONAL

July 2001

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Petition in support of LCC Access Project #28

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APPENDIX C: Botanical Resources Assessment, Char & Associates

APPENDIX D: Wildlife Survey, Tim J. Ohashi

APPENDIX E: Archaeological Inventory Survey, Cultural Surveys Hawaii

APPENDIX F: Letter from Cheryl Soon, Director, City and County of Honolulu,
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Land Manager, Kamehameha Schools, dated July 16, 2001

APPENDIX G: Letter from Thomas Fujikawa, Harbors Administrator,
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Preface

Subsequent to the February 23, 2001 publication of the Draft EA in the State Office of Environmental Quality Control's (OEQC) *Environmental Notice*, the applicant City and County of Honolulu Department of Transportation Services realigned a portion of the bike path. The modified segment involves approximately 500 feet on the western end of the proposed bike path and it is the section connecting the Pearl Harbor Historic Trail and Waiawa Road. The new alignment is generally parallel to the original alignment, but located approximately 50 feet west of the original alignment. It crosses an adjacent property identified as TMK: 9-4-08:23 that is currently owned by Okada Trucking Co., but is proposed for acquisition by the City and County of Honolulu. (A detailed description is provided in IV.B. Alternative Routes Considered.) Since the anticipated environmental impacts are unchanged with the new alignment, the Final EA and FONSI determination have been filed with the OEQC.

Executive Summary

The Department of Transportation Services (DTS) of the City and County of Honolulu is proposing to construct a bike path measuring approximately 3,690 linear feet in two phases. The bike path would connect the existing Pearl Harbor Historic Trail with Leeward Community College (LCC). This segment was identified as a Priority One, College Access Project (CAP No. 28) in the Honolulu Bicycle Master Plan (April 1999). It is being implemented as a vision project initiated by the Aiea/Pearl City Vision Team. Phase I has been submitted for funding in the City's FY2000 construction budget cycle. Funds to construct Phase II will be requested in a subsequent fiscal year.

The proposed alignment starts from the Pearl Harbor Historic Trail and runs in a mauka direction through property owned by Okada Trucking Co., then heads east along the privately owned Waiawa Road. Waiawa Road also constitutes the makai boundary of Leeward Community College (see site plan, Figure ES-1). Phase I measures 1,750 linear feet and includes the entryway to LCC. Phase II is 1,940 linear feet long and ends where Waiawa Road becomes a public roadway. Neither Phase I nor Phase II will traverse streams, wetlands, or other undisturbed environments.

The bike corridor is located on lands identified as Tax Map Key: 9-06-003: 039 and 48 (por.) and 9-4-08: 23.

- Parcel 39 is the designation for the segment of Waiawa Road that is privately owned by Kamehameha Schools. A bike path easement would need to be established (see letter to Kamehameha Schools dated July 16, 2001, in Appendix F of this document).
- Waiawa Road also crosses onto Parcel 48 which is owned by the State of Hawaii (LCC site). In addition, part of the bike path will be located within the State Energy Corridor; therefore, an agreement to abide by conditions for development within the corridor must be entered into with the State Department of Transportation, Harbors Division (see letter from DOT-Harbors, dated December 20, 2000, in Appendix G of this document).
- TMK 9-4-08:23 is currently owned by Okada Trucking Co. but is in the process of being acquired by the City and County of Honolulu.

The proposed action is consistent with State and County plans, policies, and ordinances. It promotes the goals and objectives of the General Plan and the Central Oahu Development Plan, and is consistent with zoning for public use as defined by the Land Use Ordinance and in the Special Management Area regulations.

The asphaltic concrete bike path will vary in width from 8 to 10 feet and have an overall cross slope of 2%. Improvements associated with the bike path include concrete masonry unit (CMU) retaining walls, bike safety rails, striping, and signage. Future improvements to adjacent properties include short driveway and roadway extensions to maintain a standard

20-foot road width along the existing road. A six-foot high chain link fence measuring approximately 1,000 feet will be installed along the back side of Leeward Community College. The new fencing will stretch from the end of an existing chain link fence to the eastern boundary of the college. The new fence is being provided at the college's request for security reasons. No lights will be provided along the proposed alignment.

The topography along the bike path alignment is relatively level with gentle undulations. For the majority of the bike path, slopes rarely exceed 1-3%. The only exceptions are two short stretches of 100 feet and 200 feet, respectively, that have a slope of 5%. The incline level meets ADA standards and is well within a comfortable range for casual bikers.

Three alternatives, a no action alternative and two alternative alignments, were considered and rejected in favor of the proposed action that has been refined with input from City and County officials, landowners, the Aiea-Pearl City Vision Team and the Pearl City and Aiea Neighborhood Boards.

The first alternative route is the proposed alignment presented in the Draft EA. It is largely the same as the route that is currently proposed, except for the connection between the Pearl Harbor Bike Trail and Waiawa Road. In this alternative, the bike path would have been located adjacent to a mauka-makai drainage channel, and passed through land owned by Kamehameha Schools and leased to various tenants.

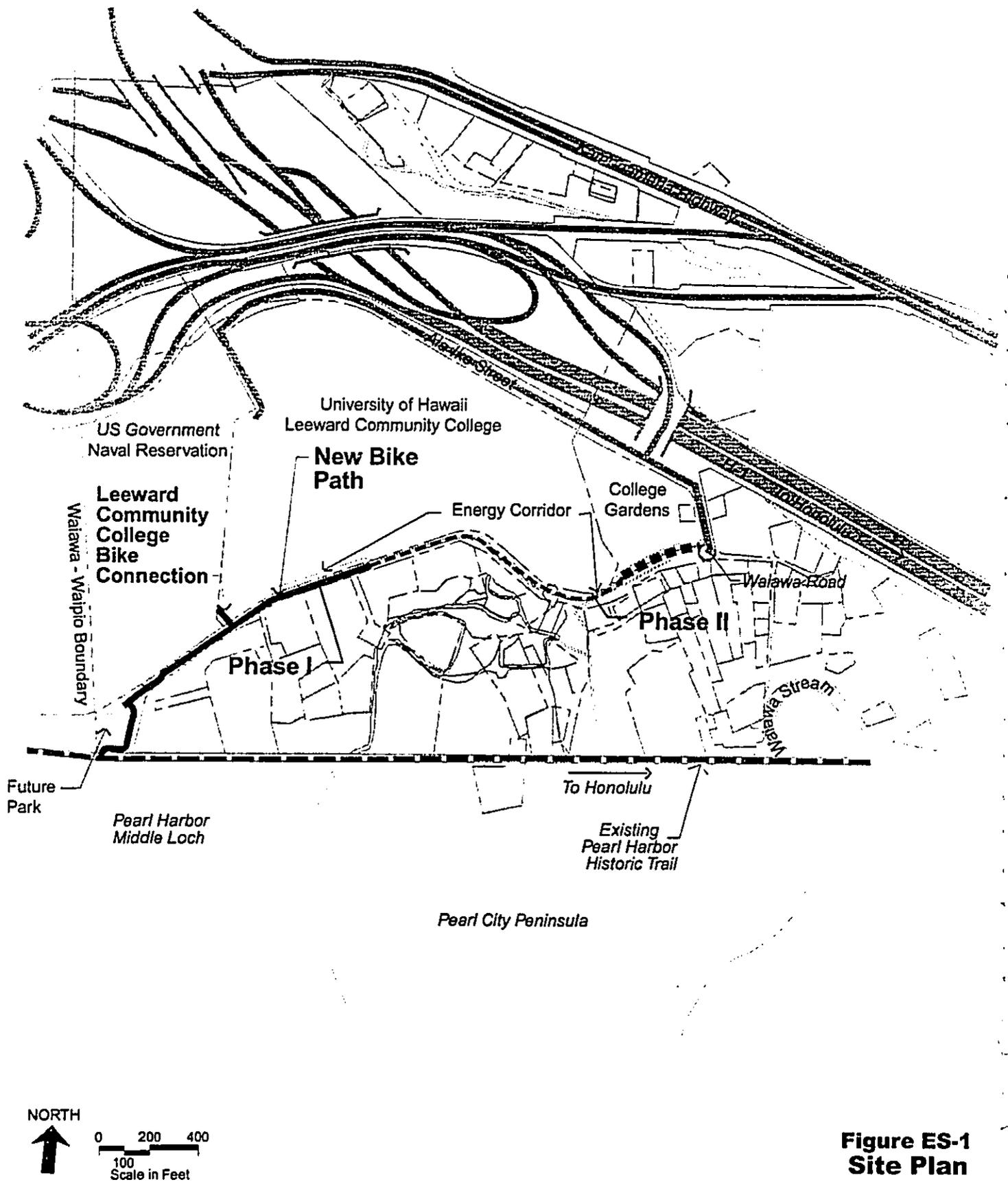
The second alternative route involves extending the proposed bike path so that it loops back to the Pearl Harbor Historic Trail. The looped configuration offers greater flexibility and convenience to bike riders than the spur that is being proposed, but at significantly higher cost. The proposed action does not preclude the option of building a future looped extension.

Environmental impacts associated with the proposed action are limited to temporary construction-related noise, dust, and potential soil erosion. With proper mitigating measures and the use of best management practices during construction, these environmental impacts are not judged to be significant. No adverse impacts are anticipated with respect to wildlife or botanical resources.

The archaeological assessment notes that human remains were found near the proposed corridor during unrelated construction in 1995. Similar finds are possible if subsurface work is required and, should this be the case, archaeological monitoring may be necessary.

Long-term impacts are expected to be positive because the proposed action effectively expands choices in modes of transportation and access to the college campus. Bicyclists who must currently travel on busy, high-speed highways would have an alternative route. In addition, the path expands the network of bikeways for recreational cyclists. The path also provides shoreline access for students and faculty who can engage in estuarine projects. The Pearl Harbor National Wildlife Refuge is located makai of Pearl Harbor Historic Trail.

The Environmental Assessment was completed in compliance with the Hawaii Environmental Review Process and Chapter 200 of Title 11, Department of Health Administrative Rules, Sections 10-12 and requirements for a Special Management Area Use Permit, Major. Environmental impacts associated with construction and operation of the bike path were assessed, and based on the environmental consequences associated with the proposed action, a Finding of No Significant Impact (FONSI) is warranted.



**Figure ES-1
Site Plan**

I. General Information

This Environmental Assessment has been prepared pursuant to the Administrative Rules of the Department of Health, Chapter 200 of Title 11, "Environmental Impact Statement Rules," Sections 10, 11, 12 as required for a Special Management Area Use Permit (SMP) under Chapter 25, Revised Ordinances of Honolulu, as amended.

Project Name: Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
Pearl Harbor Historic Trail to Leeward Community College

Applicant: Ms. Cheryl Soon, Director
Department of Transportation Services
City and County of Honolulu

Landowners: Kamehameha Schools
Okada Trucking Co.
State of Hawaii

Agent Kimura International, Inc.
1600 Kapiolani Blvd., Suite 1610
Honolulu, HI 96814
Tel: 944-8848
Fax: 941-8999
Attn: Glenn T. Kimura

Tax Map Key: 9-06-003: 039 and 48 (por.); 9-4-08: 23

Project Area: Approximately 0.66 acres

Land Use Controls: State Land Use: Agricultural; Urban
Development Plan: Agriculture
Zoning: Ag-2, General Agriculture;
A-2 Medium Density Apartment
SMA: Yes

Approving Agency: Department of Transportation Services
City and County of Honolulu

Determination: Finding of No Significant Impact (FONSI)

Agencies Consulted: City and County of Honolulu, Department of Design and
Construction

City and County of Honolulu, Department of Facility Maintenance
City and County of Honolulu, Department of Parks and Recreation
City and County of Honolulu, Department of Planning and
Permitting
City and County of Honolulu, Fire Department
City and County of Honolulu, Police Department
State of Hawaii, Department of Transportation, Harbors Division
State of Hawaii, State Historic Preservation Office
U. S. Army Corps of Engineers
U.S. Department of the Interior, Fish and Wildlife Service
Aiea Neighborhood Board No. 20
Pearl City Neighborhood Board No. 21
Waipahu Neighborhood Board No. 22
Kamehameha Schools
Leeward Community College Administration

Permits
Needed:

Special Management Area (SMA) Use Permit
Possibly a National Pollutant Discharge Elimination System
Notice of Intent (NPDES NOI) for sediment control

II. Description of the Proposed Action

A. General Description

(1) Proposed Project

The proposed project involves the construction of an asphaltic concrete bike path that provides access from the existing Pearl Harbor Historic Trail to Leeward Community College. This project is identified as a Priority One, College Access Project in the Honolulu Bicycle Master Plan of April 1999. The proposed bike path will ultimately measure some 3,690 linear feet (.70 mile) and is being proposed for construction in two phases. The alignment generally runs west to east along the makai boundary of the Leeward Community College. The proposed route is located on or adjacent to an existing agricultural road known as Waiawa Road and through land that is proposed for future park development (see location map, Figure II-1).

Waiawa Road varies sharply in character along its length. At the easternmost end, it is connected to Ala Ike Street. The road is fully improved along this segment and it is owned and maintained by the City and County Department of Transportation Services. The public road ends in what appears to be a cul-de-sac. However, the cul-de-sac contains an inlet to the privately owned portion of Waiawa Road which belongs to Kamehameha Schools. For a distance of about 160 feet, the bike path will pass through State-owned land at the southeast corner of LCC. The bike path will also pass through a portion of the designated State Energy Corridor which contains fuel pipelines.

Waiawa Road was originally built atop a berm left in place by the Oahu Sugar Company and intended to serve small truck farms in the area, tenants of Bishop Estate/Kamehameha Schools. Even today, its use is limited primarily to farmers, as well as Okada Trucking Company which maintains a baseyard in the area and a few households. In places, the single-lane roadway is paved with asphaltic concrete that has weathered with cracks and potholes, while in other places, the road is composed of compacted gravel. There is no physical barrier or sign at the cul-de-sac entryway indicating the privately owned section of Waiawa Road—it merely appears to be another driveway. There is, however, a gate across the road near the western end, makai of the Naval reservation.

At present, Waiawa Road does not intersect with the Pearl Harbor Trail, therefore, a new corridor will be constructed to make this connection, crossing property that is currently owned by Okada Trucking Co. The Okada Trucking property is being used to store trucks and construction equipment, as well as construction material and debris. In the past, it has been proposed for multi-family residential development; however, current plans are for its acquisition by the City and County of Honolulu and future development of a public park.

(2) Purpose and Need for the Project

The Honolulu Bicycle Master Plan identifies the proposed project as a Priority One College Access Project. Specifically, the master plan calls for construction of a shared-use path between Leeward Community College and the Pearl Harbor Bike Path (also known as the Pearl Harbor Historic Trail). The Pearl Harbor bike path offers one of the most bicycle friendly routes on the island. Yet because there is no connection to LCC, students, faculty, and staff are unable to use the existing bike path for commutes. Instead, those who wish to ride their bicycles to the college are relegated to using Farrington or Kamehameha Highways—both of which present hazardous conditions for bicyclists. The proposed action furnishes an important link to the local bicycling community and makes a positive contribution toward decreasing the use of single-occupancy motor vehicles.

The students, faculty, and administrators have expressed strong support for the project (see documents in Appendix A). Notable among these is a petition of full support for the LCC Access Project that was signed by 120 individuals affiliated with the college.



Cul-de-sac where Waiawa Road changes from public to private ownership.



Proposed bike path will be constructed along Waiawa Road (makai of College Gardens, shown on the right side of the photo).



Waiawa Road, looking west. Leeward Community College is on the right-hand side.



Gate restricts access at western end of Waiawa Road.

(3) Relation of the Parcel to the Special Management Area

The project falls within the Special Management Area (SMA) of the Pearl Harbor region, an area given special planning consideration and regulatory review because of its proximity to the island's shoreline resources. The proposed bike corridor does not cross any streams, wetlands, or pristine areas.

(4) Location Map

See Figure II-1, Location Map and Figure II-2, Tax Map Boundaries.

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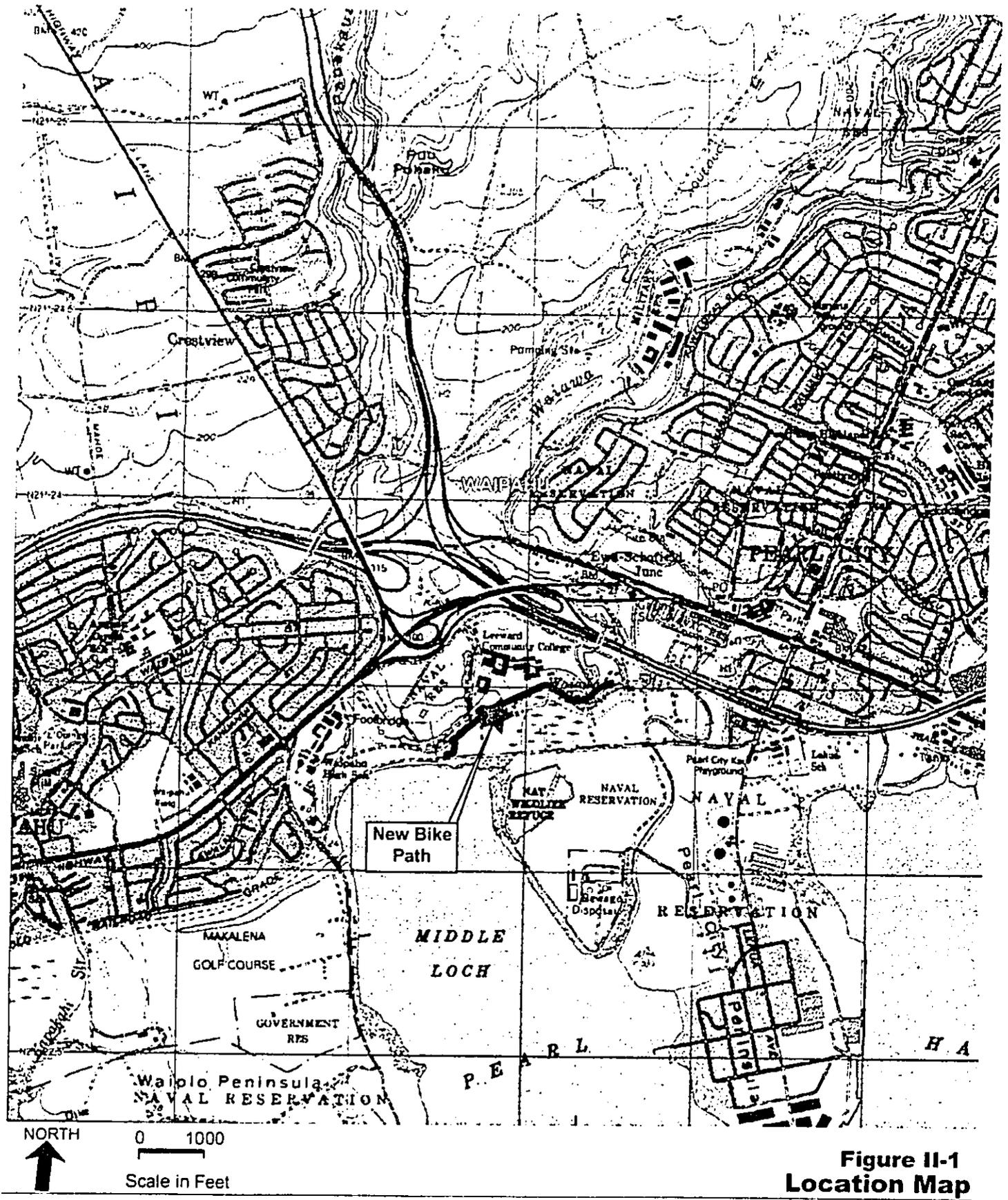
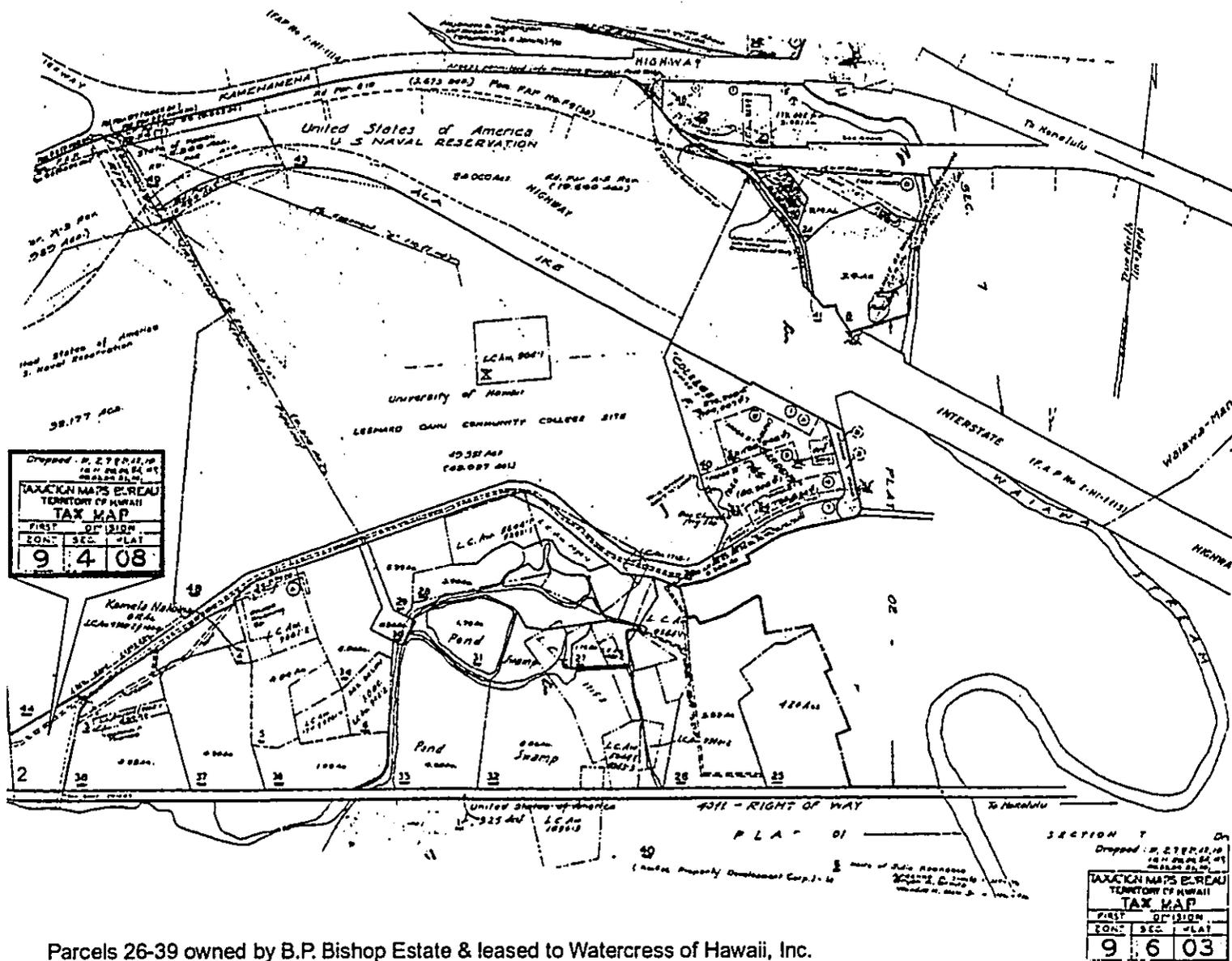


Figure II-1
Location Map

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Parcels 26-39 owned by B.P. Bishop Estate & leased to Watercress of Hawaii, Inc.
 Parcel 44 owned by United States of America, U.S. Naval Reservation
 Parcel 48 owned by University of Hawaii, Leeward Community College Site
 Parcel 40, 52, 53 & 54 owned by College Gardens
 Parcel 51 is Waiawa Road
 Parcel 23 is owned by Okada Trucking Co. (to be acquired by the City & County of Honolulu)



Figure II-2
Tax Map Boundaries

DOCUMENT CAPTURED AS RECEIVED

(5) Land Use Approvals

A major Special Management Area permit is required for the proposed project because the project falls within the SMA and construction cost estimates exceed \$125,000. Phase I is estimated to cost \$840,000 and Phase II is estimated at \$600,000.

B. Technical Characteristics

(1) Use Characteristics

The proposed action will provide bicycle access from the existing Pearl Harbor Historic Trail to Leeward Community College. Bicyclists, joggers, and pedestrians will be able to enter the campus through an access point at the rear of the campus, near the tennis courts. After completion of Phase II, bicyclists will be able to ride the entire length of Waiawa Road, then take Ala Ike Street to the front of the campus.



Bicycle and pedestrian access point will be provided at makai boundary of the college campus, near the tennis courts.

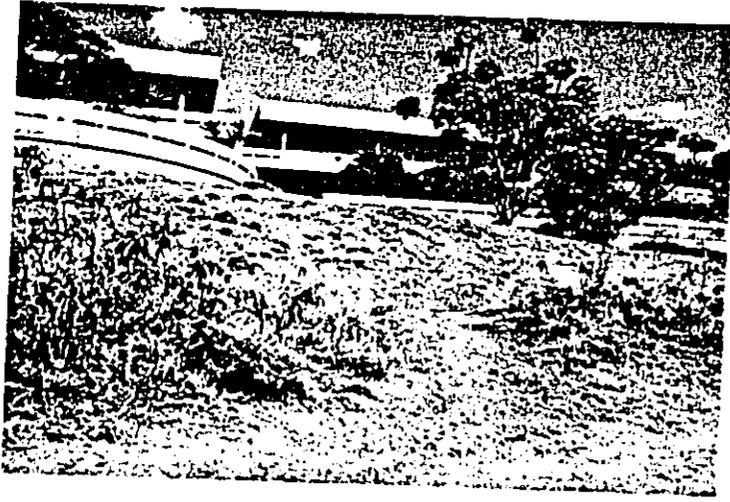
(2) Physical Characteristics

The path will measure approximately 3,690 feet in length (about .70 mile) and will vary in width from 8 to 10 feet. The segment that connects the Pearl Harbor Historic Trail to the existing road will have a width of 8 feet. The path then increases in width to 10 feet until it reaches the portion of the roadway that traverses State-owned land. The bike path narrows to 8 feet on the State-owned segment because of design constraints within the Energy Corridor and the need to maintain a standard 20-foot wide roadway for fire access.

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The bike path will lie within the existing roadway. In some areas, shoulders will be graded or leveled to increase the usable width of the corridor. Where the roadbed is wide enough, existing pavement may be used for the bicycle path. Such usage will be indicated by striping. The bike lane will be marked on the roadway, and there will be no grade or curb separation between motorists and bicyclists. Except for limited areas (for example, where resurfacing is needed to create a smooth interface between the road and the bike path), no improvements will be made to the road itself.

The bike path will be paved with asphaltic concrete. Auxiliary improvements associated with the bike path include retaining walls, bike safety rails, striping, and signage. Improvements to adjacent properties include any repair of private driveways impacted by the proposed alignment and short driveway and roadway extensions to maintain the standard 20-foot road width. A 6-foot high chain link fence approximately 1,000 feet long will be installed to encompass the entire makai boundary of the campus. This improvement is being provided at the request of the college for security reasons.



View of Leeward Community College buildings from Waiawa Road.



Chain link fence on makai boundary of LCC will be extended as a security measure.

(3) Construction Characteristics

Construction will consist of clearing and grubbing, demolition, and grading. Following grading, new construction will involve a 6-inch subsurface base course, 6-inch aggregate base course, and a surface layer of asphaltic concrete measuring 2 inches (see typical cross-sections in Figure II-3). Shoulders will be stabilized with a soil additive (PolyPavement). In some places, retaining walls and bike safety rails will be installed to accommodate slopes and changes in local topography, such as swales and berms.

(4) Utility Requirements

The bike path will not require any utilities. Utility issues primarily involve existing underground utilities. Path construction will take place along a relatively narrow roadway that contains various underground lines. Aboveground, guys supporting electrical poles will have to be relocated. To avoid any potential impact on or damage to existing utilities, all prudent measures have been taken to identify lines. Project engineers have consulted with the respective utility companies and agencies. Of particular significance is planned construction of a fuel line in the State energy Corridor by the Hawaiian Electric Company. The proposed HECO action will not affect Phase I of the LCC bike path, but may call for scheduling Phase II after the fuel line has been installed.

Portions of the bike corridor fall within the State Energy Corridor, an easement across the makai portion of the campus. The State Department of Transportation, Harbors Division has reviewed the plans and approved the project provided that no retaining walls with chain link fence are constructed within the corridor limits (see letter dated December 20, 2000 in Appendix G). Other improvements, such as the bike path and railings may be subject to removal if work is required on the energy pipeline. If this occurs, the City would be responsible for the cost of removing and reconstructing the bike path improvements.

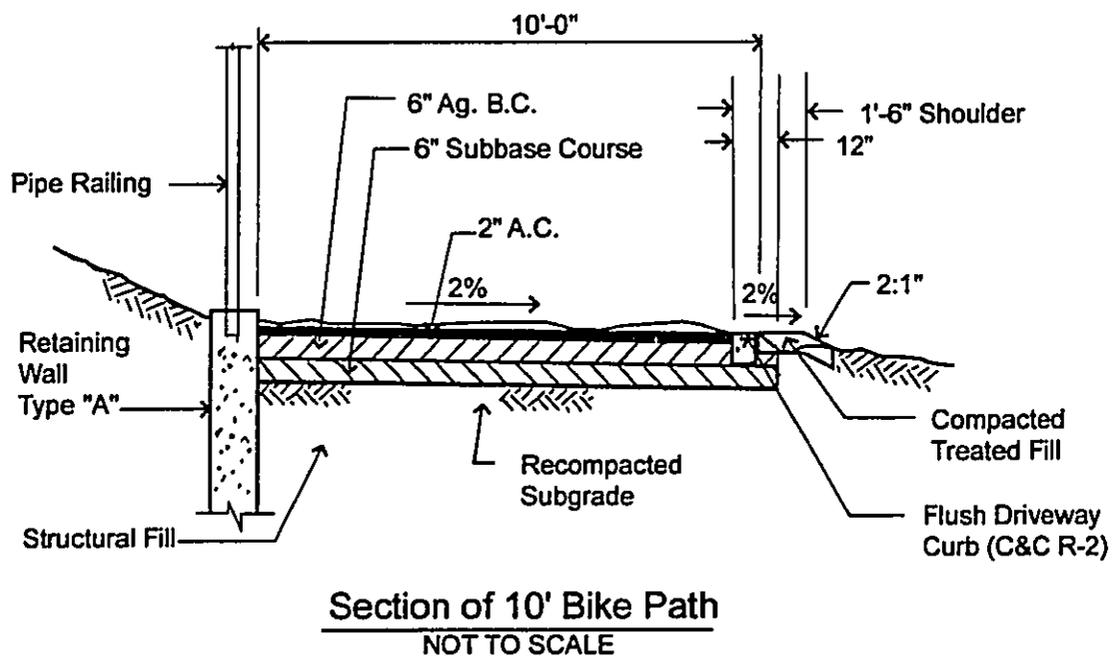
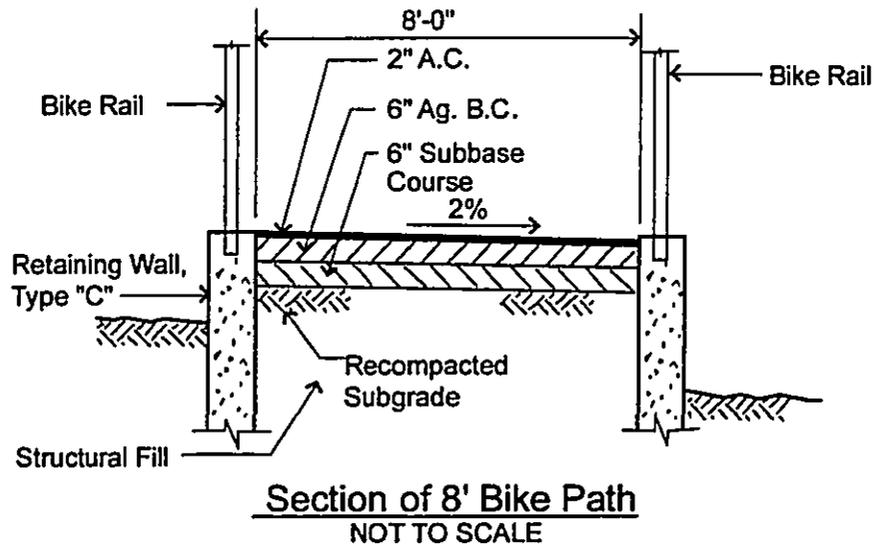


Figure II-3
Typical Bike Path Cross Section

(5) Liquid Waste

The proposed action is a permanent bike path. There are no restroom facilities or drinking fountains associated with the project that would generate liquid waste.

(6) Solid Waste

Given the relatively short distance of the bike path, and the absence of commercial activity nearby, the proposed action is not expected to generate solid waste or trash.

(7) Access to Site

The proposed action is itself a form of access by providing a public bicycle easement from the shoreline (Pearl Harbor Historic Trail) to a major educational institution. The proposed bicycle path can also be reached via Ala Ike Street.

C. Economic and Social Characteristics

(1) Estimated Cost and Time Phasing of Construction

The total estimated construction cost is approximately \$1.4 million, including \$840,000 for Phase I and \$600,000 for Phase II. These estimates cover all work and materials to build the bike path, necessary retaining walls, bike rails, bike barriers, signage, fences, roadway repair and extensions, and new asphaltic concrete pavement connections to existing driveways.

Each phase of construction is expected to take 6 months after bidding and award of contract. Construction activity will be divided into separate phases to ensure access for tenants and landowners of surrounding properties.

(2) Social Characteristics

The proposed project implements a recommendation of the Honolulu Bicycle Master Plan that was adopted in April 1999. The connection to the Leeward Community College was identified as a Priority One, College Access recommendation. When completed, the bike path will provide students and faculty with an alternative means of transportation to and from school. Although the vast majority of students attending the college commute by single-occupant vehicles, providing an alternative mode may encourage more students to bike instead of drive. For those students that live and/or work along the Waipahu-Pearl City corridor, the Pearl Harbor Historic Trail would provide a safe and pleasant alternative to Farrington Highway and Kamehameha Highway. Currently, there is no connection from the college campus to Pearl Harbor Historic Trail and the shoreline, despite their proximity. College faculty have indicated that the proposed path is desirable because it increases the

accessibility of Pearl Harbor which could play a greater role as an education and science resource.

D. Environmental Characteristics

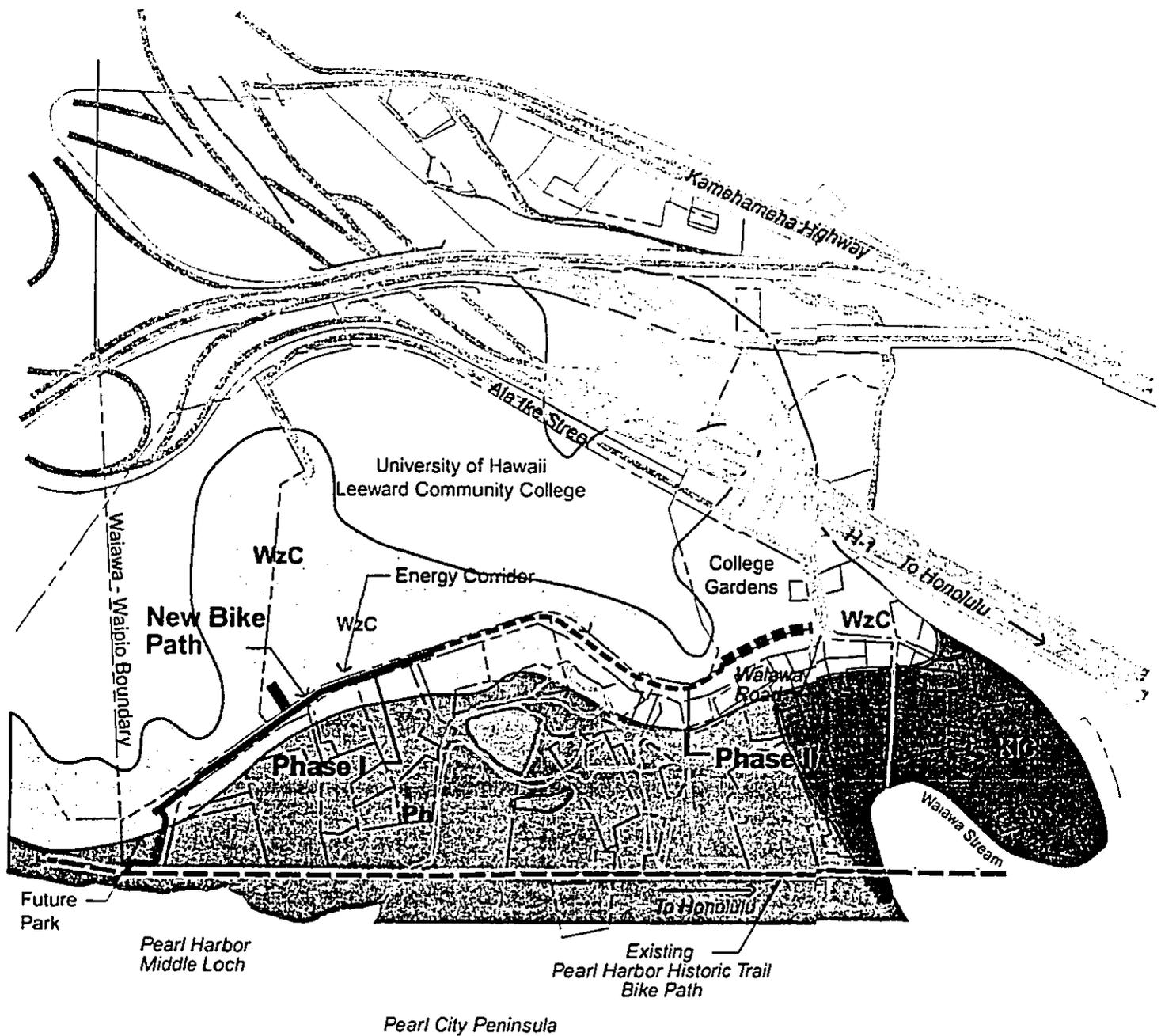
(1) Soils

According to the Soil Conservation Service, the soils found within the project alignment include Waipahu silty clay (WzC) and Pearl Harbor (Ph) soil classifications (see Figure II-4). Waipahu silty clay is characterized as well-drained soils on the terraces of the island of Oahu. On this soil, runoff is medium and the erosion hazard is moderate. The Pearl Harbor clay soil series are very poorly drained soils found on the low coastal plains adjacent to the ocean. Permeability is very slow, runoff is very slow to ponded and the erosion hazard is no more than slight.

A geotechnical analysis was conducted to guide site preparation and grading, foundation support, backfilling for retaining walls, and pavement design. (Report can be found in Appendix B.) The field investigation included six soil test borings to depths ranging from 7 to 11.5 feet below the existing ground surface. Laboratory tests and engineering analysis concluded that the proposed bike path is feasible. However, design of the facility has had to address potential geotechnical concerns, such as use of suitable fill material to counter the presence of soft and compressible subsurface materials, the presence of clayey soils with some shrink and swell tendencies, and deleterious materials at old fill sites.

(2) Topography

The topography along the bike path alignment is relatively level with gentle undulations. For the majority of the bike path, slopes rarely exceed 1 to 3%. The only exceptions are three short stretches. These segments will have a slope of 5%, which is within a comfortable range for casual bikers and meets Americans with Disabilities Act standards for handicap access. Ground elevations range from approximately 8 feet above mean sea level at the Pearl Harbor Historic Trail to 42 feet at the highest point along the route.



LEGEND

- WzC** Waipahu silty clay, 6 to 12 % slopes
- Ph** Pearl Harbor clay
- KIC** Kawaihapai clay loam, 6 to 15% slopes

NORTH



0 200 400
 100
 Scale in Feet

**Figure II-4
 Soils**

(3) Surface Runoff, Drainage, and Erosion Hazard

The unimproved section of Waiawa Road, makai of the cul-de-sac, does not have storm drains. Surface runoff flows in a makai direction toward existing agricultural fields. The existing roadway and shoulders show no signs of erosion. Shoulders are stabilized by existing vegetation. Storm runoff from the LCC site (located upslope) is directed into a concrete drainage ditch on the ewa side of the property and collected in a culvert near the Pearl Harbor bike path. This is the same drainage easement that abuts the proposed bike path.

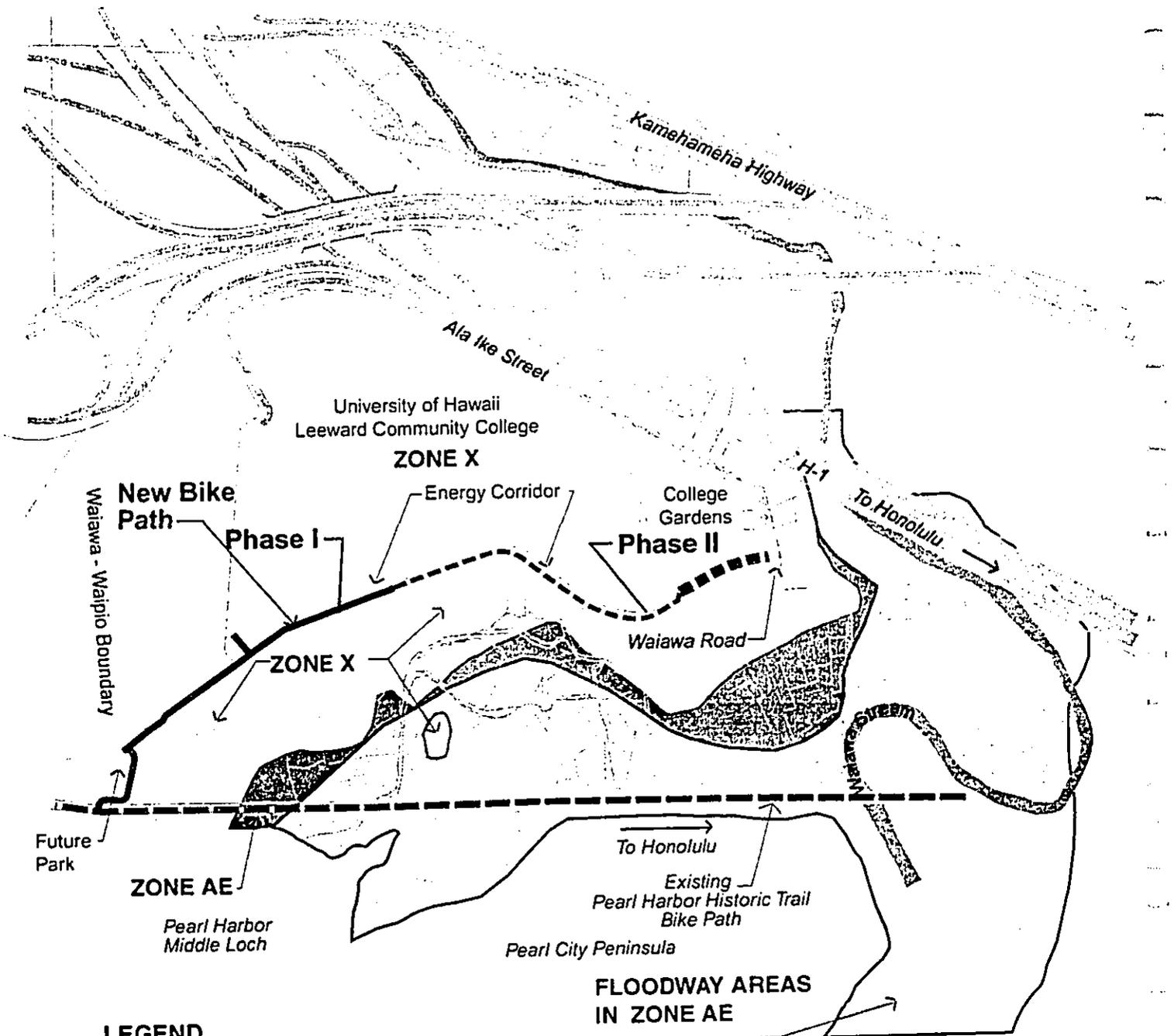
The new bike path is not expected to alter drainage patterns. It will be designed with a 2% cross slope. Precipitation will sheet flow in a makai direction toward the existing roadway and will follow the existing drainage courses of the road.

(4) Federal FIRM, Flood Hazard District

According to the Flood Insurance Rate Map (FIRM), the project site falls in Zone X, defined as areas inundated by a 100-year flood with flood depths of 1 foot (see Figure II-5). The Land Use Ordinance, Section 21-9.10, Flood Hazard Districts, indicates that streets and roadways are exempt uses in accordance with the underlying zoning district in the general floodplain district (Section 21-9.10-13 (a) (11)). The proposed bike path is comparable to a public use street or roadway.

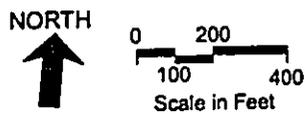
(5) Other Information Pertinent to the Special Management Area

None.



LEGEND

- ZONE AE** Special flood hazard area inundated by 100-year flood
Base flood elevations determined
- ZONE X** Areas of 500-year flood; areas of 100-year flood w/ avg. depths of less than 1 foot



**Figure II-5
 Flood Zones**

III. Affected Environment

A. Brief description of subject site in relation to surrounding area and the description of the surrounding area. Existing land uses, general plan and development plan land use designations, zoning and unique features.

The proposed bike path will be constructed on lands owned by the Kamehameha Schools, Okada Trucking Co., and the State of Hawaii. Approximately 2,060 linear feet lie on Kamehameha Schools property, 630 feet are on Okada Trucking property, and the remaining 1,000 feet are on State property (see Figure III-1). Abutting properties are owned by the U.S. Government (Navy), State of Hawaii, and Kamehameha Schools.

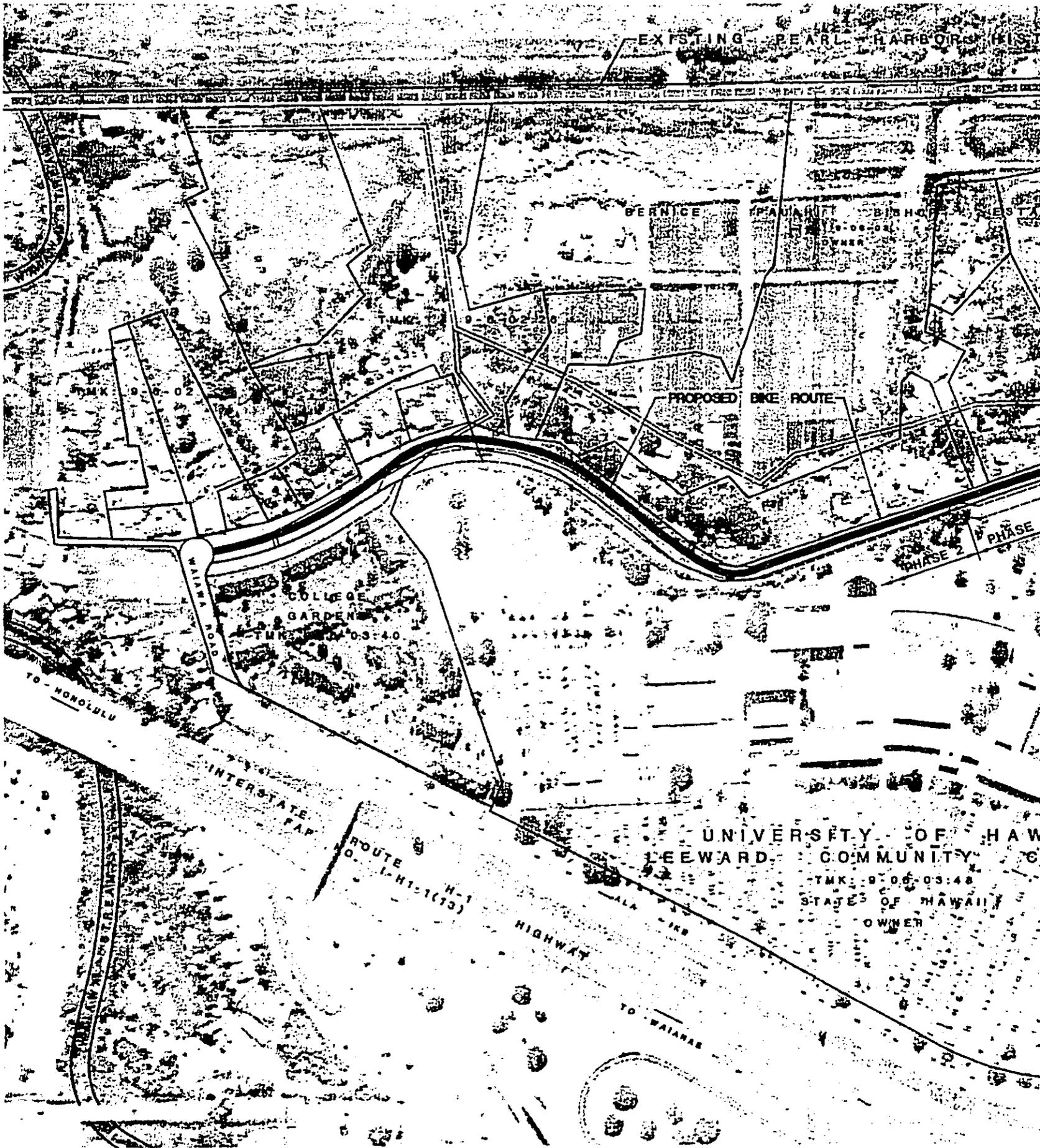
Land uses on adjacent properties include open storage yards for transportation and construction equipment and construction material and debris, agriculture (watercress and other truck crop farms), a few single-family residences (built on land leased from Kamehameha Schools or owned in fee), a former Navy storage depot, a townhouse complex (College Gardens), and the community college. Scrub vegetation is interspersed among these uses.

Waiawa Road overlooking watercress farm. Naval ships seen in the distance.

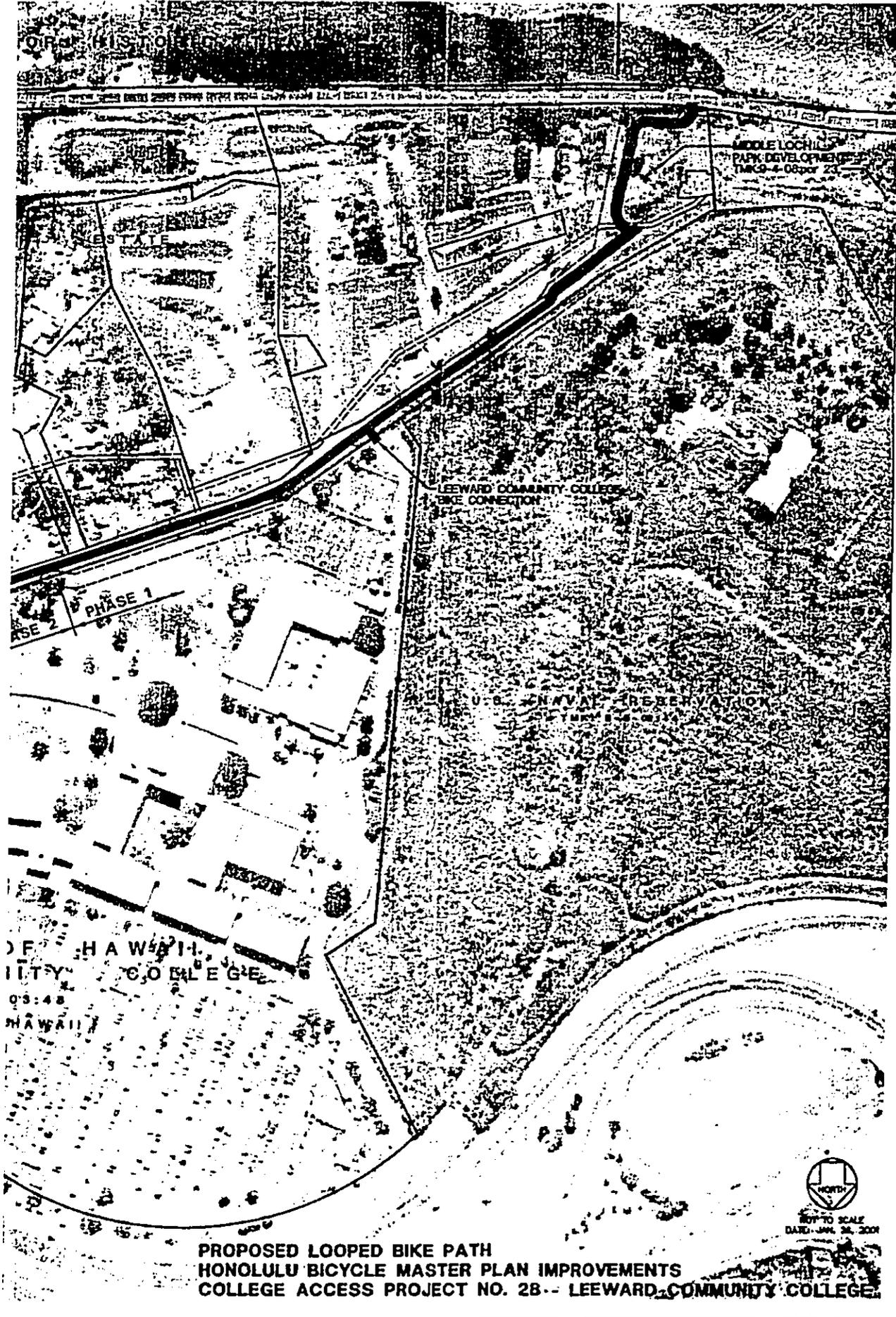


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**Figure III-1
Land
Ownership
& Surrounding
Uses**

The bike path connects to the Pearl Harbor Historic Trail, an existing 5.9-mile bike route that extends along the former Oahu Rail & Land (OR&L) right-of-way from Halawa Landing to Waipahu Depot Road, eventually reaching Nanakuli. This route is being enhanced through a master plan that has been developed as a vision project by the Pearl City and Aiea communities. According to the master plan, the trail is envisioned as a "world-class heritage and recreational corridor." Four goals that will guide future community projects are:

- Provide a shared-use path for recreation, fitness, and alternative transportation
- Preserve the former OR&L railroad alignment as an important historic resource
- Use the Pearl Harbor Historic Trail as a unifying element to provide economic opportunities
- Use the Pearl Harbor Historic Trail as a catalyst for environmental enhancement

As an extension of the Pearl Harbor Historic Trail, the proposed action is fully consistent with and complementary to these delineated goals.

The proposed bike path is located in both the State Agricultural and Urban Districts (see Figure III-2). Because bike paths are defined as roadways, they are a permitted use in the Agricultural District.

The proposed project is consistent with the goals, objectives and policies of the Oahu General Plan with respect to promoting recreational uses and alternative forms of transportation.

The project falls within the Central Oahu Sustainable Communities Plan Area, one of eight planning regions on Oahu. The plan is currently going through a revision process in which the intended outcome is a vision statement and implementing policies that will support the region's unique character, lifestyle, and economic opportunities.

The LCC bike path would promote several of the plan's objectives¹, notably:

- *Pedestrian and Bicycle Travel.* Pedestrian and bicycle travel should be encouraged, particularly to reach neighborhood destinations, such as schools, parks, and convenience stores (p. 3-55).

A primary purpose of the LCC bike path is to encourage bicycling to and from the college campus by providing a safe route.

- *Adaptive Reuse of the OR&L Historic Railway.* There should also be a parallel paved bikeway along the length of the rail route, either within or

¹ Objectives and policies from the Draft Central Oahu Sustainable Communities Plan, as posted on the Department of Planning and Permitting website.

adjacent to the right-of-way. The bikeway should be provided even in those sections where the railroad itself is not operational (p. 3-25).

The proposed project is not located within the historic railway corridor (Pearl Harbor Historic Trail); however, it is connected to the historic spine and, as such, it is an appropriate and complementary adjacent use.

- ***Bike Paths.*** *A major bike path should run east-west along the OR&L right-of-way (with branch routes to the Waipahu Cultural Garden and Leeward Community College) (p. 4-9).*

This statement from the “Public Facilities and Infrastructure Policies” section of the Central Oahu Sustainable Communities Plan is a direct reference to the proposed project.

The path is located on lands designated Agriculture (see Figure III-3) on the Central Oahu Development Plan Land Use Map. Adjacent uses include Agriculture (Kamehameha Schools leased parcels), Industrial (Former Navy storage facility), Public Facility (Leeward Community College) and Medium Density Apartment (College Gardens residential apartments).

The Development Plan Public Facilities map designates the Pearl Harbor Historic Trail as a transit corridor programmed for 4+ years (see Figure III-4). A transit station symbol has been placed on a portion of the Kamehameha Schools property makai of the bike path. The public facilities map also shows a future transit station and corporation yard to the west of the LCC, on the Navy and Okada Trucking Company properties. Ala Ike Street fronting LCC has been identified as a future rapid transit corridor. There are no development plan public facility proposals for the proposed bike path on Waiawa Road; however, the immediate area is clearly identified as a future intermodal transportation hub and the proposed action would support this type of public facility by providing an important link.

The underlying zoning of the bike path is Ag-2, General Agriculture (along Waiawa Road) and A-2, Medium Density Apartment, on the Okada Trucking site. As a public use, the bike path is a permitted use in all zones (see Figure III-5).

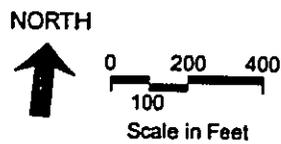
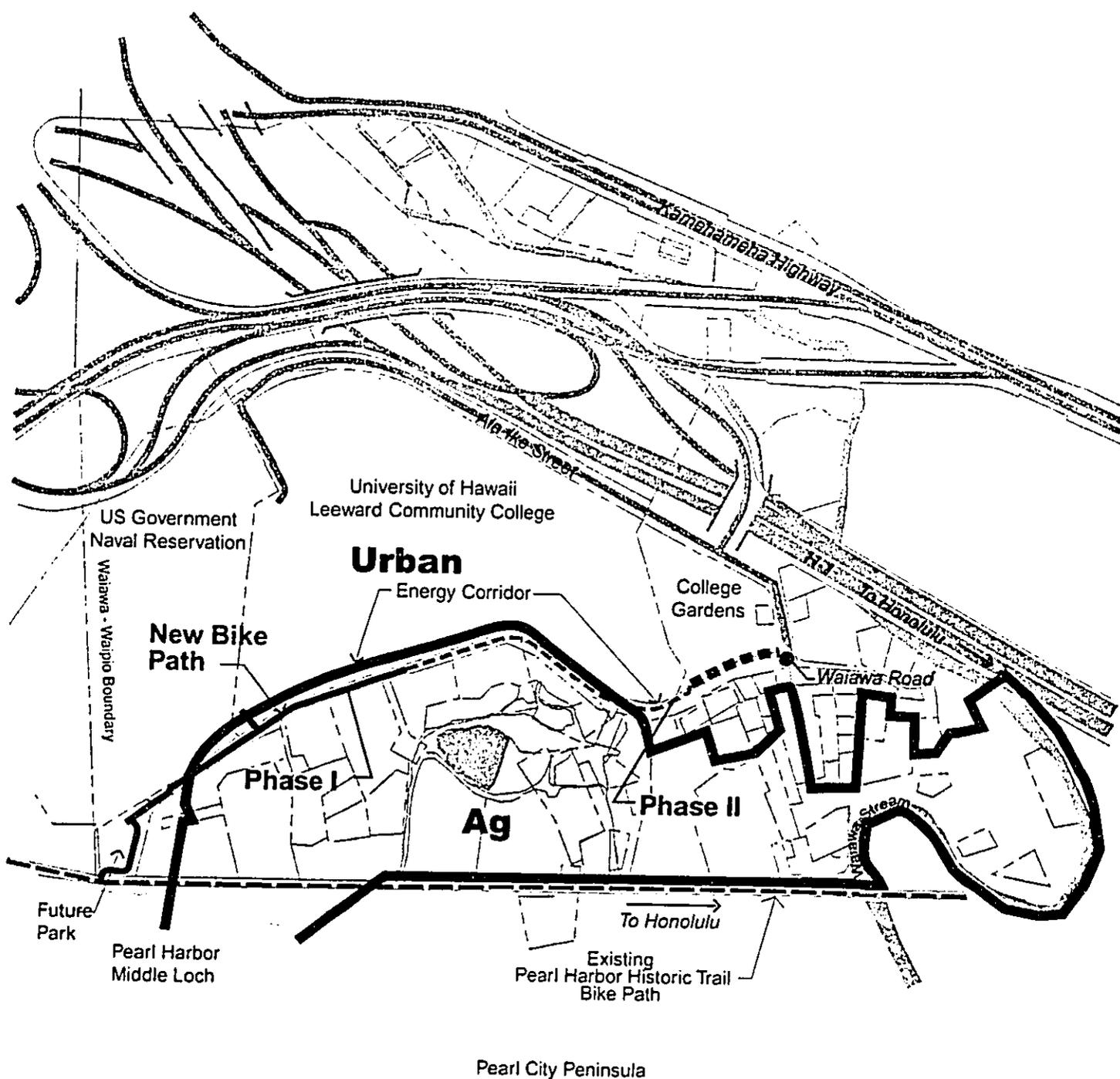
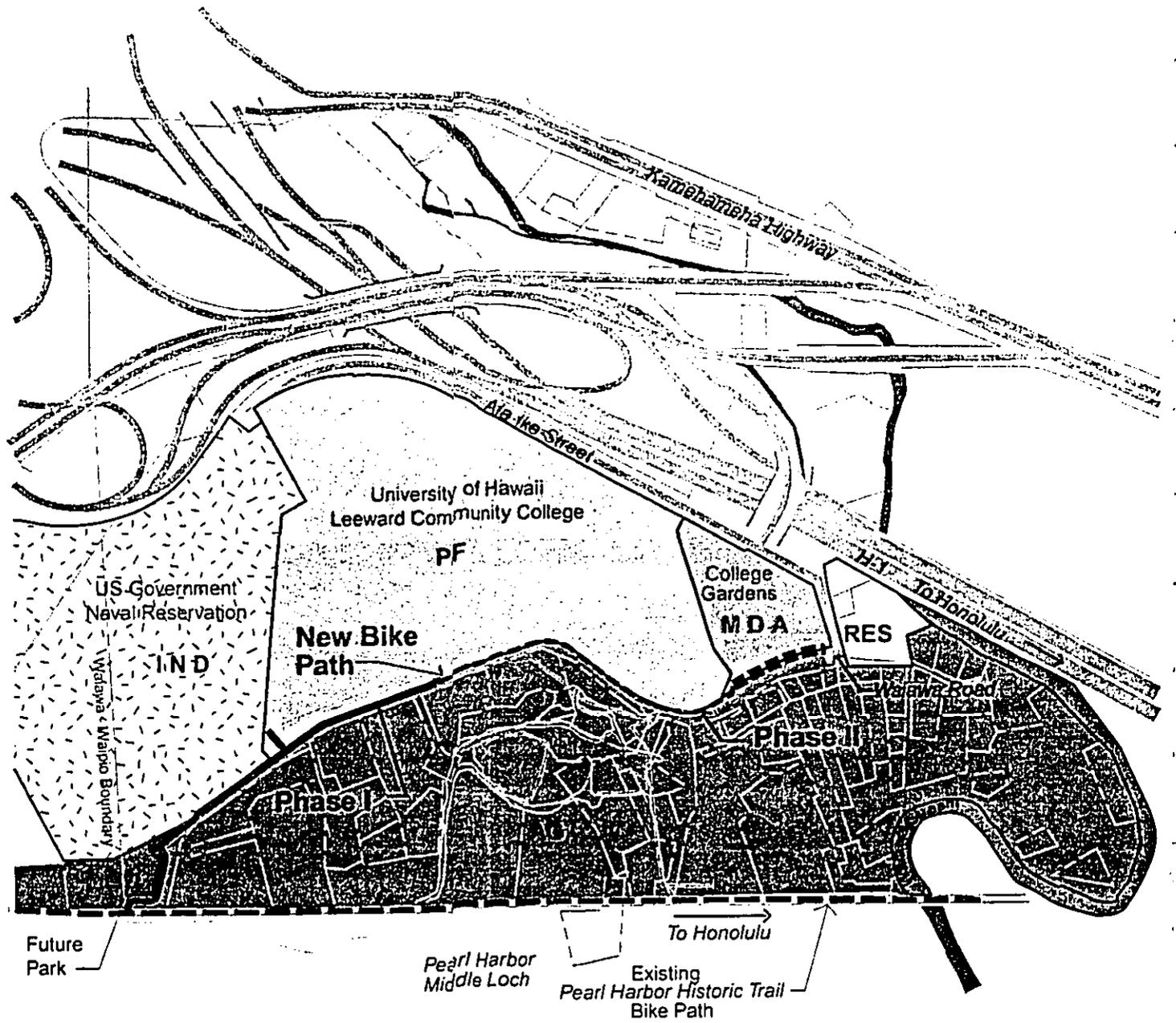
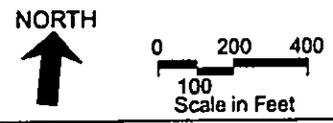


Figure III-2
State Land Use Designations

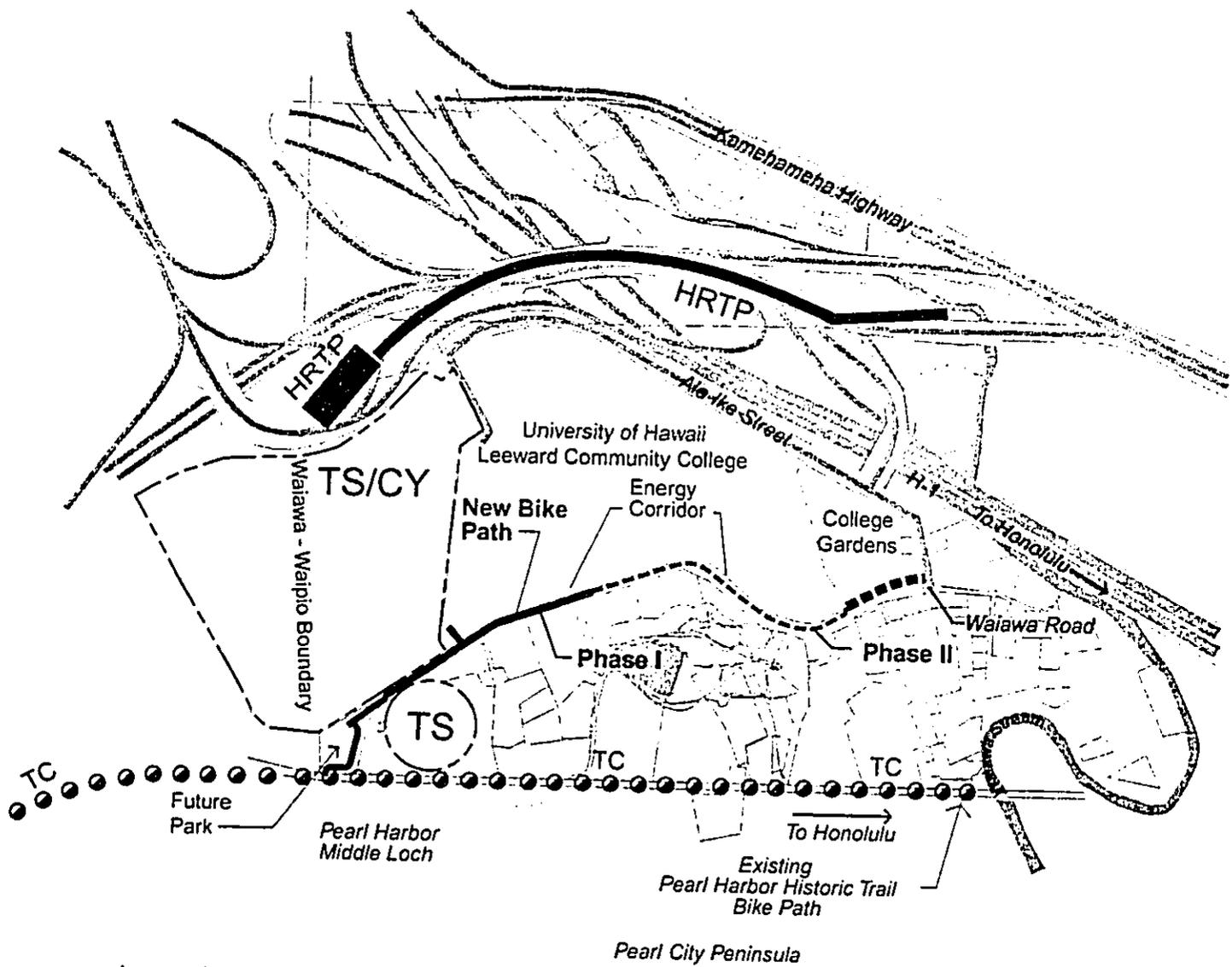


LEGEND

- AG Agriculture
- IND Industrial
- MDA Medium Density Apartment
- PF Public Facility
- RES Residential



**Figure III-3
 Development Plan Land Use Designations**

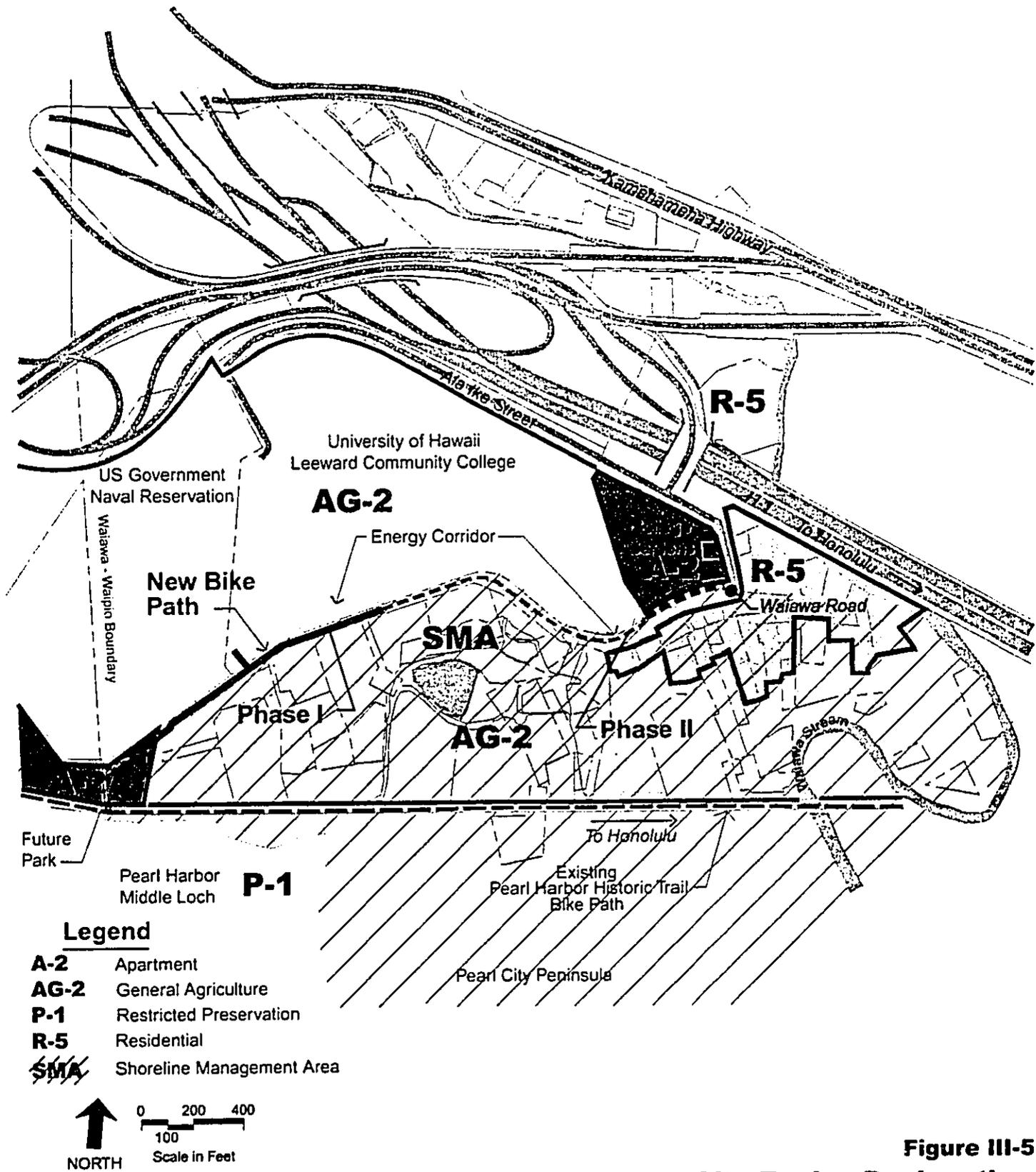


Legend

TS	Transit Station
CY	Corporation Yard
TC	Transit Corridor
●●●●	
H RTP	Rapid Transit

NORTH
 ↑
 0 200 400
 100
 Scale in Feet

**Figure III-4
 Development Plan Public Facilities**



B. Project site in relation to publicly owned or used beaches, parks and recreation areas; rare, threatened, or endangered species and their habitats; wildlife and wildlife preserves; wetlands, lagoons, tidal lands and submerged lands; fisheries and fishing grounds; other coastal/natural resources.

Recreational Resources

The proposed project is a component of a more extensive bike route provided by the Pearl Harbor Historic Trail. The proposed bike path increases the usefulness of the regional bicycling network by furnishing a missing link: the connection to the Leeward Community College for students and faculty. It also doubles as a separate scenic route for recreational bikers using the Pearl Harbor Bike Path. The proposed action expands publicly owned and sponsored recreational use and access to the coastal/natural resources provided by the Pearl Harbor waterways and shoreline.

Botanical Resources

Winona P. Char of Char and Associates, conducted an assessment of the botanical resources along the proposed bike route on November 14, 2000. (Report can be found in Appendix C).

Where the proposed bike path borders the College Gardens property, the vegetation consists of a mowed grassy strip. Buffel grass (*Cenchrus ciliaris*), Bermuda grass (*Cynodon dactylon*), and swollen fingergrass (*Chloris barbata*) are abundant, with occasional, scattered clumps of Guinea grass (*Panicum maximum*).

Koa haole (*Leucaena leucocephala*) scrub vegetation occurs on the proposed bike path where it borders Leeward Community College and the U.S. Naval Reservation property. Koa haole shrubs form a somewhat dense cover, 7 to 12 feet tall. Several taller kiawe (*Prosopis pallida*) trees are found scattered here and there. The understory is composed of clumps of Guinea grass, 2 to 3 feet tall. Other shrubs and herbs which are associated with the koa haole scrub vegetation include spiny amaranth (*Amaranthus spinosus*), cheeseweed (*Malvastrum coromandelianum*), lion's ear (*Leonotus nepetifolia*), virgate mimosa (*Desmanthus virgatus*), Chinese violet (*Asystasia gangetica*), and Indian pluchea (*Pluchea indica*). Two native species found in the koa haole scrub are 'ilima (*Side fallax*) and hoary abutilon or mato (*Abutilon incanum*). A few patches of swollen fingergrass and pitted beardgrass- (*Bothriochloa pertusa*) are also found on the bike path corridor.

The proposed bike path slopes downward along a drainage easement before joining the existing Pearl Harbor bike path. This open area along the drainage easement has been extensively bulldozed and graded. Large piles of scrap material are found here; these include old school buses, rusted cars, metal roofing, concrete slabs, and old lumber. Scattered patches of vegetation include castor bean (*Ricinus communis*), Guinea grass, fuzzy rattlebox

(*Crotalaria incana*), *Boerhavia coccinea*, hairy merremia (*Merremia aegyptia*), kiawe, lion's ear, and 'uhaloa (*Waltheria indica*). An area of koa haole scrub is found where the proposed bike path joins the Pearl Harbor bike path.²

The vegetation along the proposed bike path is composed almost exclusively of introduced plants such as koa haole, Guinea grass, kiawe, and buffer grass. Introduced species are plants that were brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact in 1778. Three native species occur on the bike path corridor: the 'ilima, hoary abutilon, and 'uhaloa. These three species are indigenous, that is, they are native to Hawai'i and elsewhere.

Given these findings, the proposed bike path is not expected to have a significant negative impact on the botanical resources. There are no botanical reasons to impose any restrictions, conditions, or impediments to the proposed plans.

Wildlife Resources

Certified wildlife biologist Tim J. Ohashi conducted a field survey on November 21-22, 2000 to assess the wildlife resources found on and adjacent to the project site. (Report can be found in Appendix D). There was a brief visit on the evening of November 21 to determine the presence of nocturnally active wildlife species. On November 22, the entire route of the bike path was walked from the end of Waiawa Road, beginning at 6:35 a.m. and ending at 7:36 a.m. Sunrise was about 6:30 a.m. All birds and mammals seen or heard along the route were recorded. The proposed bike path is planned along the route of an existing roadway and driveway and remains wholly in upland areas that do not support native plant communities. Waiawa springs wetland is adjacent to the route. Although endangered waterbirds were present within the wetland, the proposed project will not impact any wetlands and, therefore, have no effect on any waterbird species.

A total of 13 species of birds were encountered on the proposed route. They are listed in order of abundance:

- Common myna (*Acridotheres tristis*)
- English sparrow (*Passer domesticus*)
- Spotted dove (*Streptopelia chinensis*)
- Red vented bulbul (*Pycnonotus cafer*)
- Zebra dove (*Geopelia striata*)
- Common waxbill (*Estrilda troglodytes*)
- Cattle egret (*Bulbulcus ibis*)
- Japanese white-eye (*Zosterops japonicus*)

² Although this section of the study area followed the original alignment, the environment and plantlife described are substantially similar to what is present in the realignment area.

- Red crested cardinal (*Paroaria coronata*)
- House finch (*Carpodacus mexicanus*)
- Northern cardinal (*Richmondia cardinalis*)

All the species found immediately along the route and on adjacent upland habitat were naturalized introduced species. The monkeypod trees among the houses provided roosting habitat for many of the species listed above. From these roosts, mynas, spotted doves, zebra doves, English sparrows, and house finches were observed making their morning forays out to feeding sites on the Leeward Community College campus and other points mauka of the site. Small flocks of common waxbill fed on Guinea grass and other introduced grass seeds along the roads. Northern cardinals were in denser shrub stands. Japanese white-eyes and red-vented bulbuls were foraging in the ornamental shrubs and trees. Cattle egrets were seen flying overhead in the morning, fanning out from the Waiawa Unit of Pearl Harbor National Wildlife Refuge, located on Pearl City Peninsula south of the project site.

The proposed bike route does not go through any wetland site, but there is wetland nearby. The Waiawa springs wetland is located within the curve of the bike path route at a lower elevation. It is comprised of excavated ponds, watercress impoundments and emergent vegetation, along with trash and abandoned buildings and vehicles. The federally listed endangered Hawaiian coot (*Fulica americana alai*) and Hawaii stilt (*Himantopus himantopus knudensi*) were present in ponds and watercress patches. The Pacific golden plover (*pluvialis fulva*), wandering tattler (*Heterocelus incanum*), and black-crowned night heron (*Nycticorax nycticorax*) were seen on the shoreline and berms. The northern cardinal (*Cardinalis cardinalis*) and melodius laughing thrush (*Garrulax canorus*) were in hau (*Hibiscus tiliaceus*) and mangrove (*Rhizophora mangle*) thickets that line the shoreline of Middle Loch. The strawberry finch (*Amandava amandava*) was in wayside grasses along the existing Pearl Harbor bike path. Feral pigeons (*Columba livia*) were seen flying over the wetland areas.

Stray dogs were common in the area. One feral cat was observed along the Pearl Harbor bike path, but no cat colonies were present. While no trapping was conducted to verify the presence of other small mammals, the area should support rats (*Rattus sp.*), house mouse (*Mus musculus*) and small Indian mongoose (*Auropunctatus herpestes*).

The Hawaiian hoary bat (*Lasiurus cinereus semotus*) is a federally listed endangered species. The wetland habitat adjacent to the project site may be suitable for foraging bats, but no bats were observed.

C. Relation to historic, cultural, and archaeological resources.

Cultural Surveys Hawaii, Inc., conducted an archaeological assessment for the proposed project in November 2000. (Report can be found in Appendix D.) Research at the State Historic Preservation Division indicated that no inventory-level archaeological surveys had been conducted within the current project area. The Hawaii Register of Historic Places lists

the Pearl Harbor Naval Base Site (Site 50-80-09-9992) on the register. The site is a large one covering all three lochs of Pearl Harbor. No federally registered site is located within the project area.

State site 50-80-09-5302 is most closely associated with the project corridor. This site involves human skeletal remains uncovered during excavation of a sewer line trench at 96-035 Waiawa Road, makai of the project alignment and the LCC tennis courts. The skeletal remains were removed and reinterred.

During the November 2000 field inspection, no surface archaeological sites associated with traditional Hawaiian occupation were observed in any portion of the study area. Landfill, modern building activities and road construction have probably eliminated any remnant sites. The only historic review process concerns would be related to the possible discovery of additional human remains. If the project does not include major subsurface work, then further archaeological research appears unwarranted. However, if subsurface work is a component of the bike path construction, archaeological monitoring may be necessary.

D. Coastal views from surrounding public viewpoints and from the nearest coastal highway across the site to the ocean or to coastal landform.

The project site is a bike path that is meant to offer riders an opportunity to enjoy a different scenic biking experience as they ride along the Pearl Harbor Historic Trail. The bike path rises about 35 feet in ground elevation from the existing shoreline trail. Along the proposed alignment, there are occasional views of adjacent agricultural fields. The bike path itself is not visible from any public viewpoint or coastal highway.

E. Quality of receiving waters and ground water (including potable water) resources. Describe effects on the groundwater recharge cycle within the groundwater control area, show existing and proposed well locations with pumping estimates. Describe effects on receiving waters – streams and ocean waters.

At its closest point to the shoreline, where the proposed project is linked with the Pearl Harbor Historic Trail, new construction would occur approximately 100 feet from Pearl Harbor Middle Loch. The corridor does not cross any streams, wetlands, or other bodies of water. The bike route would not significantly affect the quantity of runoff or the quality of receiving waters and groundwater resources. Erosion control measures and best management practices will be implemented during construction. The amount of impervious surface added to the existing roadbed is marginal, especially in an environment that is largely agricultural and rural in character.

F. Include suitable and adequate location and site maps.

Location maps and site plans are included in the report. Construction drawings, including demolition and grading plan, civil drawings, and sections, accompany this report.

IV. Project Impacts and Alternatives Considered

A. Project Impacts Relating to the Coastal Zone Management Objectives and Policies (Section 205A-2, HRS) and the Special Management Area Guidelines (Section 25-3.2 ROH)

1. Coastal Zone Management objectives and policies (Section 205A-2) applicable to the proposed project are cited and discussed below:

(b) Objectives

(1) Recreational resources;

(A) Provide coastal recreational opportunities accessible to the public.

The proposed project implements recommendations made in the Honolulu Bicycle Master Plan. In addition to providing a college access route, the project provides expanded bike trails for public recreation.

(c) Policies

(1) Recreational resources;

(A) Improve coordination and funding of coastal recreational planning and management; and

(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

(v) Ensuring public recreational use of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

The proposed project calls for public funds to be used for dual purpose: recreation and (non-motorized) transportation. It enhances an existing recreational asset by building a spur that enables safe and convenient public access to the college.

- (2) *Historic resources;*
 - (C) *Support state goals for protection, restoration, interpretation, and display of historic resources.*

The proposed project has no historic value; however, it supports other community initiatives to increase the use and enjoyment of Pearl Harbor Historic Trail.

- (6) *Coastal hazards;*
 - (B) *Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;*
 - (C) *Ensure that developments comply with requirements of the Federal Flood Insurance Program;*
 - (D) *Prevent coastal flooding from inland projects; and*
 - (E) *Develop a coastal point and nonpoint source pollution control program.*

According to the Flood Insurance Rate Map (FIRM), the project site is located within Zone X, which is defined as areas subject to 100-year floods with flood depths of 1 foot. According to the Land Use Ordinance, Section 21-9.10, Flood Hazard Districts, roadways and bikeways are exempt from flood hazard district requirements (Section 21-9.10-13 (a) (11)). Erosion control measures and best management plans will be used to minimize construction-related nonpoint source pollution.

2. Shoreline Management Area Review Guidelines (Section 25-3.2) that are relevant to the proposed project are discussed below:

- (a) *All development in the special management area shall be subject to reasonable terms and conditions set by the council to ensure that:*
 - (1) *Adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas and natural reserves is provided to the extent consistent with sound conservation principles;*
 - (2) *Adequate and properly located public recreation areas and wildlife preserves are reserved;*

- (3) *Provisions are made for solid and liquid waste treatment, disposition and management which will minimize adverse effects upon special management area resources; and*
- (4) *Alterations to existing land forms and vegetation; except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation or failure in the event of earthquake.*

The proposed project will provide a new public easement and improved pathway to the Pearl Harbor shoreline. Improvements will affect existing transportation and utility corridors and will not interfere with any recreation or wildlife area. No building structures are included in this project.

The land form is flat to gently sloping to flat and will receive minimal alterations. The terrain will grubbed and re-graded to form a safe surface for bicycle and pedestrian travel. Cut and fill activities will occur primarily around the segment connecting the Pearl Harbor Historic Trail and Waiawa Road.

- (b) *No development shall be approved unless the council has first found that:*
 - (1) *The development will not have any substantial, adverse environmental or ecological effect except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health and safety, or compelling public interest. Such adverse effect shall include, but not be limited to, the potential cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect and the elimination of planning options;*
 - (2) *The development is consistent with the objectives and policies set forth in Section 25-3.1 and area guidelines contained in HRS Section 205A-26;*
 - (3) *The development is consistent with the county general plan, development plans and zoning. Such a finding of consistency does not preclude concurrent processing where a development plan amendment or zone change may also be required.*

The proposed project is consistent with the guidelines expressed above. The bike path increases opportunities for alternative transportation and recreation. No substantial, adverse environmental or ecological effects are anticipated. The project is also consistent with relevant objectives and policies of Section 25-3.1 as well as the county general plan, development plans, and zoning.

- (c) *The council shall seek to minimize, where reasonable:*

- (1) *Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon;*
- (2) *Any development which would reduce the size of any beach or other area usable for public recreation;*
- (3) *Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams which the special management area and the mean high tide line where there is no beach;*
- (4) *Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast;*
- (5) *Any development which would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.*

The proposed project is consistent with the guidelines expressed above. Implementation will not involve dredging or filling operations of any water body and the proposed action is not relevant to beach alteration. The project enhances public access opportunities to an existing public recreational feature (the Pearl Harbor Historic Trail). It does not interfere with the line of sight from a major highway to the sea and it would not affect water quality, bodies of water used for fishing, wildlife habitats, or agricultural uses of land.

B. Alternatives Considered

The proposed project calls for the construction of a bike path that provides a link between the existing Pearl Harbor Historic Trail and Leeward Community College. Alternatives to the proposed project include (1) no action and (2) an alternative alignment. The following is a discussion of the alternatives considered and the recommended course of action.

(1) No Action

The no action alternative would maintain the status quo. It would not implement a project developed through the community vision process, nor a priority recommendation contained in the Honolulu Bicycle Master Plan. This project represents the consensus of and is supported by neighborhood boards (Pearl City and Aiea), LCC administrators, and the bicycling community. Without the proposed action, the only LCC-bound routes available to bicyclists are Farrington Highway (from the ewa direction) and Kamehameha Highway (from the Honolulu direction). These highways are heavily trafficked and only suitable for advanced riders. The proposed bike path opens up a route that is appropriate for casual bicyclists and children.

(2) Alternative Routes

The Honolulu Bicycle Master Plan recommended an alignment for Waiawa Road that loops back to Pearl Harbor Historic Trail. This alignment was investigated. Although it would give users more flexibility and it is a more desirable route overall, this option exceeded budgetary targets and the properties involved are encumbered by long-term leases. However, extending the bicycle path to form a loop in the future remains possible as a separate (third) phase of design and construction.

Another variation in the bike route is shown in Figure IV-1 and labeled “old alignment.” In this configuration, the connection between the Pearl Harbor bike trail and Waiawa Road runs alongside a drainage easement. When the project was initially engineered, this alignment provided the most direct and technically feasible connection to Waiawa Road (and access to the LCC campus). However, it would also have required establishing a new public easement along the edge of private property. When the City and County of Honolulu began taking definitive steps toward acquiring the adjacent Okada Trucking Co. property, a new connector route became viable. The new alignment offers several advantages. When the county’s real estate acquisition is complete, it would locate the path on public property, and when plans for a Middle Loch Park are implemented, the bike path will be integrated into a recreational setting. Also, preliminary engineering plans for the new alignment indicate that retaining walls will not be necessary (unlike the old alignment), although a moderate amount of cut and fill may be needed.

(3) Recommended Course of Action

Through the planning and design process and input from the college administration, the Vision Team and Neighborhood Boards, and relevant county agencies, the proposed project has evolved as the recommended course of action.

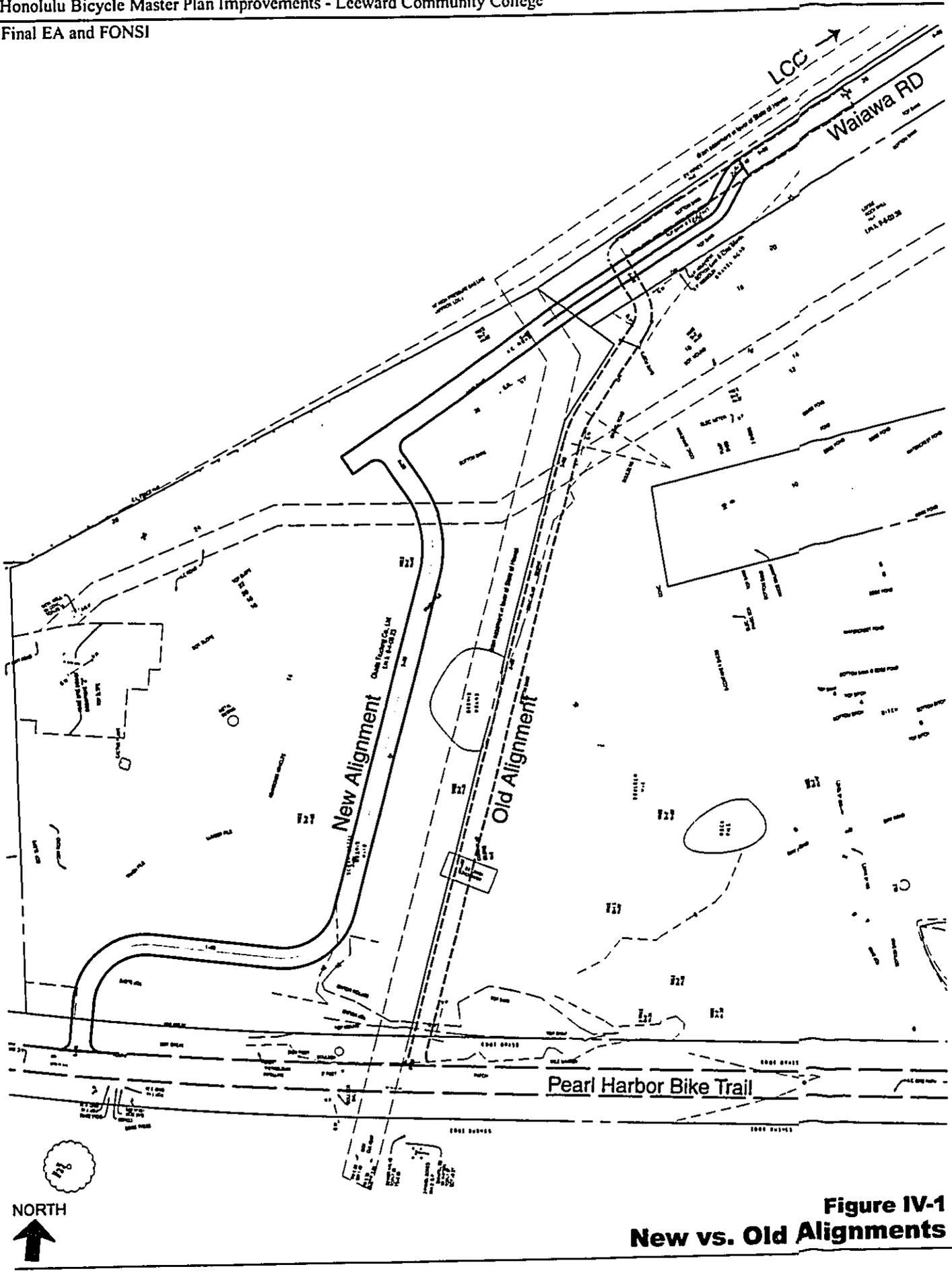


Figure IV-1
New vs. Old Alignments

V. Mitigation Measures

Short-term environmental impacts would be associated with construction activity during the 6-month construction period. Construction will involve the use of heavy machinery for grading and trucks for hauling material to and from the site. Construction noise would be mitigated by adhering to State Department of Health construction noise limits and curfews. Routine watering will be employed to control fugitive dust. Erosion control barriers and best management practices will be used to mitigate potential erosion during grading operations.

Long-term environmental impacts are not anticipated. The construction of the asphaltic concrete bike path includes retaining walls that would stabilize the path over many years. The bike path will be constructed with a 2% cross slope that will direct runoff from the surface to avoid standing water.

In the past, the college administration indicated that they have had problems with vandalism and theft from perpetrators entering the campus from the makai side where the bike route is proposed. To mitigate this problem, the proposed project will extend the existing chain link fence that covers only a portion of the rear boundary. The extension will complete the coverage so that the entire rear boundary of the campus is enclosed by fencing.

There are no anticipated changes in the motorized traffic on Waiawa Road because this project will not substantially affect the main roadbed. The bike path will not be lighted so its use would be limited to daylight hours.

VI. Determination

Based on the information described herein, the proposed project is not expected to result in significant social, economic, cultural, or environmental impacts. Consequently, a finding of no significant impact is warranted pursuant to the provisions of Subchapter 6 of Chapter 11-200, HAR.

VII. Findings and Reasons Supporting the Determination

In accordance with the significance criteria in Section 11-200-12 of Title 11, Chapter 200, this EA has determined that the proposed project will have no significant adverse impact on the environment.

Significant criteria supporting a Finding of No Significant Impact (FONSI) are presented below:

The project does not involve an irrevocable commitment to loss or destruction of any natural or cultural resource.

No loss or destruction of any natural or cultural resource will be involved. The archaeological study indicated that no National Register of Historic Places sites are located within the project area. However, human skeletal remains were inadvertently discovered during prior excavation for a nearby sewer line so there is a possibility of other similar finds. If subsurface work is required, archaeological monitoring may be necessary during construction.

The project does not curtail the range of beneficial uses of the environment.

The proposed improvements do not curtail the range of beneficial uses of the environment. The bike path will be constructed in marginal areas of the roadway that were previously unused and, perhaps, seen as unusable.

The project does not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.

The proposed project is consistent with the environmental policies, goals, and guidelines expressed in Chapter 344, HRS. The proposed project helps to create opportunities for residents to improve their quality of life and enjoy a public recreational facility and it also encourages transportation systems (in this case a bike path) in harmony with the lifestyle of the people and environment of the State (Sections 344-3, (2, B) and 344-4 (4 and 5)).

The project does not substantially affect the economic or social welfare of the community or State.

The proposed project will not significantly affect the economic welfare of the community or state; however, the proposed bike path will have a positive effect on the social welfare of those who use the bike path.

The project does not substantially affect public health.

The proposed project will be performed in accordance with all State and local regulations to ensure the protection of human health and the environment. Potential impacts on public health are considered insignificant and temporary. Any impacts from the project that may affect public health will be mitigated by measures defined in this report.

The project does not involve substantial secondary impacts, such as population change or effects on public facilities.

The proposed action is not expected to cause substantial secondary impacts, such as population changes or effects on public facilities.

The project does not involve a substantial degradation of environmental quality.

The proposed project does not involve a substantial degradation of environmental quality. In contrast, proposed improvements will provide an improved and safe mode of access to the college campus. The subject site is not environmentally pristine and does not have any biological resources of significance. Construction activities will require clean up of trash and debris from the roadsides which will improve environmental quality and aesthetics.

Is individually limited, but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.

This project is self-contained and will not lead to a commitment for larger actions.

This project does not affect any rare, threatened, or endangered species, or its habitat.

The proposed project follows an alignment where the land has been previously disturbed. There are no rare, threatened, or endangered plant species in the area. Waiawa springs wetland is adjacent to the route and provides a habitat for endangered waterbirds. However, the proposed project will not adversely impact any wetlands, and is not expected to affect any waterbird species.

This project does not detrimentally affect air or water quality or ambient noise levels.

The potential impacts on air, water, and noise levels will be insignificant and limited to the construction period. Any potential impacts from the project will be mitigated by measures defined in this report.

This project does not affect nor is it likely to suffer damage by being located in an environmentally sensitive area.

The proposed project is not located in an environmentally sensitive area.

This project does not substantially affect scenic vistas and viewplanes identified in county or State plans or studies.

The proposed project does not adversely affect scenic vistas in the surrounding area. The project itself allows the bicycling public to enjoy open space views that would otherwise go unnoticed.

This project does not require substantial energy consumption.

Energy, in the form of gasoline and diesel fuel will be consumed during construction. However, the amount of energy expended is not considered substantial.

VIII. Comments and Responses to the Draft Environmental Assessment

A notice announcing the availability of the Draft EA was published in the February 23, 2001 edition of the OEQC *Environmental Notice*. The notice provided a brief project summary and established a 30-day period for public comments, ending on March 27, 2001. A follow-up announcement was posted in the *Environmental Notice* dated March 8, 2001. In addition, the *Honolulu Advertiser* published a brief article about the proposed LCC bike path on March 6, 2001. That article also mentioned the availability of the Draft EA and the comment deadline of March 27.

A copy of the Draft EA was placed at the Pearl City Public Library for public review. Copies were also sent to the following agencies and organizations:

U. S. Army Corps of Engineers
U.S. Department of the Interior, Fish and Wildlife Service

Leeward Community College
Office of State Representative Willie C. Espero
State of Hawaii, Department of Transportation, Harbors Division
State of Hawaii, Office of Environmental Quality Control
State of Hawaii, State Historic Preservation Office

City and County of Honolulu, Department of Design and Construction
City and County of Honolulu, Department of Planning and Permitting
City and County of Honolulu, Department of Facility Maintenance
City and County of Honolulu, Department of Parks and Recreation
City and County of Honolulu, Department of Planning and Permitting
City and County of Honolulu, Fire Department
City and County of Honolulu, Police Department

Aiea Neighborhood Board No. 20
Pearl City Neighborhood Board No. 21
Waipahu Neighborhood Board No. 22

Kamehameha Schools



HOUSE OF REPRESENTATIVES
STATE OF HAWAII
STATE CAPITOL
HONOLULU, HAWAII 96813

February 27, 2001

Cheryl D. Soon, Director
City and County of Honolulu
Department of Transportation
711 Kapolei Blvd.
Honolulu, Hawaii 96813

Subject: TMK: 9-6-3: 39, 39 por., 48 por.

Dear Ms. Soon,

I am in support of the Leeward Community College Bike Path, which The Department of Transportation Services (DOTS) of the City and County of Honolulu proposes to construct a 3,600-foot bike path in two phases.

Since the bike path will expand choices in modes of transportation and access to the Leeward Campus, it will assist in the traffic congestion by eliminating some of the cars off the roadways. For safety reason, bicyclists that now travel on busy, high-speed highways would have an alternative route. It will also benefit recreational cyclists with a paved asphaltic concrete bike path.

Thank you for your consideration.

Respectfully,

Willie C. Espero

Willie C. Espero
State Representative
41st District

415 S. Beretania St., Rm 405 • Honolulu, Hawaii 96813
Phone: (808) 546-0350 • Fax: (808) 546-0351 • E-mail: willie@capitol.hawaii.gov



KIMURA INTERNATIONAL

Monday, April 23, 2001

The Honorable Willie C. Espero
House of Representatives
State of Hawaii
State Capitol
415 South Beretania Street, Room 406
Honolulu, HI 96813

Dear Mr. Espero,

Subject: Draft Environmental Assessment (EA) for the Proposed Leeward Community College Bike Path

Thank you for your support of the above-mentioned project as transmitted in your letter dated February 27, 2001.

We appreciate your input to the environmental assessment process.

Sincerely,
KIMURA INTERNATIONAL, INC.

Glenn T. Kimura

Glenn T. Kimura

cc: Department of Transportation Services, Mr. Michael Oshiro

1600 Kapolei Blvd., Suite 1610
Honolulu, Hawaii 96814
Tel (808) 944-8848 • Fax (808) 941-8999

BENJAMIN J. CATELAWO
DIRECTOR



STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
100 SOUTH KAPOLANI AVENUE
SUITE 100
HONOLULU, HAWAII 96813
TELEPHONE: (808) 586-4186
FACSIMILE: (808) 586-4188

GENEVIEVE SALMONSON
DIRECTOR

March 20, 2001

Cheryl Soon
Department of Transportation Services
711 Kapiolani Blvd., #1200
Honolulu, Hawaii 96813

Attn: Michael Oshiro

Dear Ms. Soon:

Subject: Draft Environmental Assessment (EA) for Leeward Community College Bike Path

We have the following comments to offer:

Contacts: Document all contacts in the final EA, including those made during the pre-consultation phase. Enclose copies of any correspondence with state or county agencies in addition to the correspondence already included in the draft EA. This is especially true of your contacts with the State Historic Preservation Division of DLNR, given that human remains were previously uncovered in the area. Documentation is required showing that SHPD has given its concurrence to the findings presented and to any proposed mitigation measures.

Cultural impacts assessment:

Act 50 was passed by the Legislature in April of 2000. This mandates an assessment of impacts to local cultural practices by the proposed project. In the final EA include such an assessment.

If any part of the subject area is in a developed urban setting, cultural impacts must still be assessed. Many incorrectly assume that the presence of urban infrastructure effectively precludes consideration of current cultural factors. For example, persons are known to gather kauna'oa, 'i'iima, 'uhaloa, noni or ki on the grassy slopes and ramps of the H-1 freeway and some state highways on the neighbor islands. Certain landmarks and physical features are used by Hawaiian navigators for sailing, and the lines of sight from landmarks to the coast by fisherman to locate certain fishing spots. Blocking these features by the construction of buildings or tanks may constitute an adverse cultural impact.

Cheryl Soon
March 20, 2001
Page 2

For assistance in the preparation refer to our *Guidelines for Assessing Cultural Impacts*. Contact our office for a paper copy or go to our homepage at <http://www.state.hi.us/health/eqc/index.html>. You will also find the text of Act 50 linked to this section of our homepage.

Paving: HRS 103D-407 requires the use of recycled glass in paving materials whenever possible. Enclosed is a copy of the referenced chapter and section of the statute.

Waiala Springs wetlands: Section III-B mentions that Waiala Springs wetlands are nearby. What measures will you take to prevent runoff from entering the wetlands?

If you have any questions call Nancy Heinrich at 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director

Enc.

c: Glenn Kimura



Monday, April 23, 2001

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813

Dear Ms. Salmonson,

Subject: Draft Environmental Assessment (EA) for the Proposed Leeward Community
College Bike Path

Thank you for comments on the above-mentioned project that were transmitted in a letter dated March 20, 2001. We are writing in response to your comments.

Contacts

We have added a new section to the Final Environmental Assessment which lists all persons contacted or consulted during preparation of the Draft and Final Environmental Assessments, and documents.

Cultural Impact Assessment

We recognize the significance of Act 50 which requires an assessment of impacts to local cultural practices. Accordingly, we have added the following text to the Final EA.

Background research by Cultural Surveys Hawaii, Inc., indicated that the project area was used intensively in traditional Hawaiian times for agriculture, aquaculture, and habitation. However, during the field inspection, no current or on-going traditional cultural practices were identified. The various *kuleana* with their fields and fishponds would not have been open to communal use, but would have been exclusive to the families working the land and residing in the vicinity. Communal use within project area would have been limited to access to the lagoonal resources of the Middle Loch of Pearl Harbor. It is suggested that the proposed project will facilitate traditional cultural practices by facilitating access to the lagoonal resources of the Middle Loch of Pearl Harbor and will not adversely affect traditional cultural practices in any way.

1600 Kapolei Blvd., Suite 1610
Honolulu, Hawaii 96814
Tel (808) 944-8848 • Fax (808) 941-8999

Ms. Salmonson, OEQC
April 23, 2001
Page 2

Paving

We have passed to the project engineers information regarding use of recycled glass in paving material. They will investigate this option and pursue its use, if feasible.

Waiawa Springs Wetlands

Runoff from the new bike path is not expected to be significant. For most of its length, the proposed bike path lies within the existing roadway corridor. In some places, the roadway will require widening by several feet. The outcome is a marginal increase in the amount of impervious surfaces. Furthermore, at its closest, the bike path passes almost 200 feet away from wetlands (i.e., areas being cultivated for watercress). Between the bike path and the wetlands are undeveloped or landscaped areas that will absorb the runoff. For this reason, the bike path itself was not designed with separate storm drains.

During construction, the contractor will be required to comply with best construction practices to minimize erosion either through runoff or fugitive dust. These measures will be consistent with City and County of Honolulu Rules relating to Soil Erosion Standards and Guidelines (1999), and Erosion and Sediment Control Guide for Hawaii, Soil Conservation Service (1968).

We appreciate your input to the environmental assessment process.

Sincerely,
KIMURA INTERNATIONAL, INC.

Glenn T. Kimura

cc: Department of Transportation Services, Mr. Michael Oshiro

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

150 SOUTH KING STREET • HONOLULU, HAWAII 96814
TELEPHONE 808-521-4514 • FAX 808-521-4103 • INTERNET WWW.DPP.HONOLULU.HI



MAR 28 2001

MAIL ROOM

RANDALL K. FUJIKI, AIA
DIRECTOR

LORETTA C. CHIE
2001/CLOG-11101SVF
2001/SHA-18

March 27, 2001

Mr. Glenn T. Kimura
Kimura International
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Mr. Kimura:

Draft Environmental Assessment (DEA):
Honolulu Bicycle Master Plan Improvements
College Access Project No. 28 - Waipahu
Tax Map Keys 9-6-3: Portions of 38 and 48

We have reviewed the DEA for the above-referenced project submitted on March 13, 2001, and provide the following comments:

- 1) The State Land Use designation in the General Information section, Land Use Controls and references throughout the final document should be cited as the Agricultural District. Similarly, the County zoning for the project area should be corrected to indicate the project site as AG-2, "General Agricultural District," rather than Restricted Agricultural District.
- 2) Section III A should be expanded to provide a brief statement that the proposed bikeway is generally consistent with the General Policies of the proposed Central Oahu Sustainable Communities Plan.
- 3) A new Section VII should be added which lists the agencies and community organizations to which draft EA was distributed for comments.

Should you have any questions, please contact Steve Tagava of our Land Use Approval Branch at 523-4817.

Sincerely yours,

Glenn T. Kimura
For RANDALL K. FUJIKI, AIA
Director of Planning
and Permitting

RKF:st

CC: OEQC
DTS

0000010174



Monday, April 23, 2001

Mr. Randall K. Fujiki, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Fujiki,

Subject: Draft Environmental Assessment (EA) for the Proposed Leeward Community College Bike Path

Thank you for comments on the above-mentioned project that were transmitted in a letter dated March 27, 2001. We are writing in response to your comments.

Land Use Designation

The Final EA has been revised so that the project area is correctly classified in the State Agricultural District and, in terms of County zoning, in the AG-2, General Agricultural District.

Proposed Central Oahu Sustainable Communities Plan

The Final EA includes an expanded discussion of the project's conformance with the proposed Central Oahu Sustainable Communities Plan. Thank you for pointing out the shortcomings of the Draft EA because the proposed bike path is clearly consistent with the overall vision of the plan to improve the livability of Central Oahu neighborhoods and to reduce automobile usage. The LCC bike path would promote several of the plan's objectives, notably:

- *Pedestrian and Bicycle Travel. Pedestrian and bicycle travel should be encouraged, particularly to reach neighborhood destinations, such as schools, parks, and convenience stores (p. 3-5).*

A primary purpose of the LCC bike path is to encourage bicycling to and from the college campus by providing a safe route.

1600 Kapiolani Blvd., Suite 1610
Honolulu, Hawaii 96814
Tel (808) 944-5818 • Fax (808) 941-8999

Mr. Fujiki, Dept. of Planning and Permitting
April 23, 2001
Page 2

- *Adaptive Reuse of the OR&L Historic Railway. There should also be a parallel paved bikeway along the length of the rail route, either within or adjacent to the right-of-way. The bikeway should be provided even in those sections where the railroad itself is not operational (p. 3-25).*

The proposed project is not located within the historic railway corridor (Pearl Harbor Historic Trail); however, it is connected to the historic spine and, as such, it is an appropriate and complementary adjacent use.

- *Bike Paths. A major bike path should run east-west along the OR&L right-of-way (with branch routes to the Waipahu Cultural Garden and Leeward Community College) (p. 4-9).*

This statement from the "Public Facilities and Infrastructure Policies" section of the Central Oahu Sustainable Communities Plan is a direct reference to the proposed project.

Contacts

We have added a new section to the Final Environmental Assessment which lists all persons contacted or consulted during preparation of the Draft and Final Environmental Assessments.

We appreciate your input to the environmental assessment process.

Sincerely,
KIMURA INTERNATIONAL, INC.



Glenn T. Kimura

cc: Department of Transportation Services, Mr. Michael Oshiro

May-31-01 10:23A Traffic Engineering Div BOB 523 4521 P.01
4/21/01 2:26P



DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
FT SHAFTER, HAWAII 96814-1410

MEMO
ATTENTION OF

May 22, 2001

Civil Works Technical Branch

Ms. Cheryl Soon, Director
Department of Transportation Services
City and County of Honolulu
711 Kapiolani Boulevard, Suite 1200
Honolulu, Hawaii 96813

Dear Ms. Soon:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the Honolulu Bicycle Master Plan Improvements, College Access Project No. 28, Oahu (TMKS 9-6-3: 39, por. 38, and 48). The following comments are provided in accordance with Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

- a. Based on the information provided, a DA permit is not required at this time.
 - b. The flood hazard information provided on page 11-13 of the DEA is correct.
- Should you require additional information, please contact Ms. Jessie Dobinchick of my staff at (808) 438-8876.

Sincerely,

James Pennaz, P.E.
Chief, Civil Works
Technical Branch



Thursday, June 28, 2001

Mr. James Pennaz
Chief, Civil Works Technical Branch
U.S. Army Engineer District, Honolulu
Fort Shafter, HI 96858-5440

Dear Mr. Pennaz,

Subject: Draft Environmental Assessment (EA) for the Proposed Leeward Community College Bike Path

Thank you for your comments on the above-mentioned project that were transmitted in a letter dated May 22, 2001. We acknowledge your assessment that a Department of Army permit is not required and verification of flood hazard information presented in the report.

We appreciate your input to the environmental review process.

Sincerely,
KIMURA INTERNATIONAL, INC.

Glenn T. Kimura

cc: Department of Transportation Services, Mr. Michael Oshiro

**FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU**

3375 KOAPAKA STREET, SUITE #425
HONOLULU, HAWAII 96819



JEREMY HARRIS
MAYOR

ATTILIO K. LEONARDI
FIRE CHIEF
JOHN CLARK
DEPUTY FIRE CHIEF

June 1, 2001

Ms. Nancy Nishikawa
Kimura International
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Ms. Nishikawa:

We received a memorandum from Ms. Cheryl D. Soon, Director of the Department of Transportation Services, dated May 7, 2001, regarding the Draft Environmental Assessment for the Honolulu Bicycle Master Plan Improvements College Access Project No. 28. The proposed project will not have an adverse impact on the services provided by the Honolulu Fire Department.

Should you have any questions, please call Battalion Chief Kenneth Silva of our Fire Prevention Bureau at 831-7778.

Attilio K. Leonard
ATTILIO K. LEONARDI
Fire Chief

AKL/KS:jo

cc: Cheryl D. Soon



KIMURA INTERNATIONAL

Thursday, June 28, 2001

Attilio K. Leonard, Fire Chief
Fire Department
City and County of Honolulu
3375 Koapaka Street, Suite #425
Honolulu, HI 96819

Dear Chief Leonard,

Subject: Draft Environmental Assessment (EA) for the Proposed Leeward Community College Bike Path

Thank you for your comments on the above-mentioned project that were transmitted in a letter dated June 1, 2001. We acknowledge your assessment that the project will not have an adverse impact on services provided by the Honolulu Fire Department.

We appreciate your input to the environmental review process.

Sincerely,
KIMURA INTERNATIONAL, INC.

Glenn T. Kimura

Glenn T. Kimura

cc: Department of Transportation Services, Mr. Michael Oshiro

1600 Kapiolani Blvd., Suite 1610
Honolulu, Hawaii 96814
Tel (808) 944-8818 • Fax (808) 941-8999

DEPARTMENT OF FACILITY MAINTENANCE
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR • HONOLULU, HAWAII 96813
Phone: (808) 523-4341 • Fax: (808) 527-5857



JENELLY HARRIS
MAYOR

ROSS S. SASAMURA
ACTING DIRECTOR AND CHIEF ENGINEER
ALVIN K.C. AU
DEPUTY DIRECTOR
IN REPLY REFER TO:

PRO 01-023

June 1, 2001

Ms. Nancy Ishikawa
Kimura International
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Ms. Nishikawa:

Subject: Draft Environmental Assessment - Leeward Community College Bikepath
Honolulu Bicycle Master Plan Improvements College Access Project No. 28

Thank you for allowing us the opportunity to comment on the above subject matter. On page II-6, of Section B, Technical Characteristics (1) Use Characteristics, please delete the 2nd sentence, "The City and County of Honolulu Department of Facilities Management will maintain the bicycle path."

The Department of Facility Maintenance (DFM) does not have the resources to maintain such a facility. Also DFM does not maintain facilities which are not located on City property. We suggest that you either contact the State of Hawaii to maintain the facility since the bikepath is located on state lands and they do have a bike program or have the City Department of Transportation Services program funds for maintenance through they Department.

If you have any questions, please call Laverne Higa at 527-6246.

Very truly yours,


ROSS S. SASAMURA
Director and Chief Engineer

RSS:lh
cc: Road Division
DTS



Thursday, July 19, 2001

Mr. Ross S. Sasamura, Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, HI 96813

Dear Mr. Sasamura,

Subject: Draft Environmental Assessment (EA) for the Proposed Leeward Community College Bike Path

Thank you for comments on the above-mentioned project that were transmitted in your letter dated June 1, 2001. In accordance with your request, we have deleted the statement on page II-6 that your department will maintain the bike path. The Department of Transportation Services is continuing to evaluate options for long-term maintenance of this facility.

We appreciate your input to the environmental review process.

Sincerely,
KIMURA INTERNATIONAL, INC.



Glenn T. Kimura

cc: Department of Transportation Services, Mr. Michael Oshiro

1600 Kapiolani Blvd., Suite 1610
Honolulu, Hawaii 96814
Tel (808) 944-5343 • Fax (808) 944-8979

JUN-12-01 03:04P Traffic Engineering Div 808 523 4621 *TE 6101 - 2190*

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU
801 SOUTH BERTANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 939-3111
<http://www.honolulu.gov>
www.cc.honolulu.hi.us



LEE D. DONOHUE
CHIEF
MICHAEL CARVALHO
ROBERT AY
DEPUTY CHIEF

JEREMY HARRIS
MAYOR

OUR REFERENCE CS-LS June 4, 2001

TO: CHERYL D. SOON, DIRECTOR
DEPARTMENT OF TRANSPORTATION SERVICES

FROM: LEE D. DONOHUE, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (LEEWARD COMMUNITY
COLLEGE BIKEPATH) HONOLULU BICYCLE MASTER PLAN
IMPROVEMENTS COLLEGE ACCESS PROJECT NO. 28

Thank you for the opportunity to review and comment on the subject document.

This project will probably cause an increase in calls and will have a negative impact on police services to the area. We are concerned about the safety of the people who will be in the area after dark and would like to recommend adequate overhead lighting. We would further like to recommend that the principles of Crime Prevention Through Environmental Design be incorporated in planning this project. Please contact Captain Stephen Kim of District 3 at 455-9055 for assistance in this area.

We may have more comments as plans for this project are further developed. If there are any questions, please call Carol Sodekami of the Support Services Bureau at 529-3658.

LEE D. DONOHUE
Chief of Police

By *Eugene Uemura*
EUGENE UEMURA, Assistant Chief
Support Services Bureau



Thursday, June 28, 2001

Lee D. Donohue, Chief of Police
Honolulu Police Department
801 South Bertania Street
Honolulu, HI 96813

Attention: Eugene Uemura, Asst. Chief, Support Services Bureau

Dear Mr. Uemura,

Subject: Draft Environmental Assessment (EA) for the Proposed Leeward Community College Bike Path

Thank you for your comments on the above-mentioned project that were transmitted in a letter dated June 4, 2001.

We spoke to Capt. Stephen Kim of District 3 to clarify the issue of overhead lighting. He mentioned that the Police Department's particular concern is adequate lighting for places where bicyclists might gather, such as rest stops or pavilions. He concurred that because the subject project is intended for through traffic only, lights are not necessary—as is the case with the existing Pearl Harbor bike path.

Capt. Kim also mentioned that criminal activity occurs along the Pearl Harbor bike path from time to time. Undesirable activities will occur as long as the area is perceived as secluded and unpopulated. Clearly all bike riders on backroad trails need to exercise prudent judgment and be aware of their surroundings, but at the same time, it is hoped that providing access to a new group of bicyclists will increase usage levels on the bike network. Moreover, a new alignment being considered would incorporate portions of the Leeward Community College bike path with a secondary access road to the campus. Such a road would enable law enforcement vehicles to patrol areas that are currently difficult to reach.

We appreciate your input to the environmental review process.

Sincerely,
KIMURA INTERNATIONAL, INC.

Glenn T. Kimura
Glenn T. Kimura

cc: Department of Transportation Services, Mr. Michael Oshiro

1600 Kapiolani Blvd., Suite 1610
Honolulu, Hawaii 96814
Tel (NS) 944-5548 • Fax (NS) 941-5999

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
801 Kamehameha Boulevard, Room 315
Honolulu, Hawaii 96813

June 12, 2001

Ms. Cheryl D. Soon, Director
Department of Transportation Services
City and County of Honolulu
Pacific Park Plaza 711 Kapiolani Blvd, Suite 1200
Honolulu, Hawaii 96813

LOG NO: 27662
DOC NO: 0106EJ01

Dear Ms. Soon:

SUBJECT: Chapter 6E-8 Historic Preservation Review - Drain Environmental Assessment Honolulu Bicycle Master Plan Improvements college Access Project No. 28: Pearl Harbor Historic Trail to Leeward Community College -Ewa, Oahu, TMK: por. 038-039: 048

Thank you for the opportunity to comment on the proposed Honolulu bicycle Maier Plan improvements for construction of a 3,600-foot bike path in two phases. The bike path would connect the existing Pearl Harbor Historic Trail with Leeward Community College (LCC). The action is being implemented as a vision project initiated by the Aiea/Pearl City Vision Team. The project alignment starts from the Pearl Harbor Historic Trail and runs the length of Waiawa Road on along the makai boundary of LCC. The path will vary in width from 8 to 10 feet. Other improvements include concrete masonry retaining walls, safety rails, striping and signage. Future improvements include shoring driveway and roadway extensions in order to maintain a standard 20-foot road width along the existing road. A six-foot high chain link fence, c. 1,000 feet long will be installed along the makai of LCC. Construction will consist of clearing, grubbing, demolition and grading followed by new construction. According to the consultants, ground disturbance to approximately 3-4 feet deep is required for the installation of the walls, shallower excavation is expected for the remaining activities. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project area.

According to the archaeological assessment included in Appendix D, no surface historic sites were found in the project corridor. One historic site, a human burial, was inadvertently uncovered in 1995, at a depth of 1.3 meters (3.3 ft) during sewerline improvements makai of Waiawa road. The burial was found within a former house lot at TMK: 9-6-003:005. Since the bike path is placed along the mauka edge of the existing road, and the area has already been heavily disturbed by installation of fuel and sewer lines, it is unlikely that ground disturbance required for this project will impact any subsurface historic sites. Therefore we believe that this project will have "no effect" on significant historic sites.

2

However, in the unlikely event that historic sites, including human burials, are uncovered during routine construction activities, all work in the vicinity must stop and the State Historic Preservation Division must be contacted at 692-8015.

Should you have any questions, please feel free to call Sara Collins at 692-8026 or Elaine Jourdain at 692-8027.

Aloha,

Nathan Napier
DON HIBBARD, Administrator
State Historic Preservation Division
EJ:amk



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kalahele Building, Room 518
801 Kalia Road, Honolulu
Honolulu, Hawaii 96813

June 20, 2001

Cheryl D. Soon, Director
Department of Transportation Services
City and County of Honolulu
Pacific Park Plaza 711 Kapiolani Blvd, Suite 1200
Honolulu, Hawaii 96813

Dear Ms. Soon:

SUBJECT: Chapter 6E-8 Historic Preservation Review - REVISION to Honolulu Bicycle Master
Plan Improvements
Waipio, Ewa, O'ahu
DMK. corr. 038-039; 048

LOG NO: 27720 ✓
DOC NO: 0106EJ15

Kimura International has provided us an up date to the proposed bike path for the above project. The new realignment on the western end of the project area will extend into the proposed Koles Cove development. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project area.

SHPD previously commented on construction and mass grading plans for the proposed Koles Cove (formerly Waterfront Manor) development for this parcel starting in the 1980s and continuing sporadically until 2000 (SHPD Log 14506, 20037, 26331, 26785). Our review comments, which remain the same, stated that because the project area has already undergone extensive grading and alteration, that it is unlikely that historic sites are still present in the area. Because the proposed realignment for the bike path is located in this area where extensive grading has occurred in the past, and it is unlikely that historic remains, we believe that the proposed amendment will have "no effect" on significant historic sites.

In the unlikely event that historic sites, including human burials, are uncovered during routine construction activities, all work in the vicinity must stop and the State Historic Preservation Division must be contacted at 692-8015.

Should you have any questions please call Sara Collins at 692-8026 or Elaine Jourdain at 692-8027.

Aloha

Don Hibbard, Administrator
State Historic Preservation Division

EJ:jk

c Nancy Nishikawa, Kimura International Inc



KIMURA INTERNATIONAL

Thursday, June 28, 2001

Mr. Don Hibbard, Administrator
State Historic Preservation Division
Department of Land and Natural Resources
601 Kamohila Boulevard, Room 555
Kapolei, HI 96707

Dear Mr. Hibbard,

Subject: Draft Environmental Assessment (EA) for the Proposed Leeward Community College Bike Path

Thank you for your comments on the above-mentioned project that were transmitted in letters dated June 12 and 20, 2001.

We acknowledge your assessment that the proposed bike path—in both its original and realigned configuration—will have "no effect" on significant historic sites. However, if any historic sites are uncovered during construction, including human burials, all work in the vicinity will stop and your office will be contacted.

We appreciate your input to the environmental review process.

Sincerely,
KIMURA INTERNATIONAL, INC.

Glenn T. Kimura

cc: Department of Transportation Services, Mr. Michael Oshiro

DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
PHONE: (808) 533-4344 FAX: (808) 533-4347
WEB SITE ADDRESS: www.cc.honolulu.gov



JEFFREY HARRIS
MAYOR

RAE M. LOUI, P.E.
DIRECTOR
GEORGE TAMASIRO
DEPUTY DIRECTOR
ERIC G. CHURCH, JIA
ASSISTANT DIRECTOR
CDEP 01-0143

July 2, 2001

Ms. Nancy Nishikawa
Kimura International
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Dear Ms. Nishikawa:

Subject: Draft Environmental Assessment (Leeward Community
College Bikepath) Honolulu Bicycle Master Plan Improvements
College Access Project No. 28, TRMK: 9-6-03: 39, Pors. 38 and 48

We have reviewed the draft EA and have the following comments:

1. It is our understanding that the Department of Design and Construction is erroneously listed as the responsible agency on the cover of the EA instead of the Department of Transportation Services. This should be corrected.
2. p. II-8, (4) Utility Requirements
Please indicate the coordination with utility companies. The EA does not identify relationship of existing underground utilities in corridor with the proposed bikepath. If existing utilities require relocation, the cost may be significant. This should be addressed more specifically in the EA.
3. p. II-12, Figure II-4 Soils
The figure should be corrected to show surface soil type Ph covering the locations between Stations 0+00 to 2+50 as shown on the enclosed portion of the Soil Conservation Service map and as described in page 6, Section 4.2 Subsurface Conditions of the Pacific Geotechnical Engineers, Inc. (PGE) soils report.

Ms. Nancy Nishikawa
Page 2
July 2, 2001

4. p. II-13, Surface Runoff, Drainage, and Erosion Hazard
We understand that the existing drainage easement alongside the proposed bike path is in favor of the State of Hawaii. Other runoffs in this area are by sheet flow and are considered private water.
5. p. 12, PGE Soils Report
Paragraph No. 9 refers to new walls between Sta. 2+04 and 3+90 as imposing surcharge loads on subsurface materials and causing settlement and movement. However, in Section 5 Discussions, first bulleted paragraph, poor subsoil was anticipated to be found between Sta. 0+00 and 2+50.

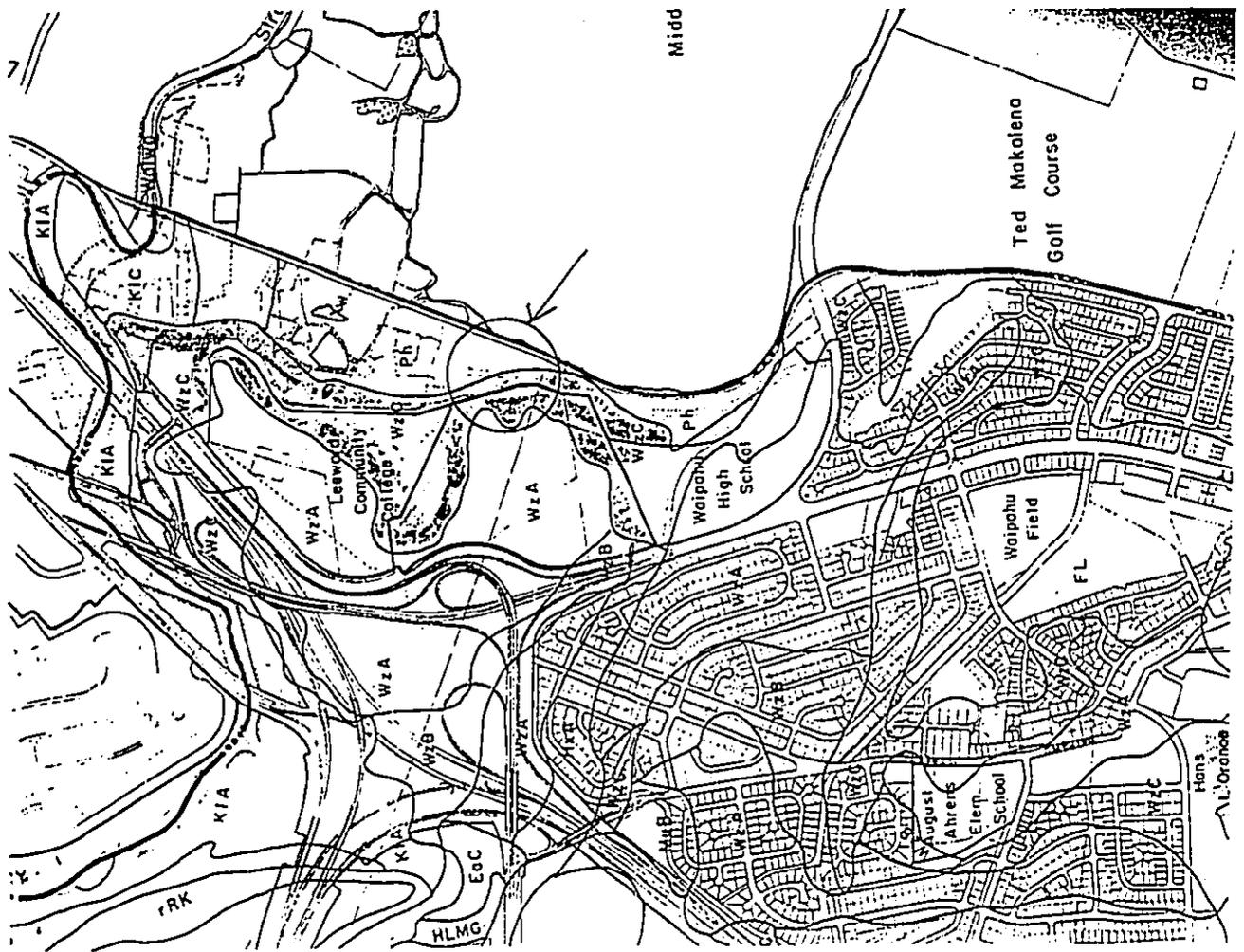
We recommend surcharging as soon as possible the area of poor subsoil prior to construction of the bikepath. Since this could delay construction, surcharging during the planning and design phase may lessen its impact.

If there are any questions, please contact Gregory Sue at 527-6304.

Very truly yours,

RAE M. LOUI, P.E.
Director

Encl.





Thursday, July 19, 2001

Ms. Rae M. Loui, Director
Department of Design and Construction
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, HI 96813

Dear Ms. Loui,

Subject: Draft Environmental Assessment (EA) for the Proposed Leeward Community College Bike Path

Thank you for comments on the above-mentioned project that were transmitted in your letter dated July 2, 2001. We are writing in response to your comments.

1. The responsible agency is the Department of Transportation Services and will be correctly identified as such on future publications of the environmental assessment.
2. Project engineers have consulted with the State Department of Transportation, Harbors Division, regarding underground pipelines located in the State Energy Corridor and with utility companies, including Hawaiian Electric Company (HECO) and Verizon Hawaii. (A letter from DOT-Harbors outlining the conditions of construction in the State Energy Corridor will be appended to the Final Environmental Assessment.) During consultations with these parties, we learned that HECO plans to construct an underground fuel pipeline within the energy corridor (from Campbell Industrial Park to the Waiau power plant) in approximately two years. Although the bike path crosses only a very small portion of the energy corridor, where it does, the pipeline will conflict with the bike path. However, given foreknowledge of the proposed HECO action, it is possible to avoid tearing up a new bike path, by scheduling Phase 2 after the HECO pipeline project is completed. Phase 1, connecting the Pearl Harbor Bike Trail and Leeward Community College, will not be affected by the HECO pipeline.

3. The soils map (Figure II-4) will be modified as necessary to conform with information provided by the U.S. Soil Conservation Service.

4. The clarification regarding surface runoff is noted.

1600 Kapiolani Blvd., Suite 1610
Honolulu, Hawaii 96814
Tel: (808) 941-8943 • Fax: (808) 941-8999

Ms. Loui, DDC
July 19, 2001
Page 2

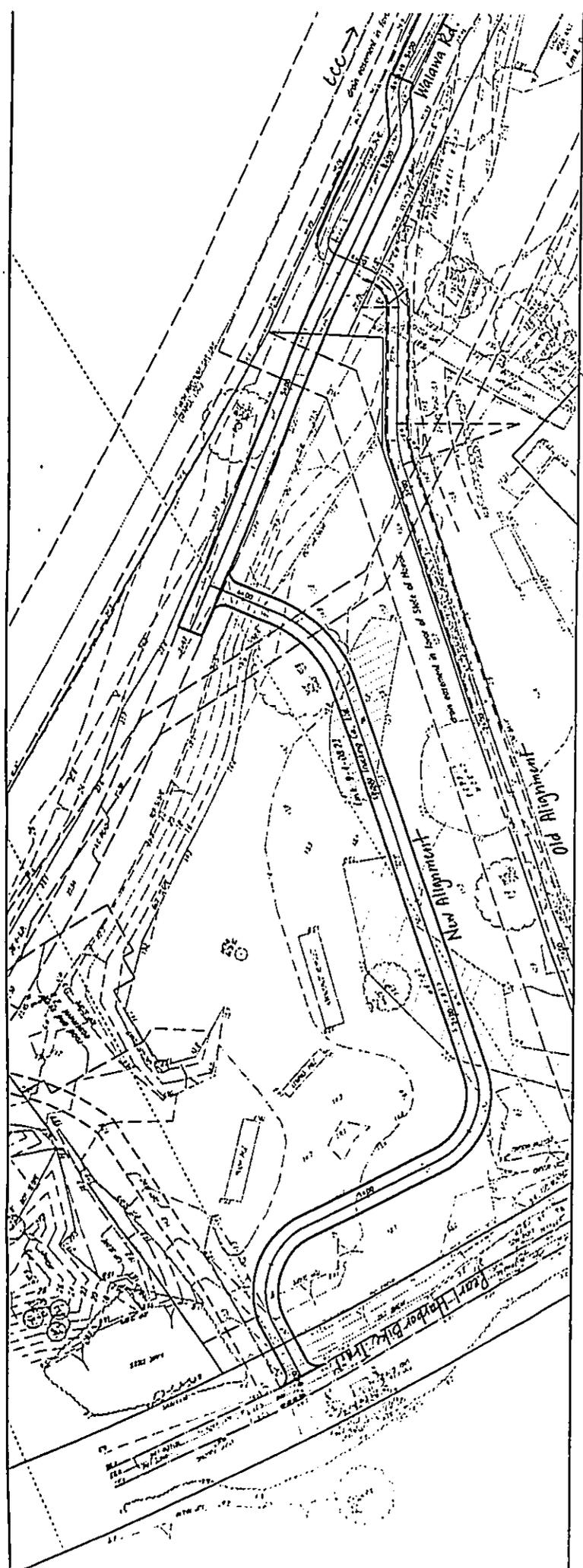
5. Changing circumstances have brought about a realignment affecting approximately 500 feet on the western (ewa) end of the proposed bike path. As shown on the attached map, the segment connecting the Pearl Harbor Bike Trail and Waiawa Road no longer runs alongside the drainage easement. In the new alignment, the connecting segment crosses property that is identified as TMK: 9-4-08: 23 and slated for acquisition from Okada Trucking Co. by the City and County of Honolulu. Item 5 of your letter referred to points on the old, and now obsolete, alignment. Preliminary design of the realigned section indicates that retaining walls will not be required.

We appreciate your input to the environmental review process.

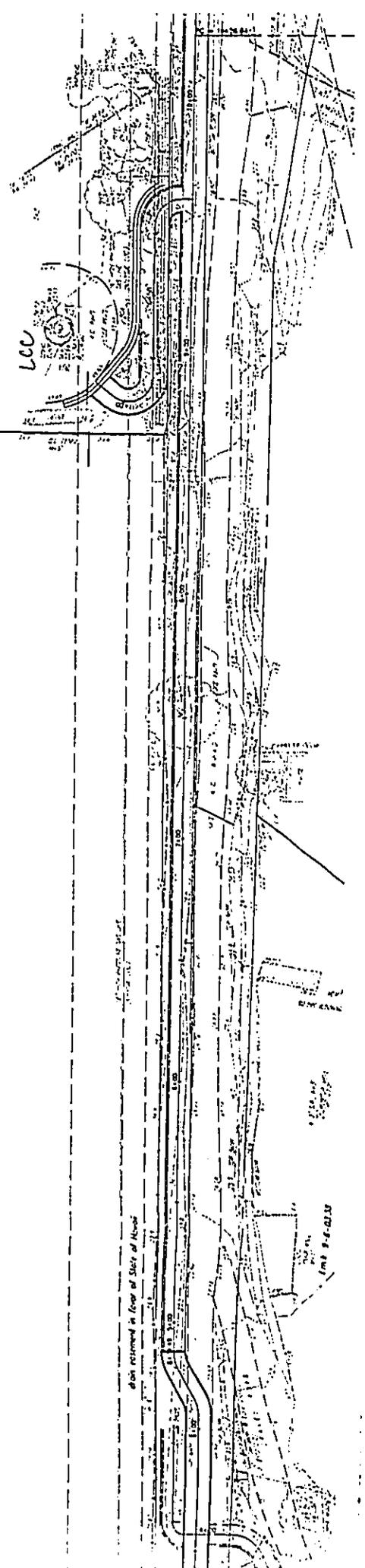
Sincerely,
KIMURA INTERNATIONAL, INC.

Glenn T. Kimura

cc: Department of Transportation Services, Mr. Michael Oshiro



100 9-6-0110
 United States of America
 100 9-6-0111
 United States of America



100 9-6-0110
 United States of America

100 9-6-0110
 United States of America
 100 9-6-0111
 United States of America

IX. References

City and County of Honolulu. October 2000. *Draft Pearl Harbor Historic Trail Master Plan.*

Department of Transportation Services, City and County of Honolulu. April 1999. *Honolulu Bicycle Master Plan.*

Earth Tech, Inc. April 2000. *Draft Environmental Assessment of the Leeward Bikeway, OR&L Railway Easement, Ewa and Waianae Districts, Oahu.*

Federal Emergency Management Agency. 1995. *Flood Insurance Rate Map, Panel 0060B.*

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Earth Tech, Inc. April 2000. *Draft Environmental Assessment of the Leeward Bikeway, OR&L Railway Easement, Ewa and Waianae Districts, Oahu.*

Federal Emergency Management Agency. 1995. *Flood Insurance Rate Map, Panel 0060B.*

APPENDICES

A.

Documents in Support of the Proposed Action

Letter from Dr. Mark Silliman, Provost, Leeward Community College
Statement by Fritz Osell to the LCC Faculty Senate
Pearl Harbor Historic Trail Resolution and Signed Petition

B.

Geotechnical Consultation
Pacific Geotechnical Engineers, Inc.

C.

Botanical Resources Assessment
Char & Associates

D.

Wildlife Survey
Tim J. Ohashi
Certified Wildlife Biologist

E.

Archaeological Inventory Survey
Cultural Surveys Hawaii

F.

Letter re. Bike Path Easement
from Cheryl Soon, Director, City & County of Honolulu
Department of Transportation Services to
James E. Bassett, Land Manager, Kamehameha Schools,
July 16, 2001

G.

Letter re. Crossing the Energy Corridor
from Thomas Fujikawa, Harbors Administrator,
State Department of Transportation to
Lester Fukuda, Hawaii Pacific Engineers
December 20, 2000

Documents in Support of the Proposed Action^{A.}
Letter from Dr. Mark Silliman, Interim Provost, Leeward Community College
Statement by Fritz Osell to the LCC Faculty Senate
Pearl Harbor Historic Trail Resolution and Signed Petition

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TE 8/00 - 3833

UNIVERSITY OF HAWAII

LEEWARD COMMUNITY COLLEGE
Office of the Provost

August 8, 2000

Director Cheryl Soon
Dept. of Transportation
Pacific Park Plaza
711 Kapiolani Blvd., 12th Floor
Honolulu, HI 96813

Dear Ms Soon:

Leeward Community College has taken a second look at the plans for the bike path that is proposed to loop near the college. This letter is to inform you of our position with regard to the proposed bike path.

The college is in favor of having a loop that extends towards the college, as it will provide another alternative for students and the community at large to come onto campus. We feel that the proposed chain link fence that will border the southern or Pearl Harbor side of campus will address our concern for security. We recommend that there be a single entry from the looped bike path to enter the college. The entryway should have a gate that the college could secure during non-business hours to minimize potential problems.

Again, thank you for the opportunity you have given Leeward Community College on the proposed bike path in the Pearl Harbor vicinity. Should you have any questions, or need more information, please feel free to call me.

Sincerely,



Mark Silliman, Ed.D.
Interim Provost

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John Kelly, a member of the Mayor's Advisory Committee informed me that the Honolulu Bicycle Master Plan section CA 28 (College Access 28) intends to make all college campuses in Hawaii accessible by bicycle.

The plan includes LCC and would link Waipahu and Pearl City to the LCC campus by bicycle paths.

It will include LCC in the bicycle path system that will link all campuses on Oahu.

The plan would make LCC more accessible by bicycle than the Manoa campus is.

This would greatly enhance access to LCC and should be beneficial in terms of recruitment.

It will make the LCC campus accessible to residents of Pearl City and Waipahu who do not chose to drive.

It would be a benign form of transportation and open the campus to an alternative form of accessibility.

Historically college campuses have always been associated with bicycles.

This plan will encourage students to seek alternative means of transportation to the campus and will enable high school students from near by districts to visit the campus regularly.

I ask the Faculty Senate to endorse the concept of incorporating the City's bicycle path system onto our campus and support the Mayor's plan to connect LCC to the island bicycle path system.

Fritz Osell

*LCC Faculty Senate
General Conceptual Plan Approved
May, 2000*

UNIVERSITY OF HAWAII
LEeward COMMUNITY COLLEGE
PEARL HARBOR 21 SERVICE LEADERSHIP PROGRAM



PEARL HARBOR HISTORIC TRAIL RESOLUTION

WE, THE FACULTY, STAFF, STUDENTS AND FRIENDS OF LEEWARD COMMUNITY COLLEGE, FULLY SUPPORT THE ESTABLISHMENT OF A COMMUNITY-BASED, COOPERATIVE PEARL HARBOR HISTORIC TRAIL THAT WILL HELP REDEVELOP THE PEARL SHORELINE, RESTORE THE ENVIRONMENT, ADD ATTRACTIONS AND DEVELOP ADDITIONAL TRANSPORTATION NETWORKS. SPECIFICALLY, WE FULLY SUPPORT THE LCC ACCESS PROJECT #28 THAT WILL CONNECT A LOOP BETWEEN LCC AND THE PEARL HARBOR HISTORIC TRAIL.

NAME (PRINT)	SIGNATURE	PHONE #
1 Pat Kennedy	<i>Pat Kennedy</i>	455-0257
2 April Winemiller	<i>April J. Winemiller</i>	375-0923
3 JO ANNE PEDRO	<i>J. Anne Pedro</i>	582-7858
4 Jennifer Martin	<i>Jennifer Martin</i>	851-0644
5 Laurie Ohta	<i>Laurie Ohta</i>	4568547
6 Anamarie Edra	<i>Anamarie Edra</i>	3826470
7 Anne Maeshiro	<i>Anne Maeshiro</i>	927-2194
8 Joshua Inoué	<i>Joshua Inoué</i>	676-7713
9 Maria Chorny	<i>Maria Chorny</i>	834-6814
10 Joni Briganti	<i>Joni Briganti</i>	680-0323
11 Lindsay Vandemark	<i>Lindsay Vandemark</i>	499-3613
12 Melissa Armas	<i>Melissa C. Armas</i>	582-0794
13 Heidi James	<i>Heidi James</i>	699-2402
14 Matthew Shimabuku	<i>Matthew Shimabuku</i>	456-2376
15 Jill Yamagata	<i>Jill Yamagata</i>	6237722
16 Darcy Ballalib	<i>Darcy Ballalib</i>	4562112
17 Kendra Makario Le	<i>Kendra Makario Le</i>	6234276
18 Vickie Zeithammel	<i>Vickie Zeithammel</i>	4227424
19 Joanne Leonard	<i>Joanne Leonard</i>	671-6938
20 Andrea Honda	<i>Andrea Honda</i>	582-687
21 Tony Corrientino	<i>Tony Corrientino</i>	266-9339
22 Clifford Garcia	<i>Clifford Garcia</i>	637-6842
23 Sandee Magallanes	<i>Sandee Magallanes</i>	223-2331
24 Lane Harada	<i>Lane Harada</i>	7808133
25 Fyanne Kuit	<i>Fyanne Kuit</i>	6855133

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NAME (PRINT)	SIGNATURE	PHONE #
1 Janet Kay Porter	<i>Janet Kay Porter</i>	455-0432
2 Mary Grace Busto	<i>Mary Grace Busto</i>	676-5669
3 MARIE FLORENDO	<i>Marie C. Florendo</i>	472-0037
4 ANGEL SUAAVA	<i>Angel Suava</i>	671-5144
5 MELANIE AIOLO	<i>Melanie Aiolio</i>	255-5159
6 Jaimie Balanay	<i>Jaimie B. Balanay</i>	278-2078
7 RODEL ISIDRO	<i>Rodel Isidro</i>	671-0201
8 Shelley Okimoto	<i>Shelley Okimoto</i>	708-3047
9 Dana Hoppe	<i>Dana W. Hoppe</i>	696-3468
10 Elizabeth Puryear	<i>Elizabeth Puryear</i>	423-0880
11 Anne Milliken	<i>Anne Milliken</i>	484-1667
12 Yuki Morinaka	<i>Yuki Morinaka</i>	456-8060
13 Keisha N. Fort	<i>Keisha N. Fort</i>	
14 ERWIN ENRIQUEZ	<i>Erwin Enriquez</i>	
15 JARLY HASHIMOTO	<i>Jarly Hashimoto</i>	
16 STEVEY LYNN DELACRUZ	<i>Stevey Lynn Delacruz</i>	689-5918
17 AARON CAWITA	<i>Aaron Cawita</i>	455-8101
18 Leeton Mone	<i>Leeton Mone</i>	677-0269
19 Scott Roldan	<i>Scott Roldan</i>	487-2835
20 RODNEY K. HICKS JR.	<i>Rodney K. Hicks Jr.</i>	676-5937
21 SABLINA POST	<i>Sablina Post</i>	671-0784
22 Teriann Nakamura	<i>Teriann Nakamura</i>	486-0820
23 Felice Deane	<i>Felice Deane</i>	483-2189
24 Daniel Mablot Jr.	<i>Daniel Mablot Jr.</i>	622-4555
25 Diane Tapet	<i>Diane Tapet</i>	676-7430

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NAME (PRINT)	SIGNATURE	PHONE #
1 Lunette Rudolfo	<i>Lunette Rudolfo</i>	455 0678
2 Eileen J. Sakamoto	<i>Eileen J. Sakamoto</i>	455 0210
3 Diane Sakai	<i>Diane Sakai</i>	455-0378
4 Larry Goldstein	<i>LARRY GOLDSTEIN</i>	483-0672
5 Edith Hanks	<i>William Hooper</i>	695-0244
6 Mary Jane Soriano	<i>Mary Jane Soriano</i>	455-0210
7 Darlene Peterson	<i>Darlene Peterson</i>	293-5125
8 Roberta J. Schmitz	<i>Roberta J. Schmitz</i>	455-0497
9 RALPH H. TOYAMA	<i>Ralph H. Toyama</i>	457-0582
10 FRANCIS ABREU	<i>Francis H. Abreu</i>	455-0249
11 MARY MIURA	<i>Mary Miura</i>	381-7985
12 Jacicaga Isujimura	<i>Jacicaga Isujimura</i>	455-0605
13 Adam Israel Moka	<i>Adam Israel Moka</i>	621-8273
14 Lora Baysa	<i>Lora Baysa</i>	625-6307
15 Roslyn Pasqua	<i>Roslyn Pasqua</i>	621-9689
16 TRACY BARTON	<i>Tracy Barton</i>	255-7276
17 CHRISTOPHER MORD	<i>Christopher Mord</i>	227-1249
18 THEODORE CUYMS	<i>Theodore Cuyms</i>	621-5783
19 Stephanie Cuyms	<i>Stephanie Cuyms</i>	621-5782
20 Robert A. Pasqua	<i>Robert A. Pasqua</i>	625-6300
21 Keith Y. Tamashiro	<i>Keith Y. Tamashiro</i>	621-2274
22 Russell A. Nacopy	<i>Russell A. Nacopy</i>	621-7680
23 Charles H. Nacopy	<i>Charles H. Nacopy</i>	621-7680
24 Jeanne C. Ishikawa	<i>Jeanne C. Ishikawa</i>	622-2121
25 Arnette Anduka	<i>Arnette Anduka</i>	622-4422

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NAME (PRINT)	SIGNATURE	PHONE #
1 Aurora Deliz	Aurora Deliz	474-0374
2	Aurora Deliz	unlisted
3 Ann Marie Watanuki	Ann Marie Watanuki	"
4 Lane Watanuki	Lane Watanuki	unlisted
5 Elizabeth Kamae	Elizabeth Kamae	unlisted
6 George Clayton	George Clayton	unlisted
7 Kala Kalai Fioyi	Kala Kalai Fioyi	unlisted
8 MITSUO TODANI	Mitsuo Todani	624-4240
9 BURT YONEMOTO	Burt Yonemoto	627-1718
10 Wilma Yonemoto	Wilma Yonemoto	627-1718
11 Amber Totimoto	Amber Totimoto	234-6068
12 Geraldine Baptista	Geraldine Baptista	622-0696
13 Barbara Calton	Barbara Calton	668-7653
14 Jane Baptista	Jane Baptista	622-0696
15 Amelia Calton	Amelia Calton	668-7653
16 Kevin Calton	Kevin Calton	668-7653
17 KRISTEN SOROKI	Kristen Soroki	623-2375
18 GARRET YUKIMOTO	Garret Yukimoto	671-6879
19 RYAN PADERES	Ryan Paderes	621-1772
20 Desmond Lynn	Desmond Lynn	621-9300
21 IAN MURPHY	Ian Murphy	621-8956
22 HELE TODANI	Hele Todani	622-4240
23 EARLENE M. ALBANO	Earlene M. Albano	686-7365
24 Peggy Soriano	Peggy Soriano	622-1573
25	Albano Soriano	622-4240

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3 Diane Sakai	<i>Diane Sakai</i>	455-0318
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5 William Hoops	<i>William Hoops</i>	695-0244
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18 THEODORE CUYO	<i>Theodore Cuyo</i>	621-5783
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22 Russell A. Nalupun	<i>Russell A. Nalupun</i>	621-7680
23 Charles H. Nalupun	<i>Charles H. Nalupun</i>	621-7680
24 Jeanne C. Ishikawa	<i>Jeanne C. Ishikawa</i>	622-212
25 Arnette Anduka	<i>Arnette Anduka</i>	622-442

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NAME (PRINT)	SIGNATURE	PHONE #
1 Joseph Chernisley	<i>Joseph Chernisley</i>	455-0625
2 Kenneth Guenette Jr.	<i>Kenneth Guenette Jr.</i>	678-0292
3 Felipe Rinald	<i>Ronald P. Felipe</i>	455-0323
4 Donald Klein	<i>Donald S. Klein</i>	455-0403
5 Jim Little	<i>Jim Little</i>	455-0279
6 Wilkie Hale	<i>Wilkie Hale</i>	455-0760
7 Cindy Martin	<i>Cindy Martin</i>	455-0483
8 Lenore S. Maruyama	<i>LENORE S. Maruyama</i>	455-0390
9 Candy Hochstein	<i>Candy Hochstein</i>	455-0244
10 James Gavin	<i>James Gavin</i>	523-2007
11 Susan Lum	<i>Susan Lum</i>	455-0355
12 Mad Silliman	<i>Mad Silliman</i>	455-0659
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PEARL HARBOR 21 SERVICE LEADERSHIP PROGRAM



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NAME (PRINT)	SIGNATURE	PHONE #
1 George Galasinao	<i>George Galasinao</i>	623 0352
2 DAVID BIRD	<i>[Signature]</i>	EMAIL
3 Ruth Tamble	<i>[Signature]</i>	EMAIL
4 FRITZ OSON	<i>[Signature]</i>	EMAIL
5 Valerie Chan	<i>[Signature]</i>	EMAIL
6 Andy Rossi	<i>[Signature]</i>	EMAIL
7 BAASONG NAKAMURA	<i>[Signature]</i>	EMAIL
8 Doyle Tuonon	<i>[Signature]</i>	EMAIL
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LETTER REPORT

GEOTECHNICAL CONSULTATION

PGE Job No. 3771-045

for

HONOLULU BICYCLE MASTER PLAN
PROPOSED LEEWARD COMMUNITY COLLEGE
ACCESS PROJECT NO. 28
PEARL HARBOR, HAWAII
FOR THE DEPARTMENT OF TRANSPORTATION SERVICES

December 8, 2000

Submitted by:
Pacific Geotechnical Engineers, Inc.
429B Waiakamilo Road
Honolulu, Hawaii 96817



Pacific Geotechnical Engineers, Inc.

*Soils and Foundations
& Engineering Geology*

429-B Waiakamilo Road
Honolulu, Hawaii 96817
Telephone (808) 841-8024
Facsimile (808) 848-5102
Email: pge@pacificgeotechnical.com

December 8, 2000
3771-045

Hawaii Pacific Engineers, Inc.
1132 Bishop Street, Suite 1003
Honolulu, Hawaii 96813

Attention: Mr. Lester Fukuda

Subject: Letter Report
Geotechnical Consultation
Honolulu Bicycle Master Plan
Proposed Leeward Community
College Access Project No. 28
Pearl Harbor, Hawaii, For the
Department of Transportation Services

Gentlemen:

1.0 INTRODUCTION

This letter report summarizes our findings and recommendations for a new bike path to be constructed near Leeward Community College, Oahu. Our geotechnical consultation services for this project were performed in general accordance with our November 17, 1999 proposal.

The approximate location of the project site is shown on the Map of Area, Plate 1.

2.0 PROJECT CONSIDERATIONS

We understand that this project includes the design of approximately 3,583 linear feet of new asphaltic concrete (AC) paved bike path. The path will generally run along Waiawa Road and an existing private road located directly south of Leeward Community College. The improvements may include re-paving or widening a portion of the existing road to support fire trucks, passenger cars and other vehicles. The new path will connect to the existing Pearl Harbor Bike Path at its western end and Waiawa Road at its eastern end.

According to your grading plans, we understand that the path construction will generally require 1 to 5 feet of cuts mainly along the upslope side of an existing road, and 1 to 3 feet of fills mainly along the downslope side of the existing road. From roughly Station 2+05 to 3+95, a U-wall system will be constructed to provide finish grades along the path that will be roughly 1 to 4 feet higher than existing grades. Cantilever retaining walls, low slope adjustment walls, and grouted rip rap (GRP) are also planned along portions of the path as outlined herein.

Based on your grading plans, we understand that cantilever retaining walls, grade adjustment walls, and GRP are planned along the following sections of the alignment:



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Approximate Stations	Left or Right Side of Path	Approximate Wall Height (feet)	Comments
1+95 to 3+78	Right	4 to 4.5 ±	U-wall system
6+20 to 8+18		1 to 2 ±	Grade adjustment wall
9+80 to 13+25		2 to 4 ±	Cantilever wall
13+78 to 14+85		1 to 2 ±	Slope adjustment wall
20+90 to 22+50		1 to 2 ±	Slope adjustment wall
25+40 to 26+95		1 to 2 ±	Slope adjustment wall
0+05 to 0+33	Left	1 to 2 ±	Slope adjustment wall
2+05 to 3+95		2.5 to 6.5 ±	U-wall system
4+13 to 16+20		4.5 to 7.0 ±	Cantilever wall
10+68 to 10+84		8.0 ± (referenced to top of backfill)	Cantilever wall / grouted rip rap at 42-inch diameter drain line crossing
20+50 to 21+90		4 to 5 ±	Grouted rip rap
23+30 to 23+95		4 to 5 ±	Grouted rip rap
23+95 to 26+50		4.3 to 5.8 ±	Cantilever wall

Please note that the above wall heights are generally measured from the bottom of wall footings to the top of wall.

3.0 SCOPE OF SERVICES

Based on the above considerations, the following work was performed:

1. **Field Exploration** - Drilled and sampled six (6) soil test borings, each to depths ranging from 7 to 11.5 feet below the existing ground surface. The borings were drilled using a Simco truck mounted drill rig with continuous flight augers. Prior to the start of the field work, a Right-of-Entry Agreement was obtained from Kamehameha Schools. Clearance from the State of Hawaii, Department of Transportation (DOT), Harbors Division, was also obtained for our borings located near an Energy Utility Corridor. Prior to the drilling, the boring locations were checked for possible underground utilities using a metal detector.



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Because of the time needed to obtain clearance from the State DOT-Harbors to drill near the Energy Corridor, we initially only drilled Borings 1, 2, 3, and 6. After obtaining clearance from the State DOT-Harbors, we re-mobilized the drill rig back to the site and completed Borings 4 and 5.

The approximate locations of our borings are shown on our Plot Plan, Plates 2.2 through 2.6. The locations of the Plot Plans are shown on our Site Plan, Plate 2.1. The locations and elevations of the borings were estimated based on information shown on the project topographic map and our field engineer's measurements using a tape.

The logs of borings are presented on Plates 3.1 through 3.6. The soils encountered were initially classified in the field according to American Society of Testing and Materials (ASTM) D2488 and the Unified Soil Classification System presented on Plates 4.1 and 4.2. The field classifications were later refined based on the results of laboratory tests performed on selected soil samples.

2. ***Laboratory Testing*** - Laboratory tests were performed on select soil samples from our borings. The tests included moisture and dry density determinations, Atterberg Limits, a gradation test, torvane shear strength tests, moisture-density relations, and California Bearing Ratio (CBR) tests.

The moisture content and dry density determination results are presented on the Logs of Borings, Plates 3.1 through 3.6 at the appropriate sample depths. The Atterberg Limits tests are presented on Plates 5.1 and 5.2. The gradation test results are presented on Plate 6. The moisture-density relations test results are presented on Plates 7.1 and 7.2. The CBR test results are presented on Plates 8.1 and 8.2. The torvane shear strength test results are summarized in Table 1.

3. ***Engineering Analysis and Consultation Letter*** - Engineering analyses of the field and laboratory data were performed, and comments and recommendations were developed regarding site preparation and grading, foundation support and backfilling for retaining walls, and flexible pavement design. The results of this consultation are summarized in this letter report, complete with field and laboratory test data.

During the design, our findings and preliminary recommendations were discussed with you and your structural engineer during a design coordination meeting, telephone conversations, and through memoranda.



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4.0 SITE CONDITIONS

4.1 SURFACE CONDITIONS

A general description of site surface conditions observed along the proposed bike path during our field exploration is summarized below:

Station 0+00 to 4+00:

- Location:** In general, the path alignment in this area will be located in an Okada Trucking Co., Ltd. yard, directly adjacent to a State of Hawaii Drainage Easement.
- Surface topography:** Gentle to slightly sloping with surface elevations ranging from roughly +8 near Station 0+00 to +22 feet near Station 4+00. All elevations in this letter report are referenced to Mean Sea Level datum.
- Surface conditions:** The surface was moderately vegetated with grass, weeds, haole koa bushes, and occasional trees. Surface soils generally consisted of elastic silt and silty sandy gravel. Mounds of metal debris, concrete slabs, tires, drums, chain-link fencing, and other miscellaneous material were observed along the alignment.

Station 4+00 to 15+70:

- Location:** In general, the path alignment in this area will be located along the northern shoulder of an existing road. It will also be located roughly parallel to a State of Hawaii Drainage Easement.
- Surface topography:** Gentle slopes along the road, and moderate slopes in the shoulder. Surface elevations range from roughly +22 feet near Station 4+00 to +34 feet near Station 15+70.
- Surface conditions:** The surface was moderately vegetated with grass, weeds, haole koa bushes, and occasional trees. Surface soils generally consisted of elastic silt with some gravel. A chain link fence was observed along the northern side of the path. Stacks of wood pallets and an abandoned car were observed near Station 8+50. Some utility poles with overhead lines were also observed along the road. Gullies and erosion was observed along the downslope side of the road near Station 8+50, and along the up slope side near Station 10+75. UngROUTED rock rip rap was observed along the northern side of the road roughly between Stations 11+00 and 12+00.



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Station 15+70 to 30+50:

- Location:** In general, the path alignment in this area will be located along the up slope edge of an existing road. The path alignment is also roughly parallel to the State DOT-Harbors Energy Corridor.
- Surface topography:** Gentle to slightly sloping with surface elevations ranging from roughly +34 feet to +47 feet.
- Surface conditions:** The road surface is paved with AC. The AC appeared old and weathered with localized areas of moderate to high severity alligator cracks and high severity pot holes. The shoulders were moderately vegetated with grass, weeds, haole koa bushes, and occasional trees. Surface soils generally consisted of elastic silt and silty sand with weathered gravel. Utility poles with overhead lines, driveways, homes, and dirt roads were observed along the existing road.

Station 30+50 to 35+83:

- Location:** In general, the proposed path alignment is located in a grassed area between the College Gardens town homes in the north and an existing road off of Waiawa Road in the south. The path will run roughly parallel to the State DOT-Harbors Energy Corridor.
- Surface topography:** Gentle slopes with surface elevations ranging from roughly +47 to +33 feet.
- Surface conditions:** Generally open and vegetated with grass. The existing road was bordered by old concrete pile stubs. Surface soils generally consisted of elastic silt with some gravel.

The pavement structure along the existing road where the path will run was checked near our Borings 2, 4, and 5 by augering through the pavement with the drill rig. A summary of the pavement conditions encountered in these shallow holes is presented below:

- Near Boring 2:** 1-inch of AC
4 inches of crushed basaltic gravel
- Near Boring 4:** 1-inch of AC
No base course. AC directly over subgrade soils.

Near Boring 5: 1-inch of AC
 2 inches of untreated aggregate base course (AB)
 4 inches of brown silt with coral sand (possibly fill?)

4.2 SUBSURFACE CONDITIONS

A review of available Soil Conservation Service (August 1972) soil maps of surface soils indicates that the path alignment is located in two distinct surface soil types. According to Soil Conservation Service (SCS) maps, surface soils in the beginning portion of the alignment, roughly between Stations 0+00 to 2+50, generally consist of Pearl Harbor clay (Ph). The SCS classified Ph soils as poorly drained deposits that developed in alluvium over organic material along low coastal plains. Ph soils were also classified as being highly plastic, and having high shrink and swell tendencies. These soils will tend to shrink upon drying, and swell and soften upon wetting.

According to SCS maps, surface soils along the remainder of the proposed bike path alignment, roughly between Stations 2+50 and 35+83, generally consist of Waipahu silty clay (WzC). The SCS classified WzC soils as well-drained. According to the SCS, these deposits developed in old alluvium derived from volcanic rocks. WzC deposits were also classified as being plastic, and having shrink and swell tendencies.

Subsurface conditions encountered along the proposed bike path are illustrated on the Log of Borings presented on Plates 3.1 through 3.6. Because the borings are widely spaced, subsurface and groundwater conditions between our borings will vary locally.

Subsurface conditions encountered in our borings are generally consistent with the soil mapping of the area by the SCS. Subsurface conditions encountered in Boring 1 drilled in the lower portion of the alignment generally consisted of approximately 3 feet of fill at the surface. The fill consisted of silty gravel and medium stiff elastic silt. A layer of AC pavement debris was encountered in the fill. Based on various debris and trash at the surface, we anticipate that other debris, cobbles, and boulders may be present in the fill. The fill was underlain by medium stiff to stiff alluvial elastic silt to the bottom of this hole at 11.5 feet. The silt graded to very soft at the groundwater table.

Subsurface conditions encountered in Borings 2, 3, and 6 generally consisted of alluvial deposits at the surface and to the bottom of these holes at 7 to 7.5 feet below existing grades. The alluvial deposits generally consisted of stiff to very stiff elastic silt with variable amounts of weathered sand and gravel. Some thin layers of highly weathered subrounded silty basaltic gravel were encountered in the alluvium.



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Subsurface conditions encountered in Borings 4 and 5 generally consisted of possible fill materials to approximately 3.5 to 4.5 feet below existing grades. The possible fill generally consisted of medium stiff elastic silt with some gravel. This material was underlain by alluvial deposits consisting of very stiff elastic silt with some weathered sand and gravel to the bottom of these holes at 8.5 feet.

Ground water was encountered only in Boring 1 at approximately 6.8 feet below existing grades. This corresponds to approximately Elevation +3.2 feet. The ground water table at this site is anticipated to be somewhat elevated due to springs and artesian groundwater conditions in the area (Visher and Mink, 1964). Because of the proximity of the site to Pearl Harbor, we anticipate that some fluctuations in the groundwater levels may occur due to tidal changes in the Harbor and rainfall landward of the site.

No groundwater was apparent in Borings 2 through 6. These borings were drilled at higher elevations and probably were not deep enough to encounter ground water.

5.0 DISCUSSIONS

Based on the results of our field exploration, laboratory testing, and engineering analysis, it is our opinion that the site is suitable for construction of the proposed bike path from a geotechnical engineering viewpoint. Potential geotechnical concerns are summarized below:

- Presence of soft and compressible subsurface materials below surface fills at the beginning portion of the bike path alignment (anticipated to be found roughly in the general area between Stations 0+00 and 2+50). Very soft material was encountered at the water table in Boring 1. These deposits are anticipated to be weak and compressible. Depending on the amount of fill that is placed, potential settlement and ground movements may occur in the bike path embankment and retaining walls constructed over these deposits.
- Possible presence of trash, debris, cobbles, boulders, and other deleterious materials in the surface fills. Old AC pavement debris were encountered in the fill in Boring 1. Piles of metal debris, concrete slabs, tires, drums, and other miscellaneous materials were also observed in the vicinity of this boring. We anticipate that the surface fills may contain trash, debris, cobbles, boulders, and other deleterious materials. These materials are not suitable for embankment fills, retaining wall support, and wall backfills. They will need to be removed and replaced with suitable fill materials, if encountered.
- Presence of clayey soils with some shrink and swell tendencies. Potential volume changes in these soils may occur as a result of changes in their moisture contents. These soils will tend to swell and soften upon wetting and shrink upon drying.



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These volume changes could potentially damage new pavements and retaining walls.

- Possible presence of variable amounts of surface fills along the existing access road. The lateral and vertical extent of fills along this road are not known. Approximately 3.5 to 4.5 feet of possible fill materials were encountered in Borings 4 and 5. The fill appeared moderately compacted. Erosion gullies and possible poorly compacted fills were observed along the downslope shoulder of the existing road in the general area of Station 8+50.
- Need to perform the path construction along a relatively narrow access road near existing underground utilities and other structures. We understand the existing road is used to provide access to farms and residences. The grading and construction will likely need to be carefully performed and coordinated to reduce the potential for impact and damage to existing utilities, and area farmers and residences.

More detailed discussions and recommendations regarding site preparation and grading, anticipated excavation conditions, retaining wall foundations and backfilling, and flexible pavements are presented in the following letter report sections.

6.0 RECOMMENDATIONS

6.1 SITE PREPARATION AND GRADING

1. Prior to grading, the areas of the proposed construction should be prepared by demolishing and removing existing pavement, rock rip rap, trash, debris, and the top 6 inches of soil containing vegetation, roots, and organic matter. Grubbing to deeper depths may be needed where large roots extend to deeper depths. The old pavement, demolished structures, trash, debris, and stripped and grubbed materials should be hauled to a suitable disposal site.
2. Existing trees that interfere with the proposed construction should be removed or relocated. The roots and stumps of these trees should be completely grubbed and the resulting excavations backfilled with granular structural fill if located under areas to be paved or with general fill if located outside of the new pavement area.
3. Any existing underground utilities and light poles that may interfere with the path construction should be relocated, as appropriate.

4. Structural fill should consist of granular, well-graded material classified as GW, GM, GP-GM, SW, SP, SM, AND SP-SM according to the Unified Soil Classification System. It should be free of organic matter, debris, clayey soils, and particles larger than 3 inches in maximum dimension. It should be non-expansive with less than 15 percent of fines passing the U.S. Standard No. 200 mesh sieve. It should have a CBR value of at least 25 percent, a CBR swell of 2 percent or less after 4 days of soaking, and a plasticity index of 10 or less.

State of Hawaii structural fill material type A may be used as structural fill provided it conforms to the requirements stated herein. The on-site clayey soils are not be suitable for use as structural fill or retaining wall backfill material.

Structural fill materials should be placed in not more than 8-inch thick loose lifts, moisture conditioned to within 2 percent of the optimum moisture content for this material, and compacted to at least 95 percent relative compaction.

Relative compaction in this letter report is defined as the dry density of the compacted material expressed as a percentage of the maximum dry density of the same material based on AASHTO T-180 test method.

Any soft or yielding zones detected during the subgrade compaction should be treated by removing the soft or loose materials to firms soils and replacing them with structural fill.

5. General fill materials in landscaping, and non-paved or non-structural areas should be free of organic matter, debris, trash, old pavements, concrete and metal debris, and particles larger than 6 inches in maximum dimension.

General fill should be placed in not more than 10-inch thick loose lifts, moisture conditioned to between optimum and 3 percent wet of optimum moisture content, and compacted to at least 85 percent relative compaction for cohesive materials, and 90 percent relative compaction for granular materials.

6.2 ANTICIPATED EXCAVATION CONDITIONS

1. All footing and trench excavations are the contractor's responsibility. All temporary excavations should be properly shored and braced or sloped in accordance with applicable City, State, and Federal OSHA regulations.
2. Excavations to the depths required for the new bike path and slope adjustment walls are anticipated to encounter fill materials and alluvium generally consisting of silt, clay, sand, gravel, and possible cobbles and boulders.



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It is anticipated that the surface fill and alluvial materials can generally be excavated with conventional earthwork equipment. Excavation and removal of hard cobbles and hard boulders, if encountered, are likely to require special handling and a hydraulic hoe ram, rock breaker, or other suitable rock excavation equipment. Blasting as a means of excavating these materials is probably not feasible at this site because of the proximity to Leeward Community College, farms, and houses.

3. Ground water was encountered in Boring 1 at the time of our field exploration at Elevation +3.2 feet. The bottom of footings invert elevations for the U-wall system approximately between Station 2+05 to 3+90 are planned at +8.5 to +18.0 feet. Based on this groundwater level and footing invert elevations, we anticipate that dewatering would generally not be necessary. However, the Contractor should have sump pumps or other appropriate dewatering equipment readily available at the site to remove any surface and/or ground water that may enter the excavations. All pumped water from any construction dewatering operations that are performed should be treated to conform to applicable City, State, and Federal, regulations before being discharged.

6.3 PERMANENT CUT AND FILL SLOPES

1. Permanent cut and fill slopes should not be steeper than 2 horizontal to 1 vertical (2H:1V). All fills placed on slopes steeper than 5H:1V should be continuously keyed and benched into the hillside. All fill slopes should be over-built and trimmed back to expose firm, compacted material at finish grades.
2. All permanent cut and fill slopes should be vegetated as soon as practical to reduce overall erosion rates.
3. Permanent cut slopes into stiff clayey alluvial deposits could possibly be as steep as 1.5H:1V. However, at the steeper slope angle, it may not be possible to maintain suitable ground cover. We recommend that slopes as steep as 1.5H:1V be protected with suitable erosion control covering, such as grouted rip rap, erosion control mats, or high density polyethylene cellular confinement material.
4. We understand that localized areas of the bike path alignment may require permanent cuts as steep as 1H:1V. We understand that grouted rip rap is planned at these locations.

Before installing the rip rap, the cut slope surface should be prepared by clearing all debris, roots, trees, and loose materials.



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We recommend that weep holes be installed in the rip rap to reduce the potential for build-up of hydrostatic pressures. At least one cubic foot of crushed rock wrapped in a non-woven geotextile should be placed at the intake end of each weep hole.

We also recommend that a continuous footing be provided at the base of the rip rap. The footing should be at least 12 inches wide, and embedded at least 18 inches below adjacent finish grades. Depending on the overall slope height, additional intermediate shear keys may be needed for the rip rap.

The top edge and flanks of the rip rap should also be thickened to at least 18 inches and/or extended beyond the top edge of the slope to reduce the potential for undermining of the rip rap.

6.4 RETAINING WALLS

6.4.1 Foundation Support

1. Because of variable fill conditions, and possible soft and compressible soils, we recommend that at least 2 feet of the subsurface materials directly below the footings for the U-wall system planned approximately between Stations 2+05 and 3+90 be over excavated and replaced with compacted structural fill. The over excavation should extend at least 2 feet beyond the footing limits.

If ground water or soft and wet conditions are encountered at the bottom of the over excavation, the excavation should be lined with a woven geotextile fabric, such as Mirafi 500X or equal. The fabric should overlap at least 24 inches along all joints.

Locally available No. 3B coarse basaltic rock (ASTM No. 5 size) should be placed over the geotextile until at least one foot or so above the groundwater table. The gravel should be compacted with vibratory compaction equipment to a dense consistency as evidenced by little to no settlement of the gravel, but not less than six passes. The remainder of the over excavation may then be backfilled with compacted structural fill.

2. Because the on-site clayey deposits have some shrink and swell tendencies and a potential for variable fill conditions along the path alignment, we recommend that at least 12 inches of the subsurface materials directly below the cantilever retaining walls along the remainder of the path alignment be over excavated and replaced with compacted structural fill. The over excavation should extend at least 12 inches beyond the footing limits. At least 12 inches of structural fill

should also be provided below slope adjustment walls that we understand will generally consist of 1 to 2 feet high concrete curbs.

3. An allowable bearing pressure of 2,000 pounds per square foot (psf) for total dead plus live loads may be used to design footings founded on structural fill. A one-third increase in the allowable bearing pressure may be used when considering the totals of all loads, including wind or seismic forces.
4. All wall footings should be embedded at least one foot below the lowest outside finish grade and should be at least 12 inches wide.
5. For footings adjacent to or on a slope, a minimum set back distance of 5 feet measured along the bottom of the footings should be provided between the outside edges of the footings and the face of the slope.
6. The top 6 inches of the footing excavations should be scarified and thoroughly moisture conditioned to between optimum and 3 percent wet of optimum moisture content for this material and compacted to at least 95 percent of relative compaction.
7. All wall footings on slopes steeper than 10H:1V should be stepped so the footing bottoms are level.
8. The wall footing excavations should be checked by the project geotechnical engineer for suitable bearing materials prior to the placement of steel and concrete.
9. Because the new walls approximately between Stations 2+05 and 3+90 will impose surcharge loads on the subsurface materials, some amount of wall settlement and movement will likely occur. We estimate that roughly 1 to 2 inches of settlement may occur as a result of up to 4 feet of backfill needed between the U-wall system planned in this area.

To reduce the potential for wall and pavement distress, we recommend that the wall be provided with expansion joints. We also recommend that survey monitoring points be established on the stems of each wall every approximately 50 feet. These points should be surveyed periodically during the construction. The amount of time needed for the settlement to occur is difficult to estimate, and may depend on such factors as, subsurface and groundwater conditions, thickness of compressible material, and loading conditions. We suggest weekly surveys during the wall construction and for approximately one month after the backfilling has been completely. After this, we suggest surveys every other week until the path is paved. This monitoring frequency may need to be modified depending on

settlement amounts and rates. A bench mark should be established sufficiently far away from the fill area so as not to be affected by the settlement. Paving in this area should not begin until the settlement rates have slowed. The project geotechnical engineer should be retained to review the settlement data.

10. Expansion joints should also be provided in the remaining retaining walls to allow for some amount of movement due to shrink and swell tendencies of the underlying soils.

6.4.2 Lateral Earth Pressures

1. Retaining walls up to approximately 8 feet in height, backfilled with free draining granular fill materials and level backfill conditions, and free to rotate at their tops can be designed to resist an active equivalent fluid pressure of 40 pounds per square foot per foot of depth (psf/ft). Where backfill slopes are as steep as 2H:1V, the walls should be designed for an active equivalent fluid pressure of 55 psf/ft. Traffic and equipment surcharges, if present, should be added to the above values.
2. Resistance to lateral loads will be provided by passive pressures on the face of footings and by frictional resistance between the concrete and structural fill along the bases of footing. Passive pressures on the faces of footing can be computed using a passive equivalent fluid pressure of 300 pounds per square foot per foot of depth (psf/ft) for level backfill conditions in front of the footings. This value should be reduced to 150 psf/ft for sloping fill conditions with grades as steep as 2H:1V in front of the footings. The upper 12 inches of soil in front of perimeter footings should be neglected in calculating passive resistance, unless the soils are confined by pavements or concrete slabs.
3. A friction factor of 0.35 along the bases of footing may be used for footings founded on structural fill.

6.4.3 Wall Backfill and Drainage

1. All retaining walls should be backfilled with granular, non-expansive and free draining fill materials conforming to the structural fill requirements of subsection 6.1. The backfill should be placed in lifts not exceeding 6 inches in loose thickness, moisture conditioned to within 2 percent of optimum moisture content for this material, and compacted to at least 90 percent relative compaction. The top 24 inches of the backfill under areas to be paved should be compacted to at least 95 percent relative compaction.
2. All retaining walls should be provided with a positive system of drainage using continuous wall back drains with perforated drain pipes or weep holes to reduce



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hydrostatic pressure buildup. If back drains are used, they should be at least 12 inches wide and consist of clean gravel, such as ASTM No. 67 basaltic gravel. The drains should extend over the full height of the wall. A geotextile filter fabric should be provided between the drain rock and the wall backfill. A perforated pipe should be placed near the bottom of the wall and sloped to drain to a suitable discharge facility.

If weep holes are used, the weep holes should be provided at a center to center spacing of not more than 6 feet. At least one cubic foot of ASTM No. 67 basaltic gravel wrapped in filter fabric should be provided at the intake end of each weep hole. Controlled low strength material (CLSM) or low permeability fill should be placed directly below the perforated pipes or weep hole levels to reduce ponding of water behind the wall. If CLSM is used, it should be placed in lifts and each lift allowed to set-up before placing subsequent lifts to reduce potentially overstressing the walls. Lift thicknesses should be checked by the project structural engineer.

3. Alternatively, a prefabricated drainage board with filter fabric may be used in place of gravel back drains and weepholes. The fabric from the drainage board should be completely wrapped around the perforated pipe at the base of the wall. The perforated pipe should be sloped to drain to a suitable discharge facility.
4. To reduce potential water infiltration, a drainage swale should be provided at the top of all walls to intercept and direct surface runoff away from the walls. A swale may not be needed along portions of the existing road that are bordered by an existing concrete lined ditch.
5. To reduce the potential for infiltration of surface water behind the walls, the top at least 12 inches of the wall backfill in unpaved areas should be capped with CLSM or low permeability fill. A geotextile filter fabric should be provided between the capping material and the wall backfill to reduce the potential for infiltration of fines into the backfill.
6. If landscaping is to be provided behind portions of the walls, a geotextile filter fabric should be placed between the granular wall backfill and the top soil to reduce the potential for infiltration of fines into the backfill.

6.5 GUIDELINES FOR FLEXIBLE PAVEMENTS

1. The traffic volume at this site is anticipated to consist mainly of passenger vehicles, light trucks, occasional fire trucks, and farming equipment along the access road.

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2. Based on an assumed subgrade CBR value of 11, the following flexible pavement sections are recommended:

Bike Path Sections Not Subjected to Vehicular Traffic:

- 2 inches of AC
- 6 inches of untreated aggregate base course
- 6 inches of untreated aggregate subbase

Bike Path Sections Subjected to Vehicular Traffic:

- 2-1/2 inches of asphaltic concrete (AC)
- 6 inches of untreated aggregate base course
- 12 inches of untreated aggregate subbase

The top 6 inches of the subgrade below pavements should be moisture conditioned to between optimum and 3 percent wet of moisture content for this material and compacted to at least 95 percent of relative compaction.

If soft and wet conditions, or standing water is encountered in the pavement subgrade, the subgrade should be over excavated at least 12 inches. The over excavated material should be replaced with a woven geotextile, such as Mirafi 500X or equal, and backfilled with No. 3B coarse basaltic gravel. The geotextile and gravel should be installed in accordance with the recommendations presented in subsection 6.4.1 of this report.

Where the road is to be constructed with unpaved gravel shoulders, the limits of the base and subbase should extend horizontally at least 12 inches beyond the edges of the AC. Where curbs are provided, the subbase material should extend below the curbs.

3. All pavement subgrades should be prepared as recommended in subsection 6.1 of this report. Care should be taken to not allow exposed subgrades to dry and crack. Subbase and base materials should be placed over the compacted subgrade as soon as possible to reduce potential drying. If shrinkage cracks appear in the excavated or compacted subgrade, the subgrade should be thoroughly scarified, moisture conditioned, and recompacted to provide a firm base and to close all cracks.
4. Untreated graded aggregate base course for the new pavements should conform to the requirements of Section 703.06 of the Hawaii Standard Specifications for Road, Bridge, and Public Works Construction, dated 1994 and as amended and hereafter referred to as the Hawaii Standard Specifications. It should have a

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nominal size of 1.5 inches and should be compacted to at least 95 percent relative compaction.

5. Untreated aggregate subbase material should conform to the requirements of Section 703.06 and 703.17, respectively, of the Hawaii Standard Specifications.
6. Base course and subbase material should be placed in not more than 8-inch thick horizontal loose lifts, moisture conditioned to within 2 percent of the optimum moisture content for this material, and compacted to at least 95 percent of relative compaction.

7.0 CONSULTATION DURING DESIGN AND CONSTRUCTION

During the design, we plan to review the geotechnical related sections of the pre-final plans and specifications to check that the intent of our recommendations have been properly reflected in the contract documents.

During pavement and wall footing construction, we recommend that we be retained to make periodic site visits to observe pavement and foundation excavations for zones of weakness, and suitability of bearing materials encountered.

We also recommend that we be retained to check on samples of proposed fill material prior to their use at the site. We should be retained to conduct periodic site visits to observe fill placement and compaction procedures and to perform tests to evaluate the actual fill compaction achieved.

8.0 LIMITATIONS

This letter report has been prepared for the use of Hawaii Pacific Engineers, Inc. and their designated engineering consultants in accordance with generally accepted soils and foundation engineering practices for the proposed Honolulu Bicycle Master Plan Improvements, College Access Project No. 28 to be constructed at Waiawa, Oahu. No other warranty, expressed or implied, is made to the professional advice included in this letter report and none should be inferred.

This letter report has been developed for the use of Hawaii Pacific Engineers, Inc. and their designated engineering consultants for the proposed Honolulu Bicycle Master Plan Improvements, College Access Project No. 28. It does not contain sufficient information for the purposes of other parties or for other uses.

 Pacific Geotechnical Engineers, Inc.

Hawaii Pacific Engineers, Inc.
Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
December 8, 2000
Page 17

This letter report does not reflect variations which may occur in the subsurface and groundwater conditions between borings. The nature and extent of variations in the subsurface and groundwater conditions may not become evident until construction.

Ground water was encountered in one of our borings at the time of our field work. However, fluctuations in the groundwater levels may occur due to variations in rainfall, irrigation, and other factors that may be different from the conditions that existed at the time of our measurements.

The field exploration portion of this study may not have disclosed the presence of underground structures, such as cesspools, drywells, storage tanks, sumps, pits, buried debris, trash, and landfills, etc., that may be present at the site. Should these items be encountered during construction, we should be retained to provide appropriate recommendations for their disposal and/or treatment. Assessment of the presence or absence of these structures was not included in the scope of this consultation.

The scope of this consultation was limited to conventional geotechnical engineering services and did not include any environmental assessment or evaluations of potential subsurface and groundwater contamination. Silence in this letter regarding any environmental aspects of the site subsurface and groundwater conditions do not indicate the absence of potential environmental problems.

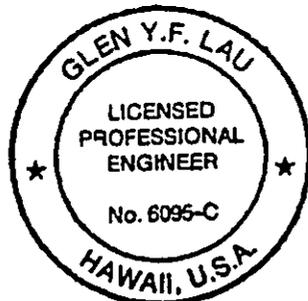
 Pacific Geotechnical Engineers, Inc.

Hawaii Pacific Engineers, Inc.
Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
December 8, 2000
Page 18

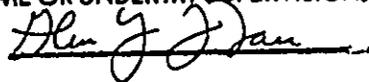
The following plates, table, and references are attached and complete this letter report.

Plate 1	- Map of Area
Plate 2.1	- Site Plan
Plates 2.2 through 2.6	- Plot Plan
Plates 3.1 and 3.6	- Log of Borings, Borings 1 through 6
Plates 4.1 and 4.2	- Unified Soil Classification System
Plates 5.1 and 5.2	- Atterberg Limits
Plate 6	- Gradation Curve
Plates 7.1 and 7.2	- Compaction Test Data
Plates 8.2 and 8.2	- Laboratory California Bearing Ratio (CBR) Test Results
Table 1	- Torvane Shear Strength Test Results

References

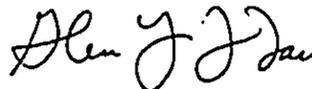


THIS WORK WAS PREPARED BY
ME OR UNDER MY SUPERVISION.



Yours very truly,

PACIFIC GEOTECHNICAL ENGINEERS, INC.



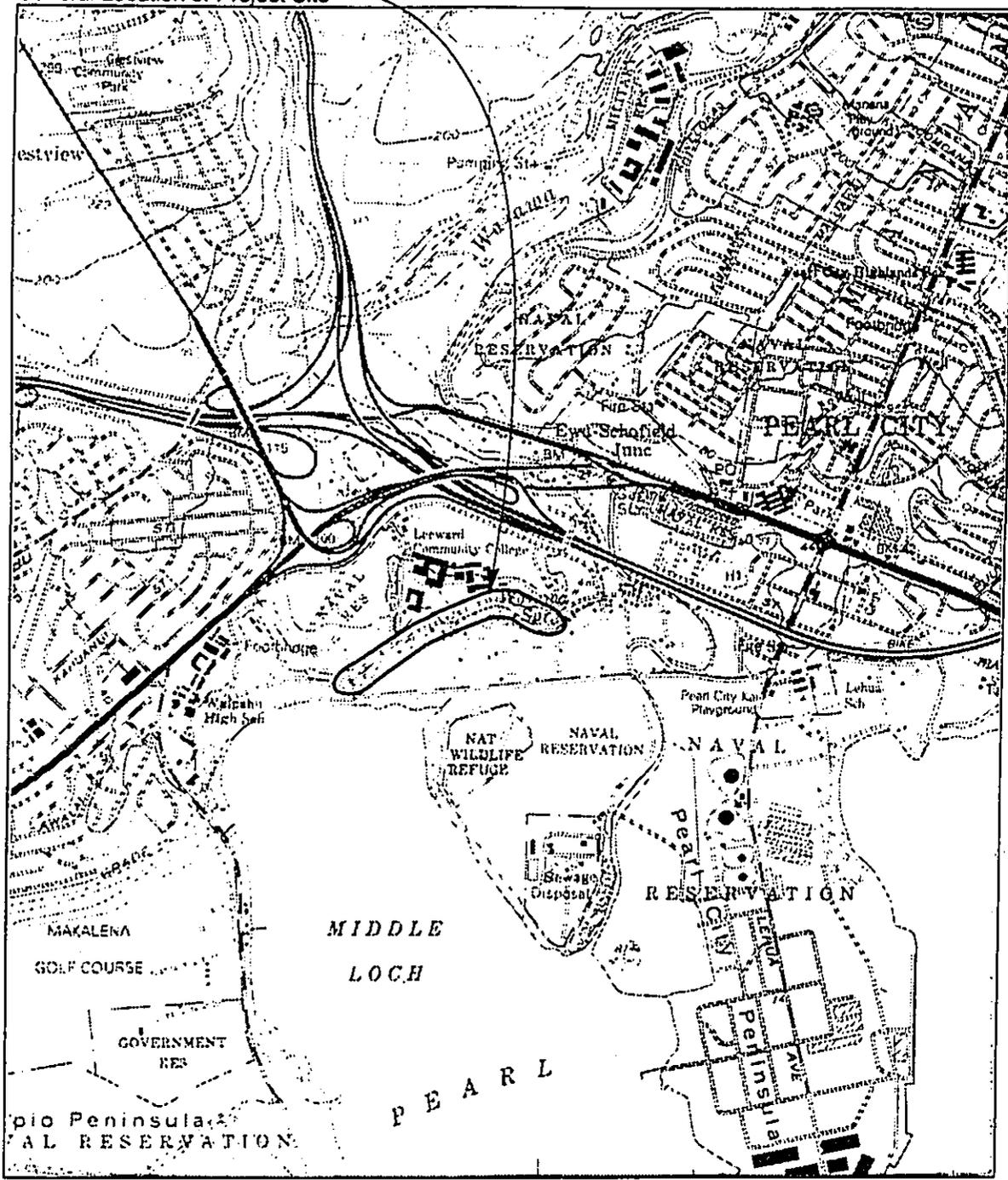
Glen Y.F. Lau, P.E.
President

(3771-045 ltr rpt.wpd)
(Six copies submitted)

Cc. Nagamine Okawa Engineers, Inc.
Attention: Mr. Dwight Okawa

KapofAve.dwg

General Location of Project Site



0 1000 2000 4000 6000
 0 0.5 1 2
 Contour Interval 40 Feet
 Datum is Mean Sea Level
 Depth Curves in Feet - Datum is Mean Lower Low Water



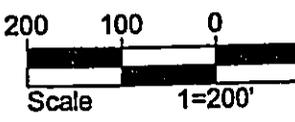
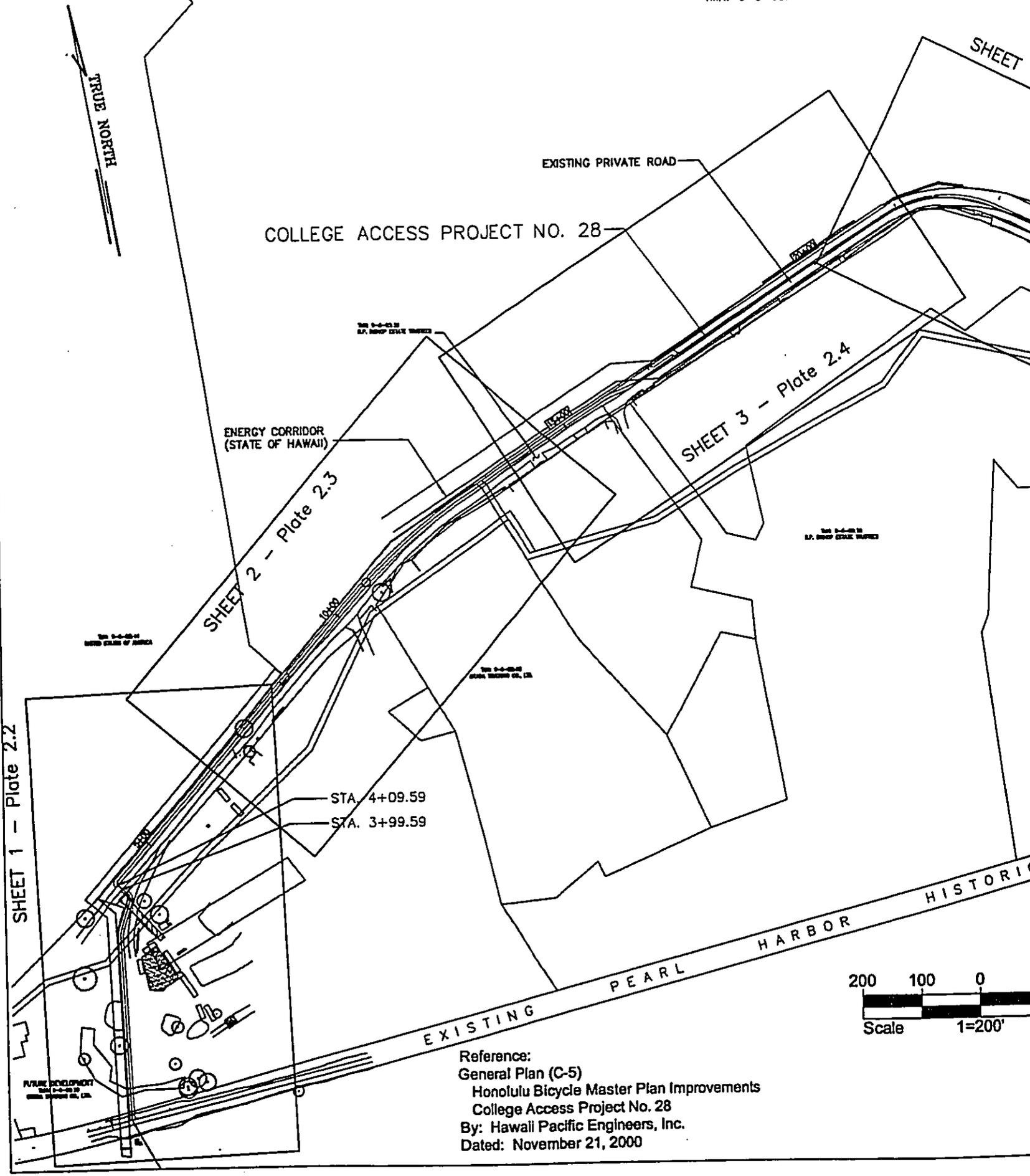
Reference:
 U.S.G.S. Topographic Map
 Waipahu, Oahu, Hawaii
 Dated: 1983

MAP OF AREA

Pacific Geotechnical Engineers, Inc.

3771-045 9937-14.dwg/Site Plan (12-07-00)

LEEWARD COMMUNITY COLLEGE
TMK: 9-3-03:48



Reference:
 General Plan (C-5)
 Honolulu Bicycle Master Plan Improvements
 College Access Project No. 28
 By: Hawaii Pacific Engineers, Inc.
 Dated: November 21, 2000

COLLEGE

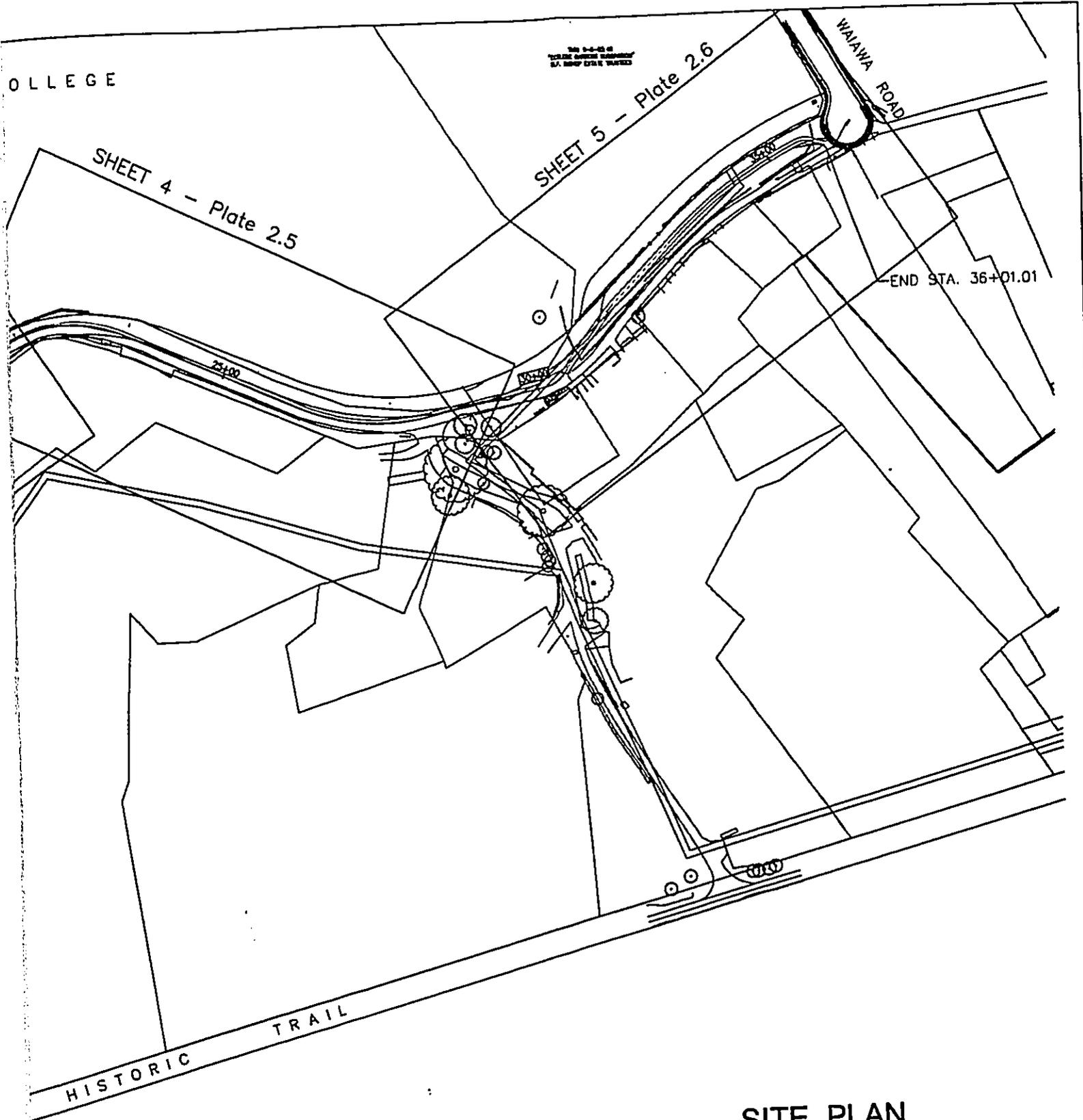
NO SCALE
TYPICAL ANCHOR BOLTS
BY NEW YORK STATE

SHEET 5 - Plate 2.6

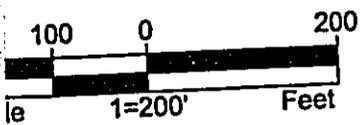
WAIANA ROAD

SHEET 4 - Plate 2.5

END STA. 36+01.01



HISTORIC TRAIL

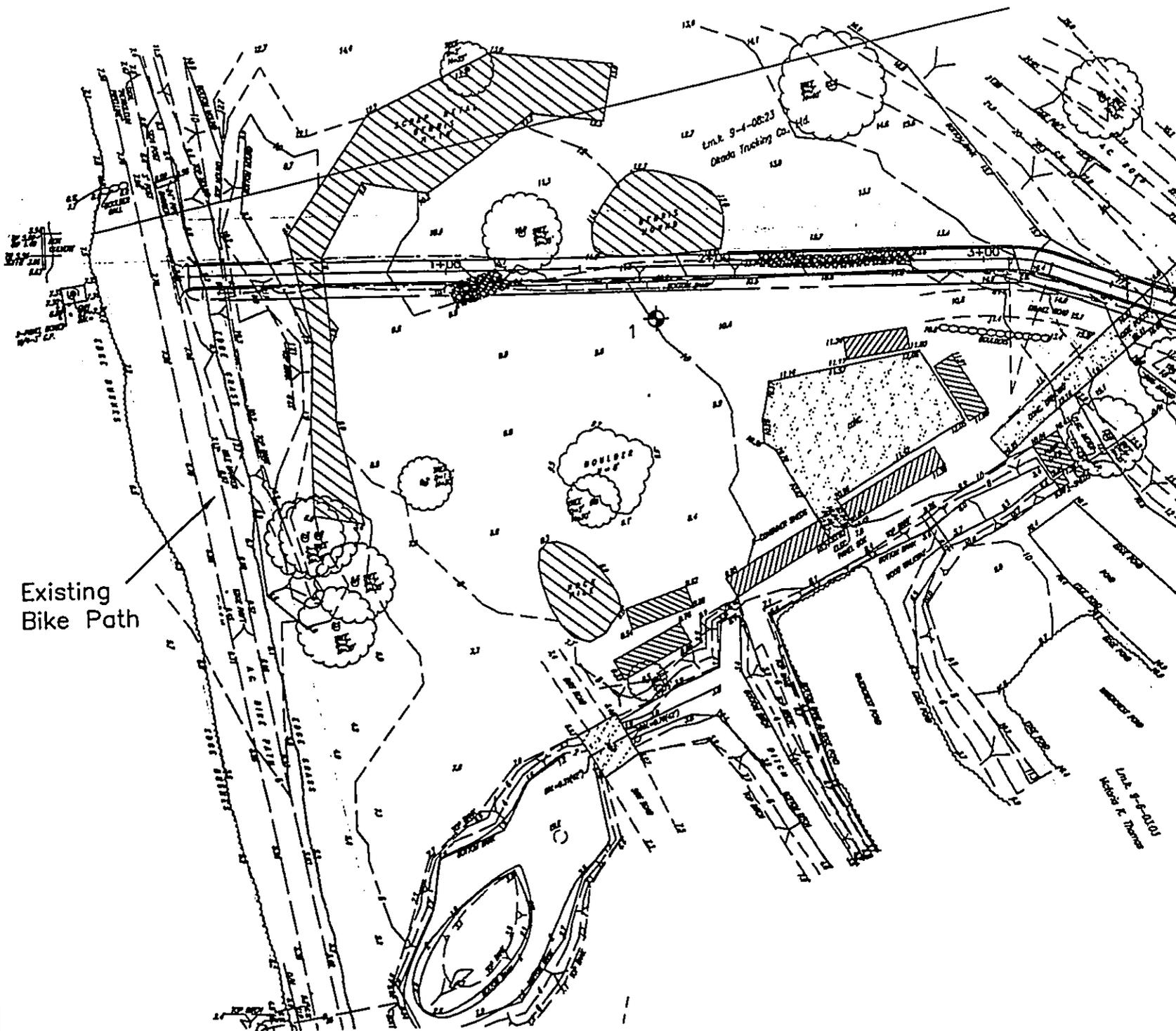


SITE PLAN

Honolulu Bicycle Master Plan Improvements
 College Access Project No. 28
 Pearl City / Aiea, Oahu, Hawaii

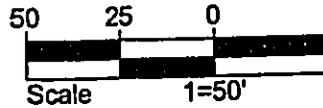
Pacific Geotechnical Engineers, Inc.

PLATE 2.1

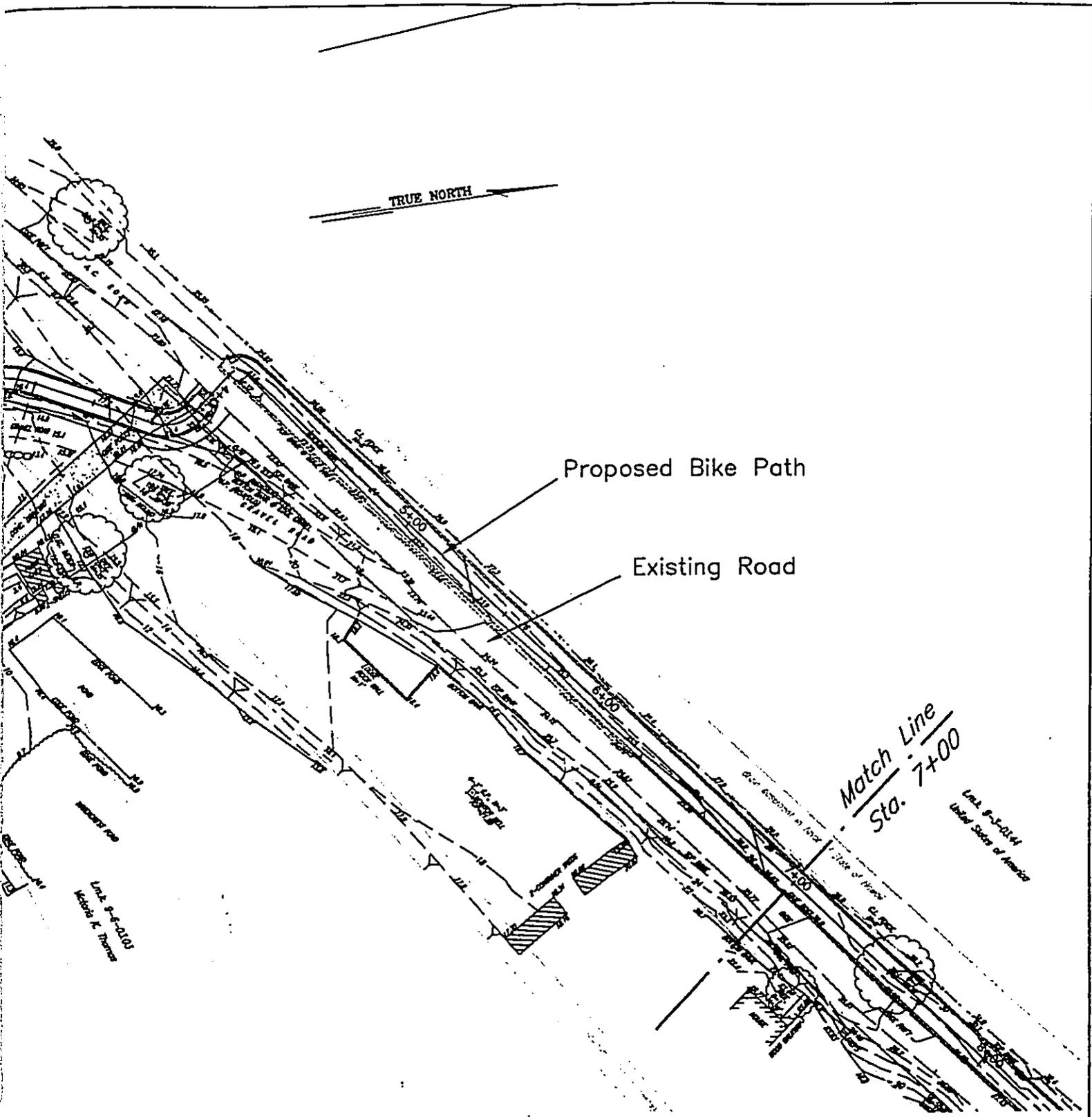


Existing
Bike Path

Legend:
⊙ Location and Number of PGE Boring

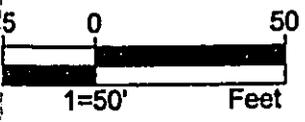


Reference:
General Plan (C-5)
Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
By: Hawaii Pacific Engineers, Inc.
Dated: November 21, 2000



PLOT PLAN

Honolulu Bicycle Master Plan Improvements
 College Access Project No. 28
 Pearl City / Aiea, Oahu, Hawaii



Pacific Geotechnical Engineers, Inc.

Match Line
Sta. 7+00

Lmk. 9-3-0344
United States of America

Proposed Bike Path

Existing Road

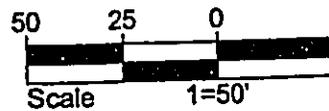
Lmk. 9-6-0305
Oada Trucking Co., Ltd.

Lmk. 9-6-0304
Victoria K. Thomas

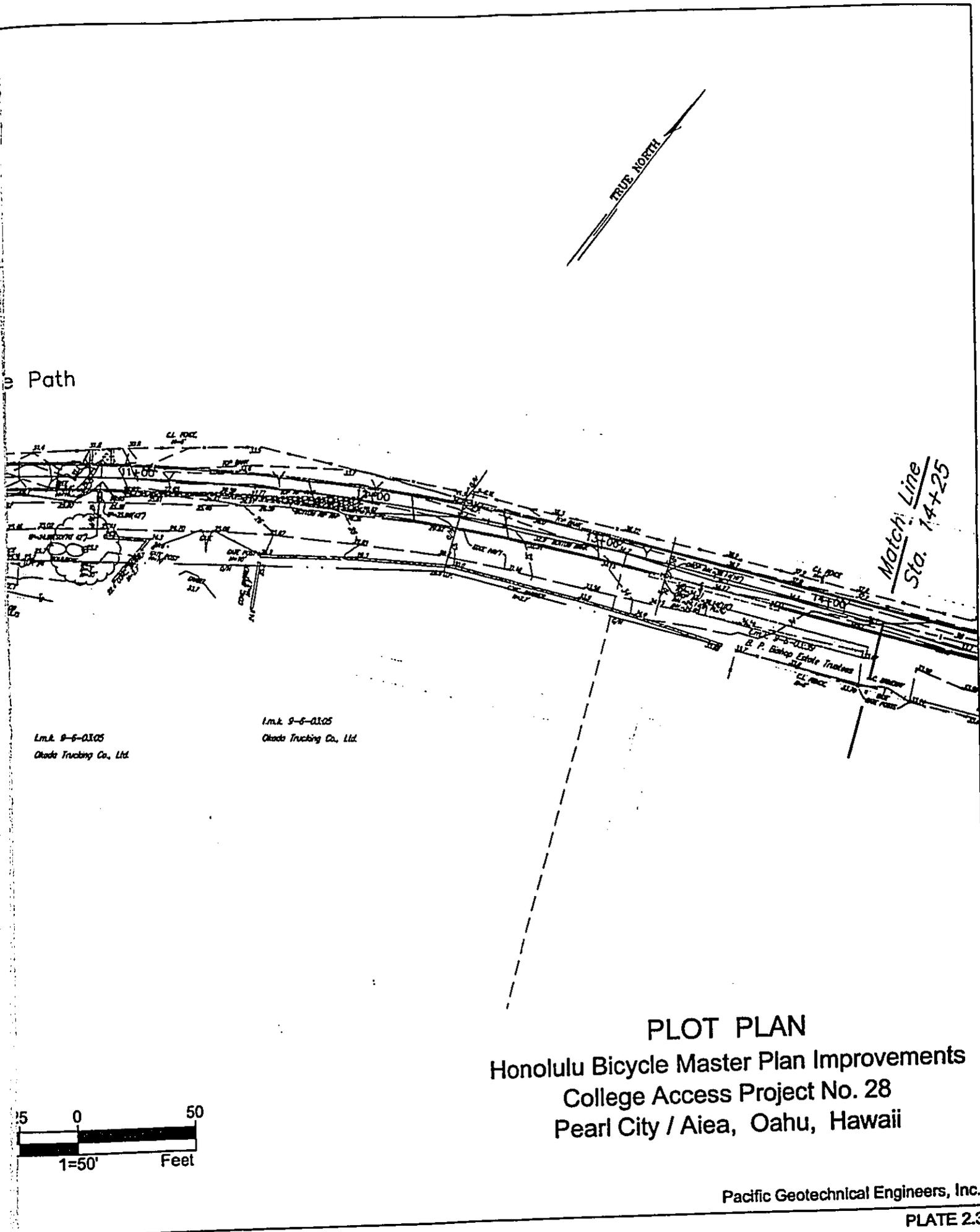
Legend:



Location and Number of PGE Boring



Reference:
General Plan (C-5)
Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
By: Hawaii Pacific Engineers, Inc.
Dated: November 21, 2000



e Path

TRUE NORTH

Match Line
Sta. 14+25

Lot 9-6-0105
Okada Trucking Co., Ltd.

Lot 9-6-0105
Okada Trucking Co., Ltd.

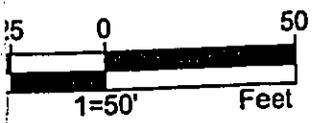
Lot 9-6-0105
B. P. Bishop Estate Trust

Pacific Geotechnical Engineers, Inc.

PLATE 2.3

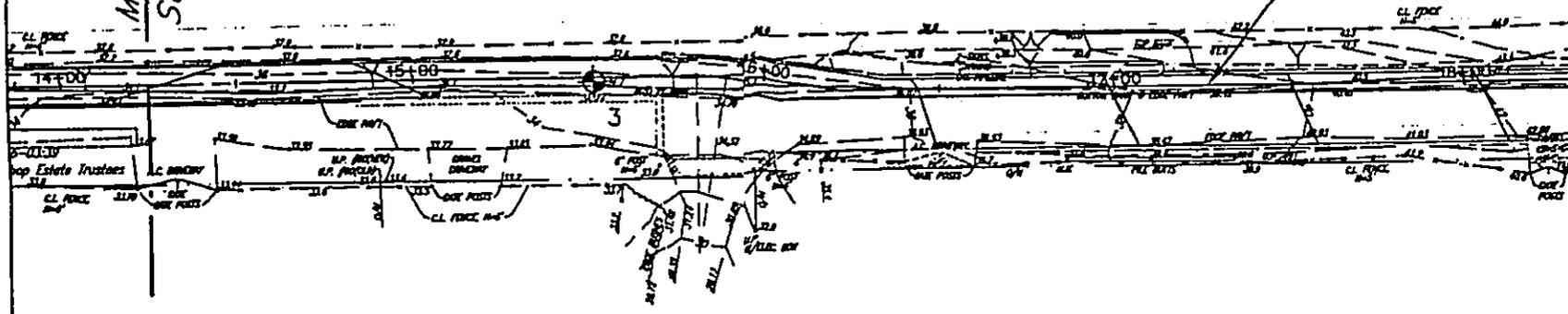
PLOT PLAN

Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
Pearl City / Aiea, Oahu, Hawaii



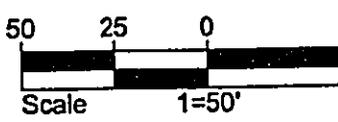
Proposed Bike Pat

Match Line
Sta. 14+25

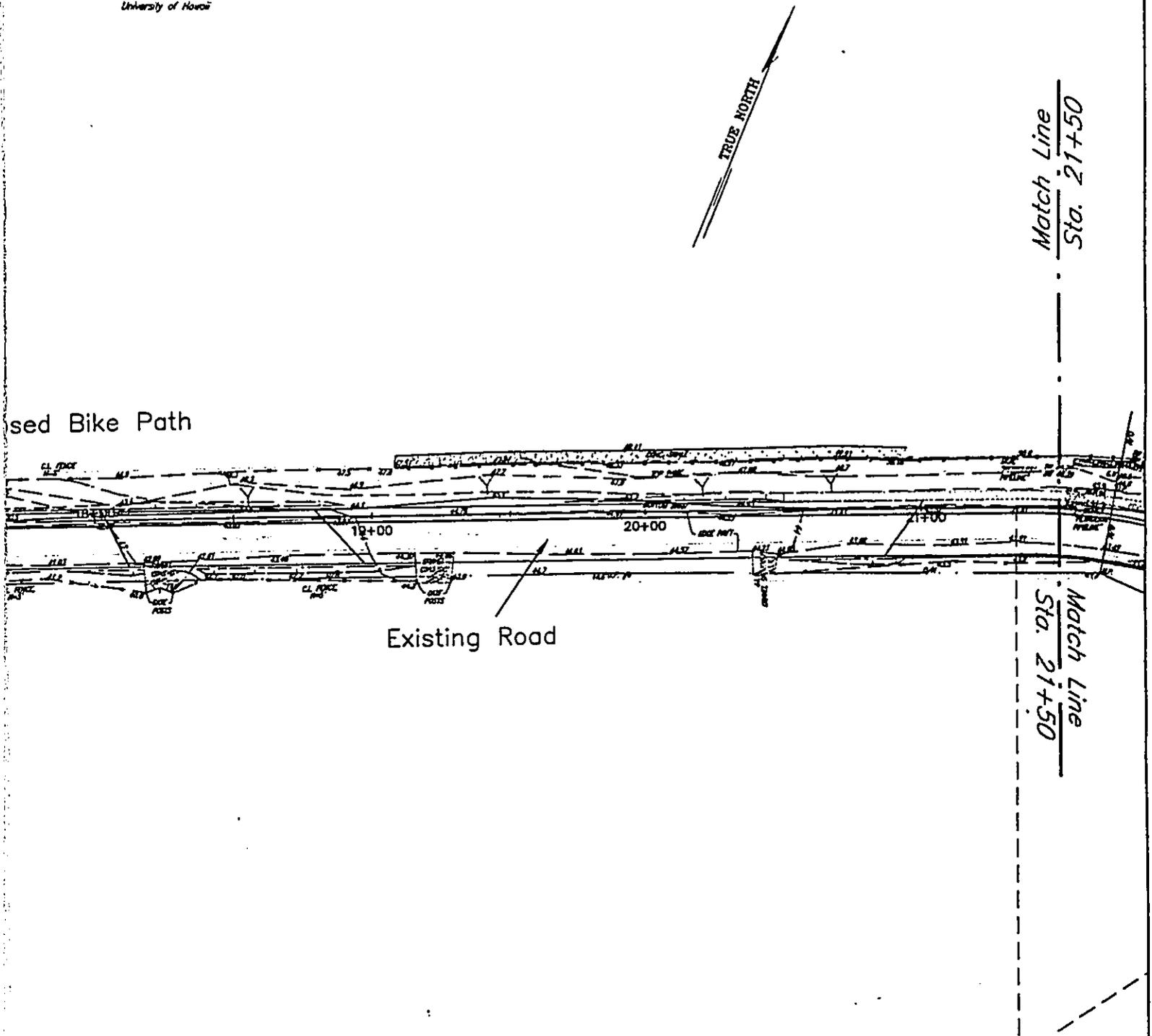


Legend:

Location and Number of PGE Boring

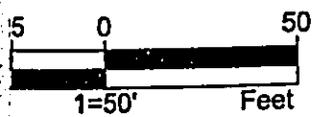


Reference:
 General Plan (C-5)
 Honolulu Bicycle Master Plan Improvements
 College Access Project No. 28
 By: Hawaii Pacific Engineers, Inc.
 Dated: November 21, 2000

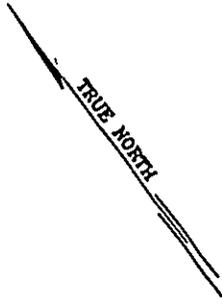


PLOT PLAN

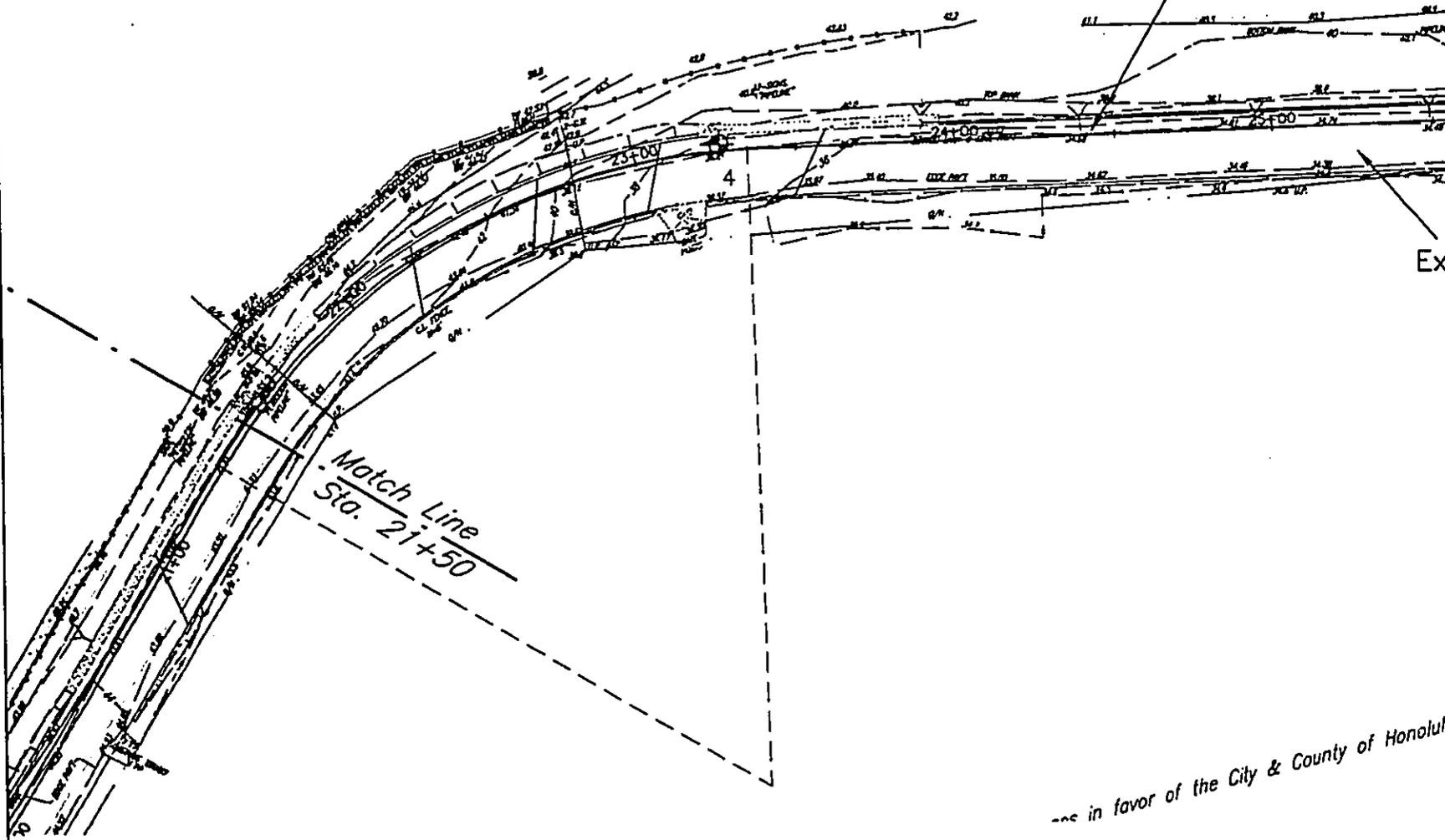
Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
Pearl City / Aiea, Oahu, Hawaii



Pacific Geotechnical Engineers, Inc.



Proposed Bike Path



Ex

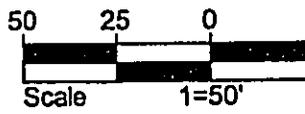
... in favor of the City & County of Honolulu

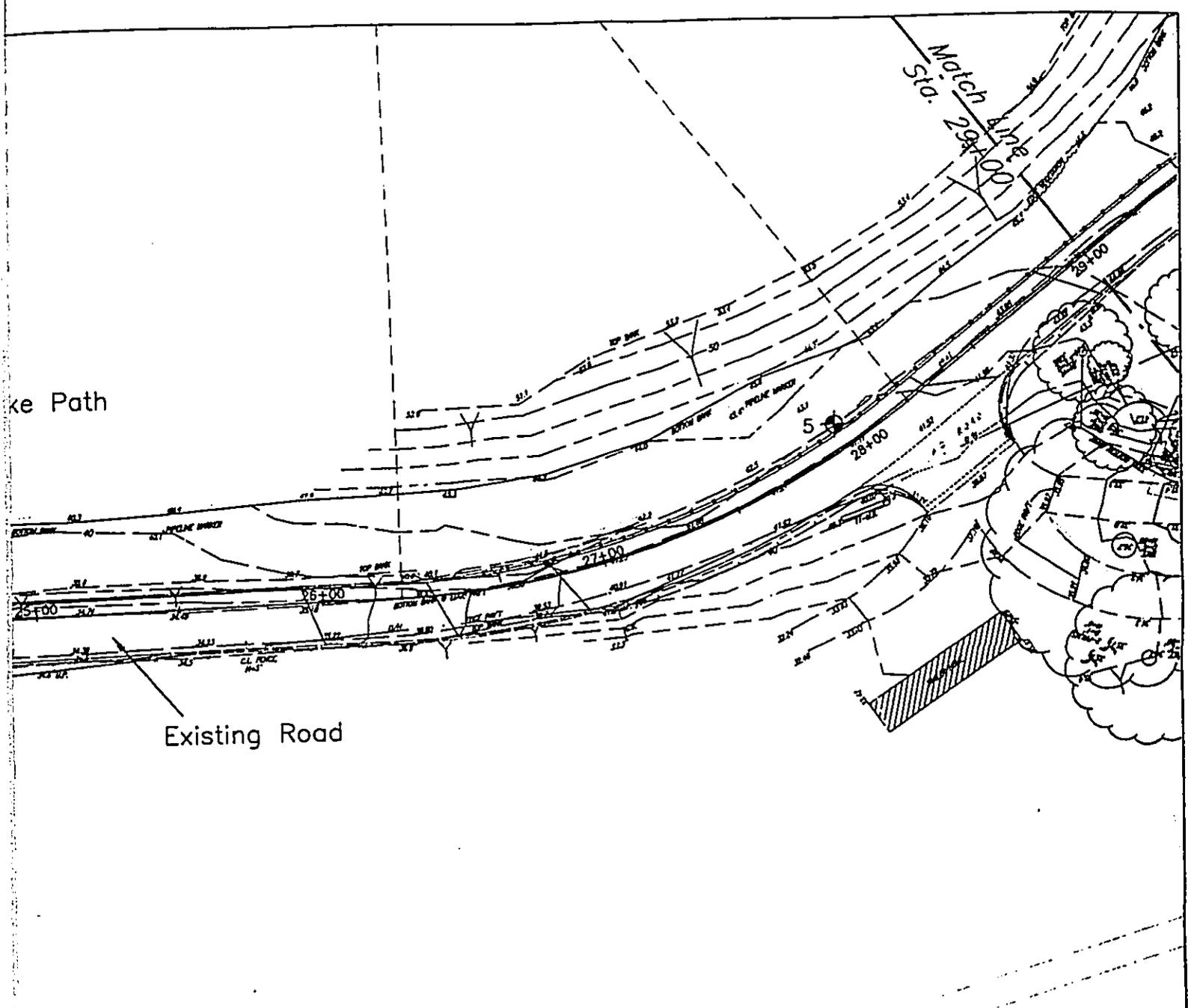
Legend:



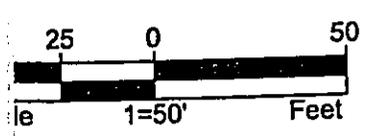
Location and Number of PGE Boring

Reference:
General Plan (C-5)
Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
By: Hawaii Pacific Engineers, Inc.
Dated: November 21, 2000





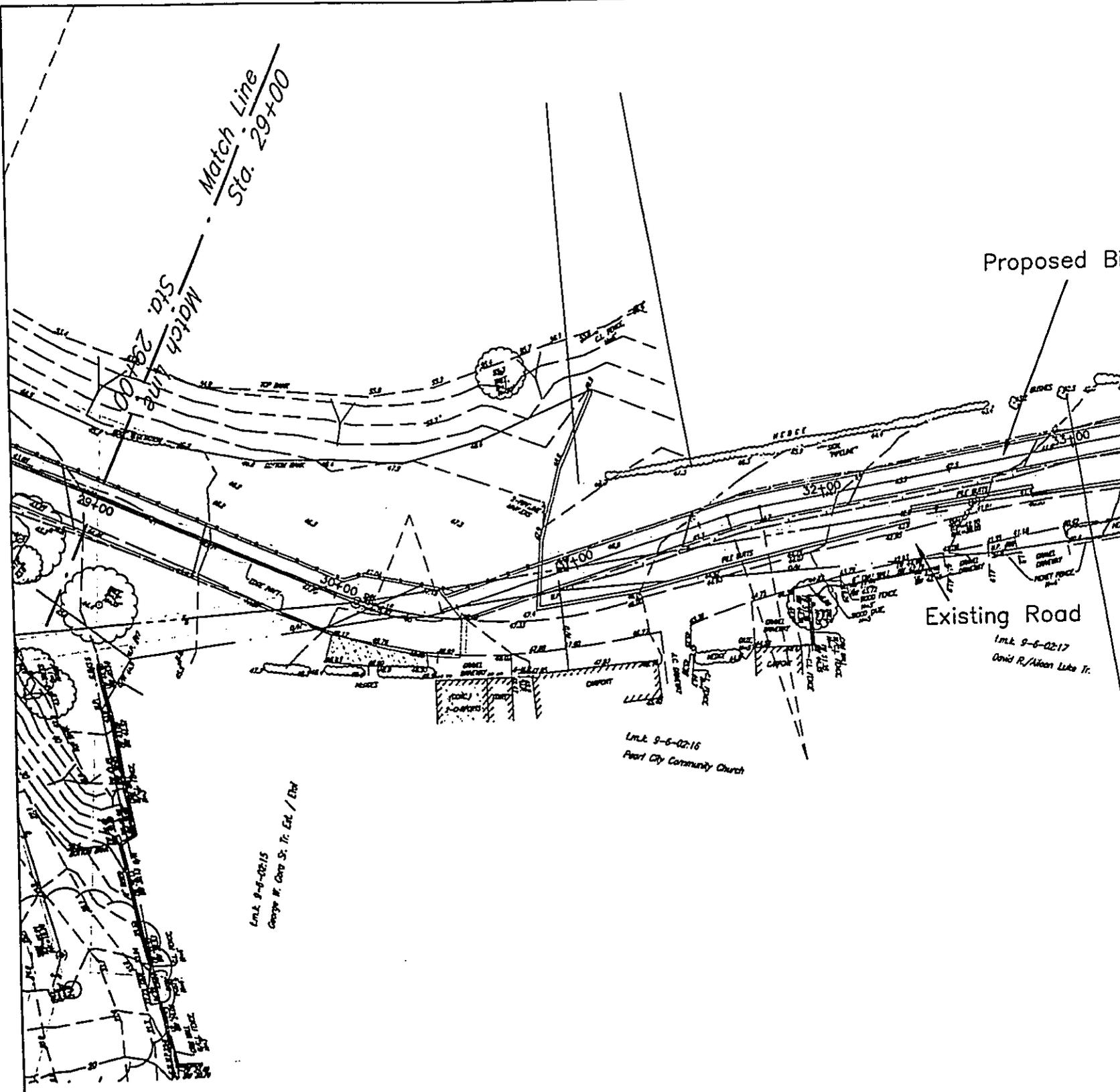
City & County of Honolulu



PLOT PLAN
Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
Pearl City / Aiea, Oahu, Hawaii

Pacific Geotechnical Engineers, Inc.

3771-045 9937-icc 12-06-00.dwg/Boring 6 (12-07-00)



L.M.L. 9-6-02-15
George W. Carr Sr. Tr. Exp. / Dist

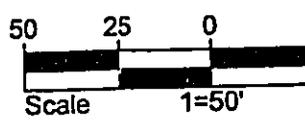
L.M.L. 9-6-02-16
Pearl City Community Church

Proposed Bicycle Route

Existing Road
L.M.L. 9-6-02-17
David R. / Alan Luke Tr.

Legend:
Location and Number of PGE Boring

Reference:
General Plan (C-5)
Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
By: Hawaii Pacific Engineers, Inc.
Dated: November 21, 2000



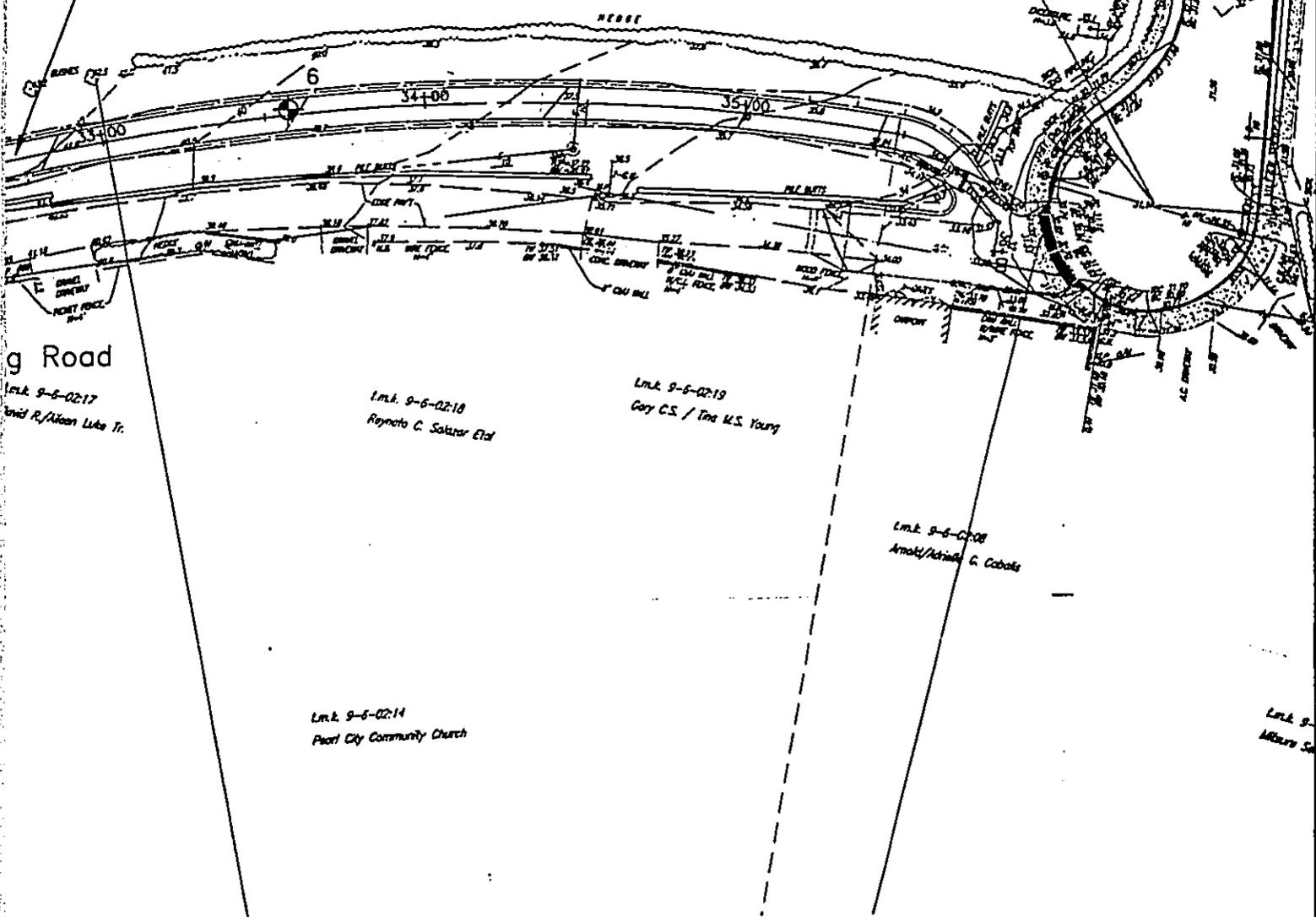
College Gardens Townhouses

Lmk. 9-3-01-40
"College Gardens"
Bishop Estate

Proposed Bike Path

TRUE NORTH

WAIAWA ROAD



g Road

Lmk. 9-6-02-17
David R./Alison Luke Tr.

Lmk. 9-6-02-18
Reynato C. Salazar Etal

Lmk. 9-6-02-19
Gary C.S. / The M.S. Young

Lmk. 9-6-02-08
Arnold/Adriana G. Cobble

Lmk. 9-6-02-14
Pearl City Community Church

Lmk. 9-6-02-15
Maura S.

PLOT PLAN

Honolulu Bicycle Master Plan Improvements
College Access Project No. 28
Pearl City / Aiea, Oahu, Hawaii

Pacific Geotechnical Engineers, Inc.

PROJECT Honolulu Bicycle Master Plan JOB No. 3771-045
 LOCATION Pearl Harbor, Oahu, Hawaii DRAWN BY llg

BORING 1 (Page 1 of 1)

SURFACE ELEVATION +10.0 ± Feet
 DATUM Mean Sea Level

LAB DATA		CORE INFO			BLOWS/FT.	DEPTH (feet)	SAMPLES	GRAPHIC LOG	SOIL CLASS	DESCRIPTION
MOISTURE CONTENT %	DRY DENSITY (pcf)	CORE TYPE	RECOVERY %	RQD % or (RQI) %						
30	88				75			GM	Reddish brown silty basaltic gravel, humid (fill)	
								MH	Brown elastic silt, medium stiff, moist, with some roots (fill)	
						2.5		GM	Black silty asphaltic gravel, medium dense, moist (fill)	
								MH	Brown sandy elastic silt, medium stiff, moist (fill)	
23	97				13			MH	Brown elastic silt, medium stiff to stiff, with some fine highly weathered basaltic sand, moist (alluvium)	
38	82				10	5				
59					2	7.5			grades very soft (Water level at 1330 hours on 10-31-00)	
59					19	10			grades grayish brown and with increasing sand content and some gravel	

Boring completed at 11.5 feet on 10-31-00.

NOTES:
 ■ - Relatively undisturbed sample
 ⊗ - Disturbed sample
 □ - Sample lost during extraction
 ▣ - Standard penetration test sample (splt-spoon sampler)
 I - Core run
 DRIVING ENERGY: 140-lb. dropping 30 inches

LOG OF BORING
 Pacific Geotechnical Engineers, Inc.

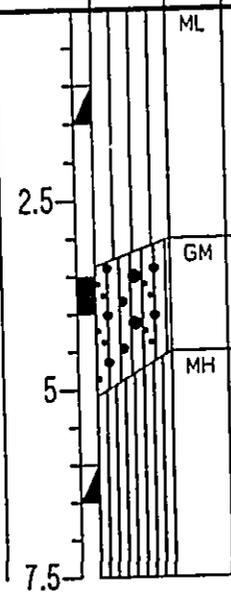
PLATE
3.1

PROJECT Honolulu Bicycle Master Plan JOB No. 3771-045
 LOCATION Pearl Harbor, Oahu, Hawaii DRAWN BY tlg

BORING 2 (Page 1 of 1)

SURFACE ELEVATION +28.7 ± Feet
 DATUM Mean Sea Level

LAB DATA		CORE INFO			BLOWS/FT.	DEPTH (feet)	SAMPLES	GRAPHIC LOG	SOIL CLASS	DESCRIPTION
MOISTURE CONTENT %	DRY DENSITY (pcf)	CORE TYPE	RECOVERY %	ROD # OF (ROD) %						
22					54				ML	Brown sandy silt, stiff, with some weathered basaltic gravel, humid (alluvium)
24	81				126				GM	Brown silty subrounded basaltic gravel, very dense, highly weathered, humid (alluvium)
36					31				MH	Yellowish brown elastic silt, stiff, with some highly weathered subrounded basaltic gravel, moist (alluvium)



Boring completed at 7.5 feet on 10-31-00.
 Ground water not encountered.

NOTES:

- - Relatively undisturbed sample
- ⊗ - Disturbed sample
- - Sample lost during extraction

- ☑ - Standard penetration test sample (split-spoon sampler)
 - I - Core run
- DRIVING ENERGY: 140-lb. dropping 30 inches

LOG OF BORING



Pacific Geotechnical Engineers, Inc.

PLATE

3.2

PROJECT Honolulu Bicycle Master Plan JOB No. 3771-045
 LOCATION Pearl Harbor, Oahu, Hawaii DRAWN BY tlg

BORING 3 (Page 1 of 1)

SURFACE ELEVATION +34.7 ± Feet
 DATUM Mean Sea Level

LAB DATA		CORE INFO			BLOWS/FT.	DEPTH (feet)	SAMPLES	GRAPHIC LOG	SOIL CLASS	DESCRIPTION
MOISTURE CONTENT %	DRY DENSITY (pcf)	CORE TYPE	RECOVERY %	RQD % OR (RQI) %						
22	79				48			MH	Brown elastic silt, stiff, with some roots, humid (alluvium)	
21	78				46			MH	Yellowish brown elastic silt, stiff to very stiff, humid (alluvium)	
20	78				140			GM	grades with some highly weathered basaltic sand and gravel Light yellowish brown silty sandy subrounded basaltic gravel, dense, locally weakly to moderately cemented, humid	

Boring completed at 7.0 feet on 10-31-00.
 Ground water not encountered.

NOTES:

- - Relatively undisturbed sample
 - ⊗ - Disturbed sample
 - - Sample lost during extraction
 - ▣ - Standard penetration test sample (split-spoon sampler)
 - I - Core run
- DRIVING ENERGY: 140-lb. dropping 30 inches

LOG OF BORING

 Pacific Geotechnical Engineers, Inc.

PLATE

3.3

PROJECT Honolulu Bicycle Master Plan JOB No. 3771-045
 LOCATION Peaʻoli Harbor, Oahu, Hawaii DRAWN BY lmi

BORING 4 (Page 1 of 1)

SURFACE ELEVATION +38.0 ± Feet
 DATUM Mean Sea Level

LAB DATA		CORE INFO		BLOWS/FT.	DEPTH (feet)	SAMPLES	GRAPHIC LOG	SOIL CLASS	DESCRIPTION
MOISTURE CONTENT %	DRY DENSITY (pcf)	CORE TYPE	RECOVERY %						
20	69			27	2.5	■		MH	Brown elastic silt, stiff, with trace of fine gravel, humid (possible fill?)
25	73			42	5	■		MH	Mottled brown and yellowish brown elastic silt, very stiff, with some weathered basaltic gravel and trace of sand, humid (alluvium)
31				90/9"	7.5	⊗			grades with more gravel
				34		■			

Boring completed at 8.5 feet on 12-01-00.
 Ground water not encountered.

NOTES:

- - Relatively undisturbed sample
- ⊗ - Disturbed sample
- - Sample lost during extraction

- - Standard penetration test sample (split-spoon sampler)
 - I - Core run
- DRIVING ENERGY: 140-lb. dropping 30 inches

LOG OF BORING

 Pacific Geotechnical Engineers, Inc.

PLATE

3.4

PROJECT Honolulu Bicycle Master Plan JOB No. 3771-045
 LOCATION Pearl Harbor, Oahu, Hawaii DRAWN BY lml

BORING 5 (Page 1 of 1)

SURFACE ELEVATION +42.0 ± Feet
 DATUM Mean Sea Level

LAB DATA		CORE INFO			BLOWS/FT.	DEPTH (feet)	SAMPLES	GRAPHIC LOG	SOIL CLASS	DESCRIPTION
MOISTURE CONTENT %	DRY DENSITY (pcf)	CORE TYPE	RECOVERY %	ROD # OR (RDI) #						
21	72				25	■			MH	Brown elastic silt, stiff, with trace roots and fine gravel, humid (possible fill?)
21	78				27	■			MH	grades stiff to very stiff
26	71				90/10"	■			MH	Yellowish brown elastic silt, very stiff, humid, with weathered basaltic sand and gravel, locally weakly to moderately cemented (alluvium)
					25	■				grades with increasing sand content

Boring completed at 8.5 feet on 12-01-00.
 Ground water not encountered.

- NOTES:
- - Relatively undisturbed sample
 - ☒ - Disturbed sample
 - - Sample lost during extraction
 - - Standard penetration test sample (split-spoon sampler)
 - I - Core run
- DRIVING ENERGY: 140-lb. dropping 30 inches

LOG OF BORING

 Pacific Geotechnical Engineers, Inc.

PLATE

3.5

PROJECT Honolulu Bicycle Master Plan JOB No. 3771-045
 LOCATION Pearl Harbor, Oahu, Hawaii DRAWN BY llg

BORING 6 (Page 1 of 1)

SURFACE ELEVATION +39.0 ± Feet
 DATUM Mean Sea Level

LAB DATA		CORE INFO			BLOWS/FT.	DEPTH (feet)	SAMPLES	GRAPHIC LOG	SOIL CLASS	DESCRIPTION
MOISTURE CONTENT %	DRY DENSITY (pcf)	CORE TYPE	RECOVERY %	RQD % OR (RQI) %						
21					30				MH	Brown elastic silt, stiff, with some highly to completely weathered basaltic sand and gravel, and some roots, humid (alluvium)
22	86				106				MH	Yellowish brown elastic silt, stiff to very stiff, with some highly weathered subrounded basaltic sand and gravel, humid (alluvium)
26	74				52					grades with less gravel

Boring completed at 7.5 feet on 10-31-00.

Ground water not encountered.

NOTES:

- - Relatively undisturbed sample
- ⊗ - Disturbed sample
- - Sample lost during extraction

▣ - Standard penetration test sample (split-spoon sampler)

I - Core run

DRIVING ENERGY: 140-lb. dropping 30 inches

LOG OF BORING

 Pacific Geotechnical Engineers, Inc.

PLATE

3.6

UNIFIED SOIL CLASSIFICATION SYSTEM - (ASTM D2487-93)

MAJOR DIVISIONS			LETTER SYMBOL	GRAPHIC SYMBOL	GROUP NAMES
COARSE-GRAINED SOILS MORE THAN 50% RETAINED ON NO. 200 SIEVE	GRAVELS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS LESS THAN 5% FINES	GW		WELL-GRADED GRAVEL, WELL-GRADED GRAVEL WITH SAND
			GP		POORLY-GRADED GRAVEL, POORLY-GRADED GRAVEL WITH SAND
		GRAVELS WITH MORE THAN 12% FINES	GM		SILTY GRAVEL, SILTY GRAVEL WITH SAND
			GC		CLAYEY GRAVEL, CLAYEY GRAVEL WITH SAND
	SANDS 50% OR MORE OF COARSE FRACTION PASSES NO. 4 SIEVE	CLEAN SAND LESS THAN 5% FINES	SW		WELL-GRADED SAND, WELL-GRADED SAND WITH GRAVEL
			SP		POORLY-GRADED SAND, POORLY-GRADED SAND WITH GRAVEL
		SANDS WITH MORE THAN 12% FINES	SM		SILTY SAND, SILTY SAND WITH GRAVEL
			SC		CLAYEY SAND, CLAYEY SAND WITH GRAVEL
FINE-GRAINED SOILS 50% OR MORE PASSES NO. 200 SIEVE	SILTS AND CLAYS LIQUID LIMIT LESS THAN 50		ML		SILT, SILT WITH SAND OR GRAVEL, SANDY OR GRAVELLY SILT
			CL		LEAN CLAY, LEAN CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY SILT
			OL		ORGANIC SILT OR CLAY, ORGANIC SILT OR CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY ORGANIC SILT OR CLAY
	SILTS AND CLAYS LIQUID LIMIT 50 OR MORE		MH		ELASTIC SILT, ELASTIC SILT WITH SAND OR GRAVEL, SANDY OR GRAVELLY ELASTIC SILT
			CH		FAT CLAY, FAT CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY FAT CLAY
			OH		ORGANIC SILT OR CLAY, ORGANIC SILT OR CLAY WITH SAND OR GRAVEL, SANDY OR GRAVELLY ORGANIC SILT OR CLAY
HIGHLY ORGANIC SOILS		PT		PEAT	

NOTE:
DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE CLASSIFICATIONS.
REFER TO ASTM D2487 FOR BORDERLINE CLASSIFICATIONS GW-GM,
GW-GC, GP-GM, GP-GC, SW-SM, SW-SC, SP-SM, AND SP-SC.

UNIFIED SOIL CLASSIFICATION SYSTEM
(SHEET 1 OF 2)

Pacific Geotechnical Engineers, Inc.

CHECKED BY/DATE

PGE JOB NO. 9011 USC33.DWG

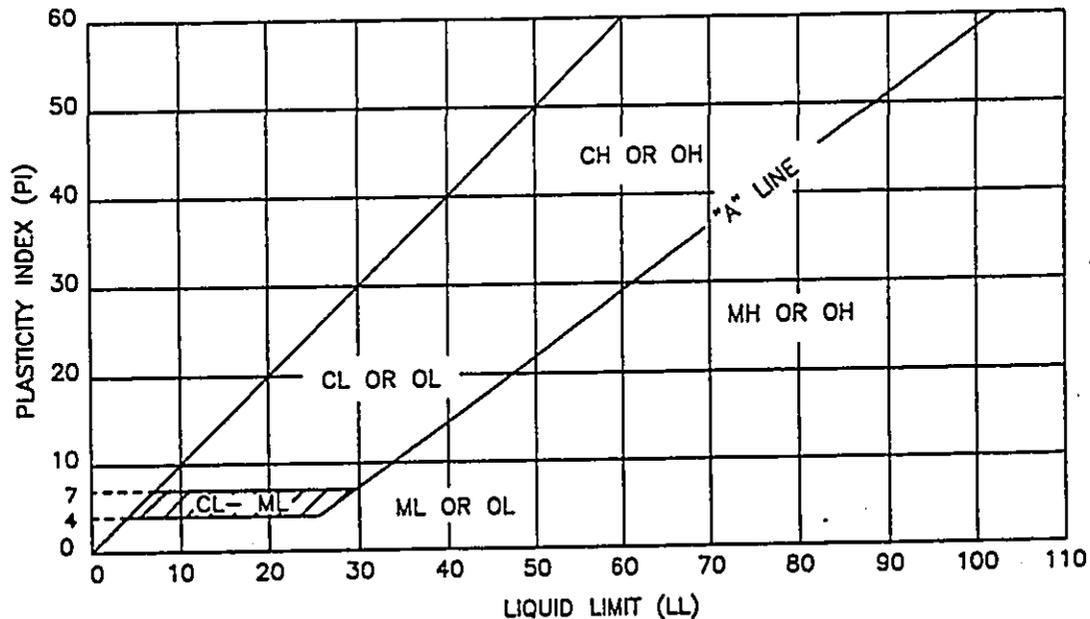
CHECKED BY/DATE: XU

GRADATION CHART

MATERIAL SIZE	PARTICLE SIZE				
	LOWER LIMIT		UPPER LIMIT		
	MILLIMETERS	SIEVE SIZE **	MILLIMETERS	SIEVE SIZE **	
SAND	FINE	0.075	#200 **	0.425	#40 **
	MEDIUM	0.425	#40 **	2.00	#10 **
	COARSE	2.00	#10 **	4.75	#4 **
GRAVEL	FINE	4.75	#4 **	19.0	3/4" *
	COARSE	19.0	3/4" *	75.0	3" *
COBBLES		75.0	3" *	300	12" *
BOULDERS		300	12" *	---	---

** U.S. STANDARD SIEVE * SQUARE OPENINGS

PLASTICITY CHART



FOR CLASSIFICATION OF FINE-GRAINED SOILS
AND FINE-GRAINED FRACTION OF
COARSE-GRAINED SOILS

NOTE: WHEN SHOWN ON THE BORING LOGS, THE FOLLOWING TERMS ARE USED TO DESCRIBE THE CONSISTENCY OF COHESIVE SOILS AND THE RELATIVE COMPACTNESS OF COHESIONLESS SOILS.

<u>COHESIVE SOILS</u>	
<u>APPROXIMATE SHEAR STRENGTH IN KSE</u>	
VERY SOFT	LESS THAN 0.25
SOFT	0.25 TO 0.5
MEDIUM STIFF	0.5 TO 1.0
STIFF	1.0 TO 2.0
VERY STIFF	2.0 TO 4.0
HARD	GREATER THAN 4.0

<u>COHESIONLESS SOILS</u>	
VERY LOOSE	THESE ARE USUALLY BASED ON AN EXAMINATION OF SOIL SAMPLES, PENETRATION RESISTANCE, AND SOIL DENSITY DATA.
LOOSE	
MEDIUM DENSE	
DENSE	
VERY DENSE	

UNIFIED SOIL CLASSIFICATION SYSTEM

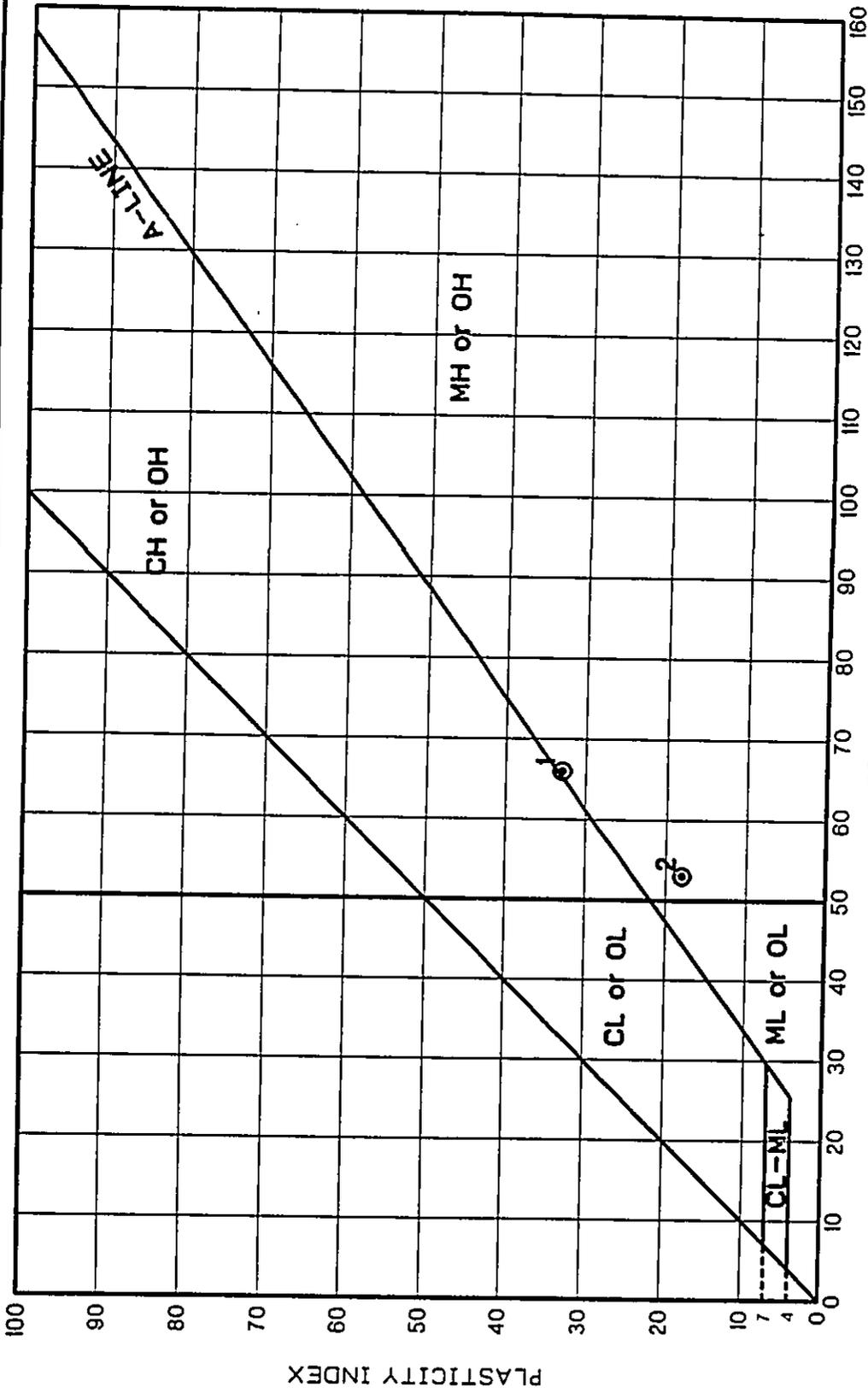
(SHEET 2 OF 2)

Pacific Geotechnical Engineers, Inc.

PGC JOB NO. 9011 USGS4.DWG

PROJECT Honolulu Bicycle Master Plan JOB NUMBER 3771-045

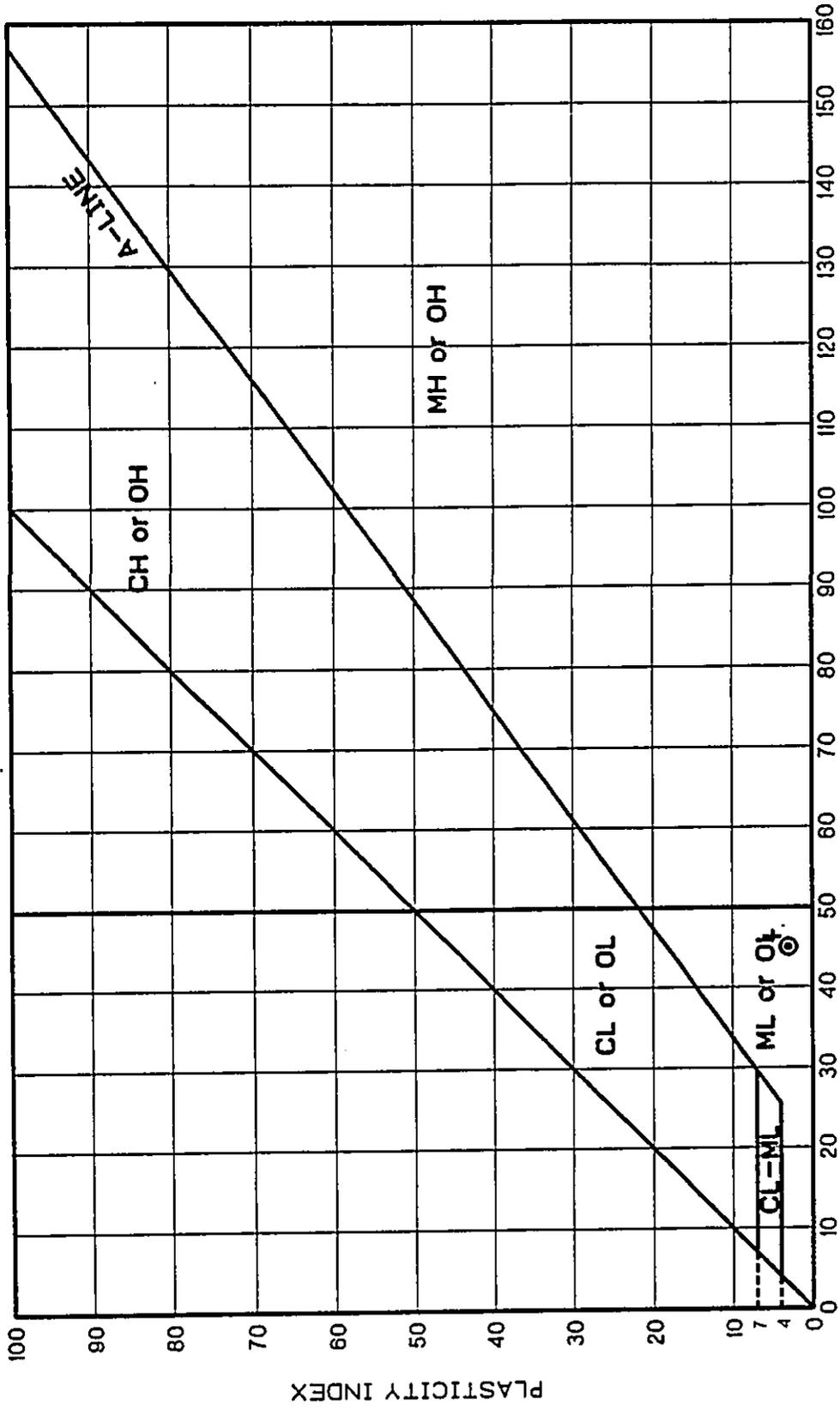
LOCATION Pearl Harbor, Oahu, Hawaii DRAWN BY lmi DATE DRAWN 11/08/00



ATTERBERG LIMITS

KEY	LOCATION	SAMPLE DEPTH (ft)	LIQUID LIMIT	PLASTICITY INDEX
1	Boring 1	5.0	66	33
2	Boring 6	1.0	53	18

PROJECT Honolulu Bicycle Master Plan JOB NUMBER 3771-045
 LOCATION Pearl Harbor, Oahu, Hawaii DRAWN BY llg DATE DRAWN 11/08/00

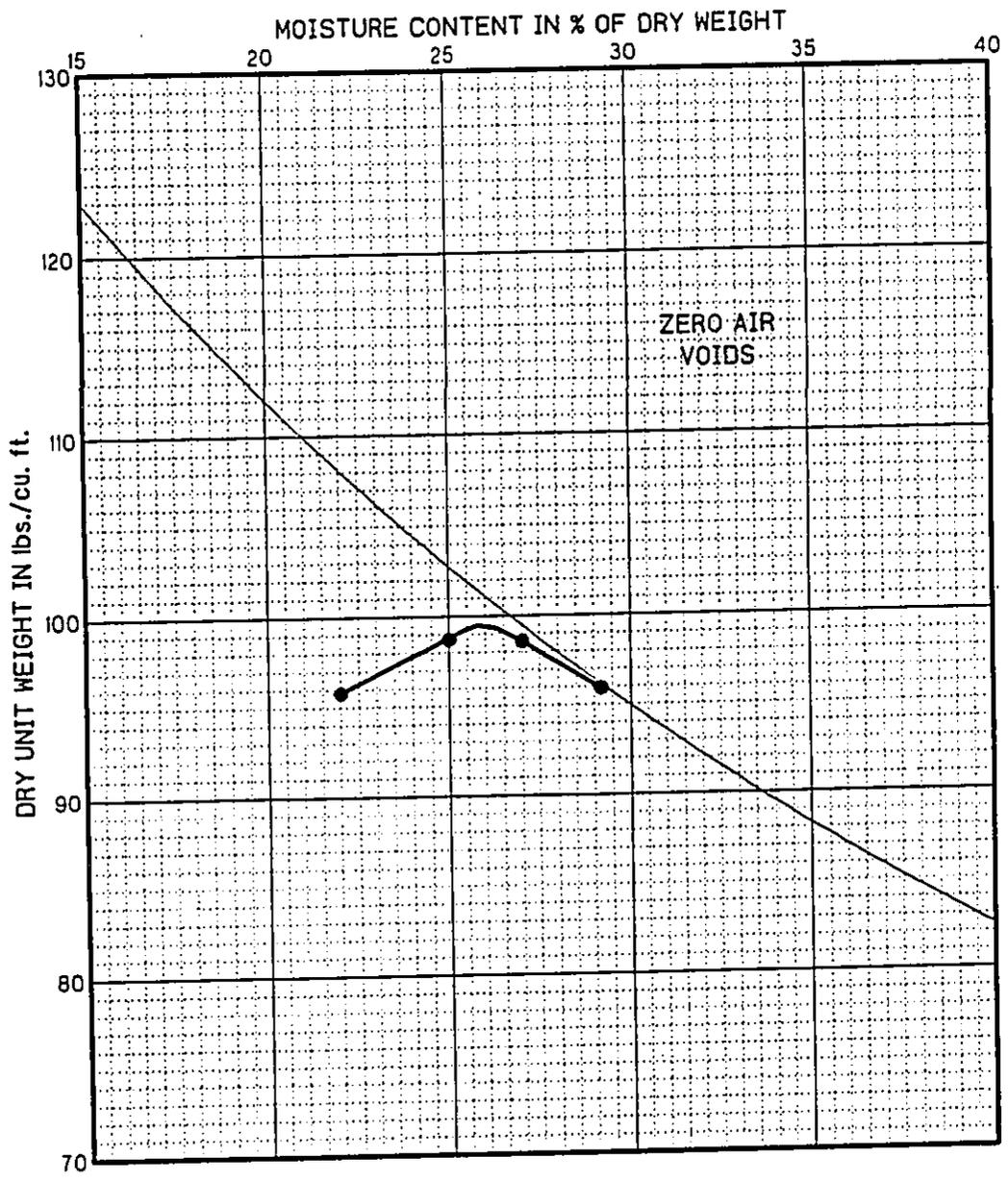


LIQUID LIMITS
ATTERBERG LIMITS

KEY	LOCATION	SAMPLE DEPTH (ft)	LIQUID LIMIT	PLASTICITY INDEX
1	Bulk 2	0.5-2.0	45	3

SAMPLE DEPTH 0.5 - 2.0 ft.
 ELEVATION ft.:
 SOIL Brown elastic silt (MH) w/ some sand and gravel
 COMPACTION METHOD ASTM D1557-91
 OPTIMUM MOISTURE CONTENT 26 %
 MAXIMUM DRY UNIT WEIGHT 99.5 pcf

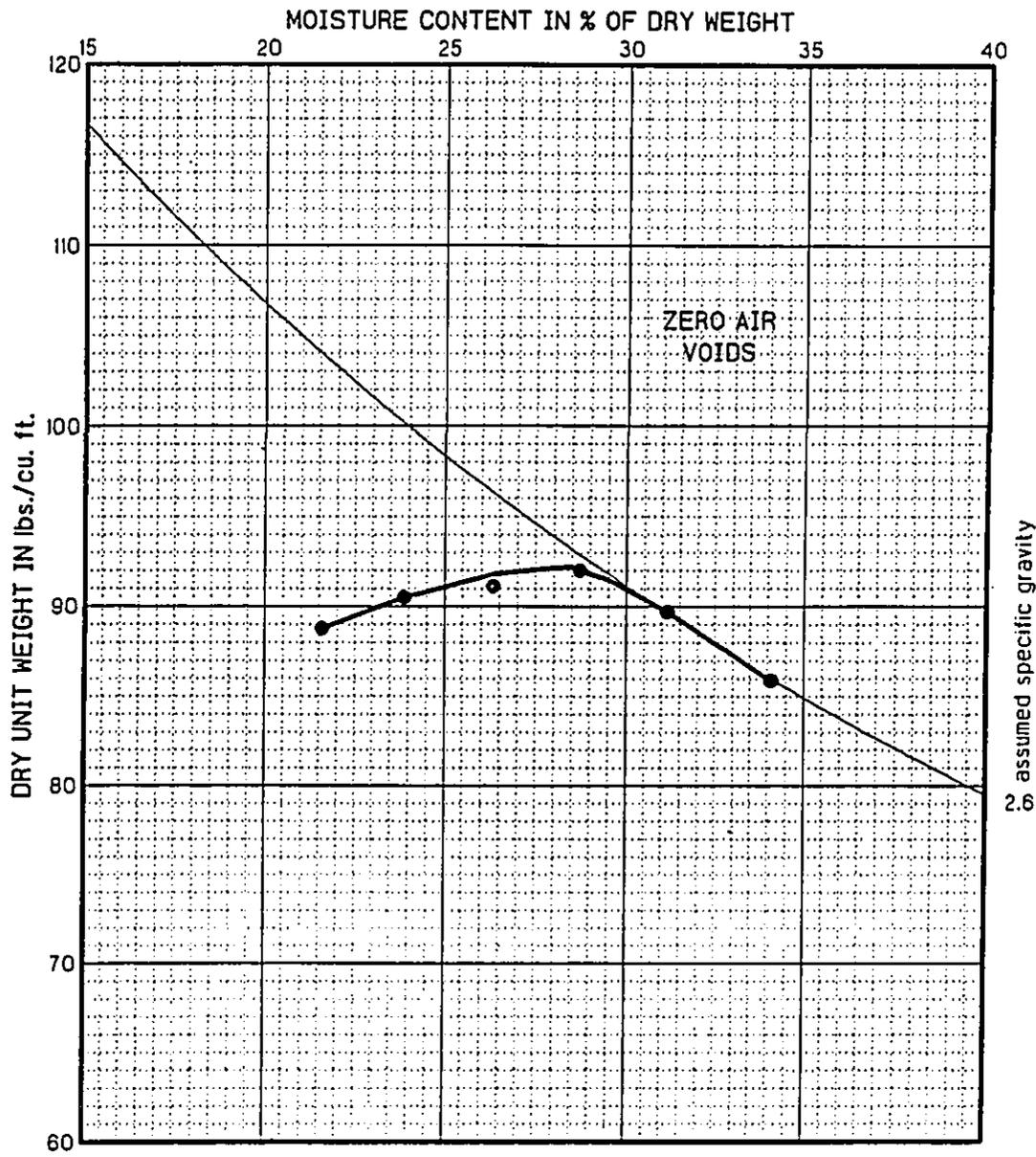
JOB NUMBER: 3771-045
 PROJECT: Honolulu Bicycle Master Plan
 Pearl Harbor, Oahu, Hawaii
 DRAWN BY: lml (12/04/2000)
BULK 1
 SAMPLE LOCATION: Near Boring 8



COMPACTION TEST DATA

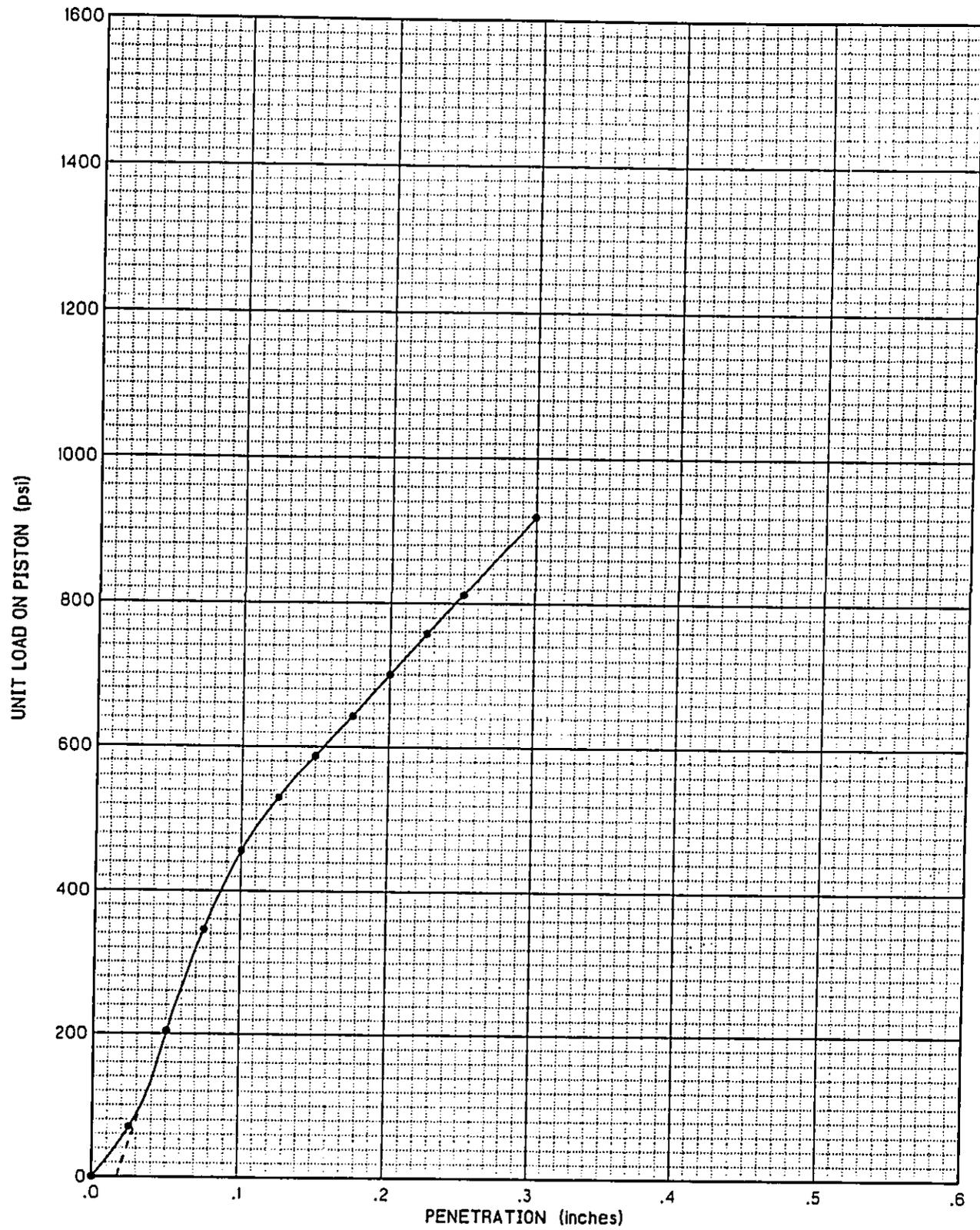
SAMPLE DEPTH 0.5 - 2.0 ft.
 ELEVATION ft.:
 SOIL Brown sandy silt (ML) w/ weathered basaltic gravel
 COMPACTION METHOD ASTM D1557-91
 OPTIMUM MOISTURE CONTENT 29 %
 MAXIMUM DRY UNIT WEIGHT 92.2 pcf

JOB NUMBER: 3771-045
 PROJECT: Honolulu Bicycle Master Plan
 Pearl Harbor, Oahu, Hawaii
 DRAWN BY: lml (12/04/2000)
BULK 2
 SAMPLE LOCATION: Near Boring 2



COMPACTION TEST DATA

PROJECT Honolulu Bicycle Master Plan
 JOB NUMBER J/11-043
 DATE 11-13-00
 DRAWN BY UG



LABORATORY CALIFORNIA BEARING RATIO (CBR) TEST RESULTS

Bulk No. (Location)	Depth (ft)	Before Soaking		After Soaking			Laboratory CBR Value	
		Moisture Content (%)	Dry Unit Weight (pcf)	Moisture Content (%)	Dry Unit Weight (pcf)	% Swell	@ 0.1"	@ 0.2"
2 (Near B-2)	0.5-2.0	28	87.0	32	87.0	0.2	48	48

Soil Description (USCS) Brown sandy silt (ML) w/ weathered basaltic gravel

Test Method ASTM D 1883-94

Pacific Geotechnical Engineers, Inc.

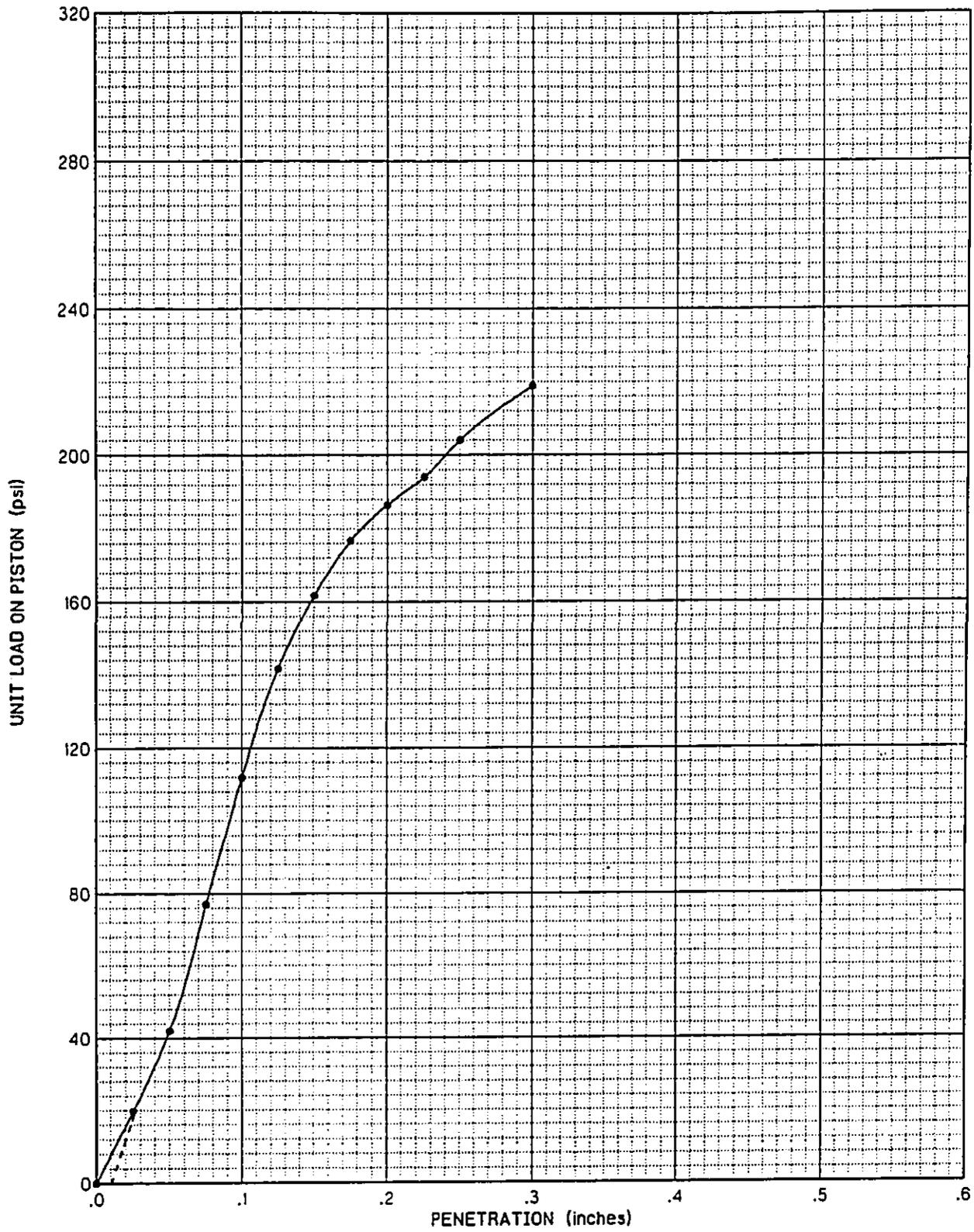
Plate 8.1

DRAWN BY *fyj*

DATE *11-15-66*

JOB NUMBER *J117-043*

PROJECT *Improving the cyclic Master Trail*



LABORATORY CALIFORNIA BEARING RATIO (CBR) TEST RESULTS

Bulk No. (Location)	Depth (ft)	Before Soaking		After Soaking			Laboratory CBR Value	
		Moisture Content (%)	Dry Unit Weight (pcf)	Moisture Content (%)	Dry Unit Weight (pcf)	% Swell	@ 0.1"	@ 0.2"
<i>1 (Near B-8)</i>	<i>0.5-2.0</i>	<i>28</i>	<i>95.0</i>	<i>31</i>	<i>93.0</i>	<i>1.5</i>	<i>14</i>	<i>13</i>

Soil Description (USCS) *Brown elastic silt (MH) with some sand and gravel*

Test Method *ASTM D 1883-94*

Pacific Geotechnical Engineers, Inc.

Plate 8.2

TABLE 1

TORVANE SHEAR STRENGTH TEST RESULTS

Boring No.	Depth (Feet)	Unified Soil Classification	Shear Strength (psf)
1	5.0	MH	1,330
3	3.5	MH	1,680
3	6.3	MH	5,000
4	3.5	MH	4,030
5	2.0	MH	1,500
5	3.5	MH	4,480
6	1.5	MH	1,865
6	3.5	MH	2,100
6	6.5	MH	2,565

REFERENCES

1. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, by the United States Department of Agriculture, Soil Conservation Service, August 1972.
2. Stearns, Harold T., Geologic Map and Guide of the Island of Oahu, Hawaii, Hawaii Division of Hydrography, Bulletin 2, colored geologic map, 1939.
3. Visher, F.N. and Mink, J.F., Ground-Water Resources in Southern Oahu, Hawaii, Geological Survey Water-Supply Paper 1778, 1964.

CHAR & ASSOCIATES

Botanical/Environmental Consultants

4471 Puu Panini Ave.
Honolulu, Hawaii 96816
(808) 734-7828

18 December 2000

Kimura International, Inc.
1600 Kapiolani Boulevard, Suite 1610
Honolulu, Hawaii 96814

Attention: Glenn T. Kimura

**SUBJECT: Leeward Bike Path
Botanical Resources Assessment**

Dear Mr. Kimura:

A bike path linking the Pearl Harbor bike path to Leeward Community College is being proposed. The bike path would follow along an existing paved road for the majority of its length; the road would be widened to accommodate the proposed bike path. Koa haole scrub covers most of the areas bordering the existing road.

Field studies to assess the botanical resources along the bike path were conducted on 14 November 2000. The primary objectives of the survey were to:

- 1) provide a general description of the vegetation along the proposed bike path corridor;
- 2) search for threatened and endangered species as well as species of concern; and
- 3) identify areas of potential environmental problems or concerns and propose appropriate mitigation measures.

The plant names used in the discussion follow Wagner et al. (1990). The few recent name changes follow those reported in the Hawaii Biological Survey series (Evenhuis and Miller 1995-1998; Evenhuis and Eldredge 1999-2000).

Description of the Vegetation

Where the proposed bike path borders the College Gardens property, the vegetation consists of a mowed grassy strip. Buffel grass (Cenchrus ciliaris), Bermuda grass (Cynodon dactylon), and swollen fingergrass (Chloris barbata) are abundant, while scattered clumps of Guinea grass (Panicum maximum) are occasional.

Koa haole (Leucaena leucocephala) scrub vegetation occurs on the proposed bike path where it borders Leeward Community College and the U.S. Naval Reservation property. Koa haole shrubs form a somewhat dense cover, 7 to 12 feet tall. Several taller kiawe (Prosopis pallida) trees are found scattered here and there. The understory is composed of clumps of Guinea grass, 2 to 3 feet tall. Other shrubs and herbs which are associated with the koa haole scrub vegetation include spiny amaranth (Amaranthus spinosus), cheeseweed (Malvastrum coromandelianum), lion's ear (Leonotus nepetifolia), virgate mimosa (Desmanthus virgatus), Chinese violet (Asystasia gangetica), and Indian pluchea (Pluchea indica). Two native species found in the koa haole scrub are 'ilima (Sida fallax) and hoary abutilon or ma'o (Abutilon incanum). A few patches of swollen fingergrass and pitted beardgrass (Bothriochloa pertusa) are also found on the bike path corridor.

The proposed bike path proceeds downslope along a drainage easement before joining the existing Pearl Harbor bike path. This open area along the drainage easement has been extensively bulldozed and graded. Large piles of scrape material are found here; these include old school buses, rusted cars, metal roofing, concrete slabs, old lumber, etc. Scattered clumps of vegetation include castor bean (Ricinus communis), Guinea grass, fuzzy rattlebox (Crotalaria incana), Boerhavia coccinea, hairy merremia (Merremia aegyptia), kiawe, lion's ear, and 'uhaloa (Waltheria indica). A patch of koa haole scrub is found where the proposed bike path joins the Pearl Harbor bike path.

Discussion

The vegetation along the proposed bike path is composed almost exclusively of introduced plants such as koa haole, Guinea grass, kiawe, buffel grass, etc. Introduced species are all those plants which were brought to the Hawaiian Islands by humans, intentionally or accidentally, after Western contact, that is, Cook's arrival in the islands in 1778. Three native species occur on the bike path corridor; these are the 'ilima, hoary abutilon, and 'uhaloa. These three species are indigenous, that is, they are native to Hawai'i and elsewhere.

None of the plants observed during the field studies is a threatened and endangered species or a species of concern (U.S. Fish and Wildlife Service 1999). All of the plants can be found in similar disturbed, lowland habitats throughout the islands. No wetlands or wetland vegetation (Reed 1988) occur within the bike path corridor.

Given these findings, the proposed bike path is not expected to have a significant negative impact on the botanical resources. There are no botanical reasons to impose any restrictions, conditions, or impediments to the proposed plans.

Please do not hesitate to contact me should you have any questions regarding the findings in this letter report.

Sincerely,



Winona P. Char

References

- Evenhuis, N.L. and S.E. Miller, editors. 1995-1998. Records of the Hawaii Biological Survey. Bishop Museum Occasional Papers Nos. 41-56.
- Evenhuis, N.L. and L.G. Eldredge, editors. 1999-2000. Records of the Hawaii Biological Survey. Bishop Museum Occasional Papers Nos. 58-64.
- Reed, P.B., Jr. 1988. National list of plant species that occur in wetlands: Hawaii (Region H). U.S. Fish and Wildlife Service Biological Report 88(26.13).
- U.S. Fish and Wildlife Service. 1999. U.S. Fish and Wildlife Service species list, plants. March 23, 1999. Pacific Islands Ecoregion Office, Honolulu, HI.
- Wagner, W.L., D.R. Herbst, and S.H. Sohmer. 1990. Manual of the flowering plants of Hawai'i. 2 vols. University of Hawai'i Press and Bishop Museum Press, Honolulu, HI. Bishop Museum Special Publication 83.

D.
Wildlife Survey
Tim J. Ohashi
Certified Wildlife Biologist



**Wildlife Survey
Leeward Bike Path
Waiawa, Oahu, Hawaii**

**Prepared for:
Kimura International, Inc.
1600 Kapiolani Blvd., Ste. 1610
Honolulu, Hawaii 96814**

**Prepared by:
Tim J. Ohashi
Certified Wildlife Biologist
P.O. Box 786
Volcano, Hawaii 96785
Email: ohashi@aloha.com**

December 22, 2000

1.0 Introduction

Field surveys were conducted on November 21-22, 2000 to assess the wildlife resources found along a proposed bike path in Pearl City, Oahu, Hawaii. The objectives of the surveys were to provide a record of wildlife on the site and determine whether the project would adversely impact any important wildlife resources in the area.

2.0 Site and Habitat Description

The proposed bike path would start at the end of Waiawa Road (50 ft. elev.) and follow an unimproved road, west for about 1/4 mi., then south along a driveway where it would meet up with the existing Pearl Harbor bike path (2 ft. elev.) (Figure 1). The proposed path is upland of the Waiawa spring wetlands and avoids any wetland site. The area is very diverse with houses, apartments, businesses and watercress farms. There are many dilapidated structures, trash and abandoned vehicles within the wetland and upland areas.

The Waiawa Unit of Pearl Harbor National Wildlife Refuge (NWR) sits on the west base of the Pearl City Peninsula, just south of the Pearl Harbor bike path. The project falls within vegetation zone A of Ripperton and Hosaka in Schwartz and Schwartz (1949). Zone A is characterized by a mean annual temperature of 75 degrees, with maximum temperatures exceeding 90 degrees. The zone typically has less than 20 inches of rain. In upland sites the ground cover is sparse with semi-desert conditions. Kiawe (*Prosopis pallida*), koa haole (*Leucaena glauca*), klu (*Acacia farnesiana*), Guinea grass (*Panicum maximum*), and uhaloa (*Waltheria americana*) were present along the proposed route. There were a host of ornamental trees and plants within the college campus and on residential property. The most common trees were mango (*Mangifera indica*), monkey pod (*Samanea saman*), banyan (*Ficus* sp.), kukui (*Aleurites moluccana*) and the octopus tree (*Brassaia actinophylla*).

3.0 Method

A brief visit was made on November 21, 2000, from 17:00 - 18:10 hrs to determine the presence of nocturnally active wildlife species. Sunset was at 17:45 hrs. On November 22, the entire route was walked beginning at the end of Waiawa Road at 06:35 hrs and ending at 07:36 hrs at the Pearl Harbor bike path (Figure 1). Sunrise was about 06:30 hrs. All birds and mammals seen or heard along the route were

recorded. Additional records were made for wildlife seen within the wetlands.

4.0 Results

Birds

Project Site

The route of the proposed bike path will remain on upland sites (Figure 2). A total of 13 species of birds were encountered on the proposed route. They are listed in order of abundance:

Common myna (*Acridotheres tristis*)
English sparrow (*Passer domesticus*)
Spotted dove (*Streptopelia chinensis*)
Red vented bulbul (*Pycnonotus cafer*)
Zebra dove (*Geopelia striata*)
Common waxbill (*Estrilda troglodytes*)
Cattle egret (*Bulbulcus ibis*)
Japanese white-eye (*Zosterops japonicus*)
Red crested cardinal (*Paroaria coronata*)
House finch (*Carpodacus mexicanus frontalis*)
Northern cardinal (*Richmondia cardinalis*)

All the species found immediately along the route and on adjacent upland habitat were naturalized introduced species. No native forest or shrub habitat was present. The monkey pod trees among the houses provided roosting habitat for many of the species listed above. From these roosts, mynas, spotted doves, zebra doves, English sparrows, and house finches were observed making their morning forays out to feeding sites on the Leeward Community College campus and other points mauka of the site. Small flocks of common waxbill fed on Guinea grass and other introduced grass seeds along the roads. Northern cardinals were in denser shrub stands. Japanese white-eyes and red-vented bulbuls were foraging in the ornamental shrubs and trees. Cattle egrets were seen flying overhead in the morning, fanning out from the Waiawa Unit of Pearl Harbor NWR.

Wetland

The Waiawa springs wetland was within the curve of the bike path route at a lower elevation. It was comprised of excavated ponds, watercress impoundments and emergent vegetation, along with trash and abandoned buildings and vehicles (Figure 3). The proposed bike route does not go through any wetland site, but is in proximity to the wetland. The federally listed endangered Hawaiian coot (*Fulica americana alai*) and Hawaiian stilt (*Himantopus himantopus knudsensi*) were present in ponds and watercress patches. The Pacific golden plover (*Pluvialis fulva*), wandering tattler (*Heterocelus incanum*), and black-crowned night heron (*Nycticorax nycticorax*) were seen on the shoreline and berms. The northern cardinal (*Cardinalis cardinalis*) and melodius laughing thrush (*Garrulax canorus*) were in hau (*Hibiscus tiliaceus*) and mangrove (*Rhizophora mangle*) thickets that line the shoreline of Middle Loch. The strawberry finch (*Amandava amandava*) was in wayside grasses along the existing bike path. Feral pigeons (*Columba livia*) were seen flying over the wetland areas.

No native short-eared owl (*Asio flammeus sandwichensis*) were seen during the survey. This species is widespread on all the main islands except Oahu where the population on that island is listed by the State of Hawaii as endangered. Short-eared owls feed extensively on house mice (*Mus musculus*) and Polynesian rats (*Rattus exulans*).

Mammals

Stray dogs were common in the area. One feral cat was observed along the bike path route, but no cat colonies were present. While no trapping was conducted to verify the presence of other small mammals the area should support rats (*Rattus* sp.), house mouse (*Mus musculus*) and small Indian mongoose (*Auropunctatus herpestes*).

The Hawaiian hoary bat (*Lasiurus cinereus semotus*) is a federally listed endangered species. The wetland habitat adjacent to the project site may be suitable for foraging bats but no bats were observed on the late evening survey.

5.0 Conclusion and Summary

The proposed bike path is planned along the route of an existing roadway and driveway and remain wholly on upland sites. The area does not support native plant

communities and therefore no native forest bird species. Waiawa springs wetland is adjacent to the route. Endangered waterbirds were present within the wetland, but the proposed project will not impact any wetlands and therefore have no effect on any waterbird species.

6.0 Bibliography

Berger, A.J. 1972. Hawaiian Birdlife. Univ. of Hawaii Press. 270 pp.

Kepler, C.B. and J. M. Scott. Notes on Distribution and Behavior of the Endangered Hawaiian Hoary Bat (*Lasiurus cinereus semotus*), 1964-1983. Elepaio 50(7):50-64.

Neal, M.C. 1965. In Gardens of Hawaii. Bishop Museum Press. Spec. Publ. 50. 924 pp.

Schwartz, C.W. and E.R. Schwartz. 1949. The game birds in Hawaii. Board of Commissioners of Agriculture and Forestry, Territory of Hawaii. 168 pp.

Tomich, P.Q. 1986. Mammals in Hawai'i. A Synopsis and Notational Bibliography. 2nd Ed. Bishop Museum Press. Spec. Publ. 76. 375 pp.

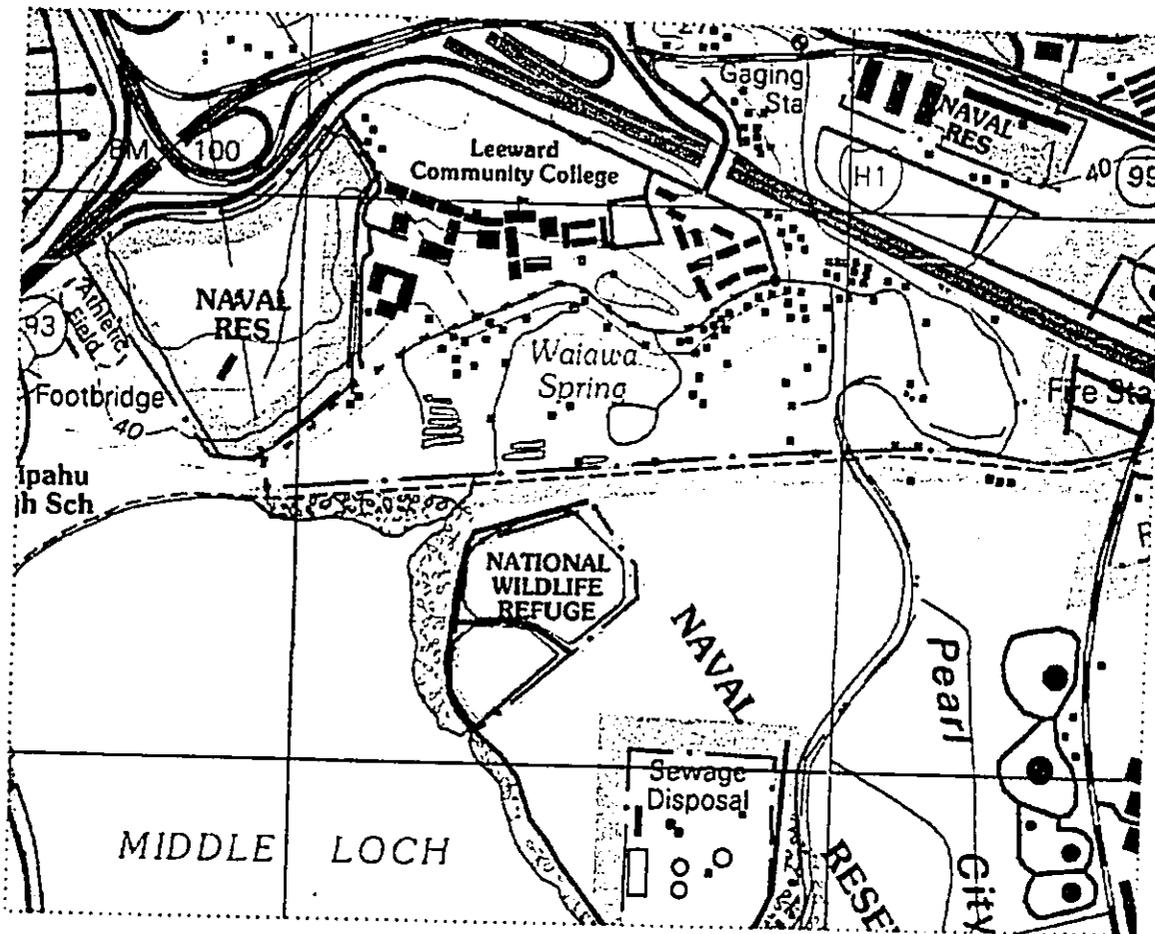


Figure 1. Route of bike path and wildlife survey (orange dash line), Waiawa, Oahu, Hawaii.

Wildlife Survey of Leeward Bike Path Route, Waiawa, Oahu, Hawaii



Figure 2. Bike route showing upland vegetation, predominantly koa haole. Leeward Community College campus in background, with monkey pod and kukui trees, Waiawa, Oahu, Hawaii, November 22, 2000.

Wildlife Survey of Leeward Bike Path Route, Waiawa, Oahu, Hawaii

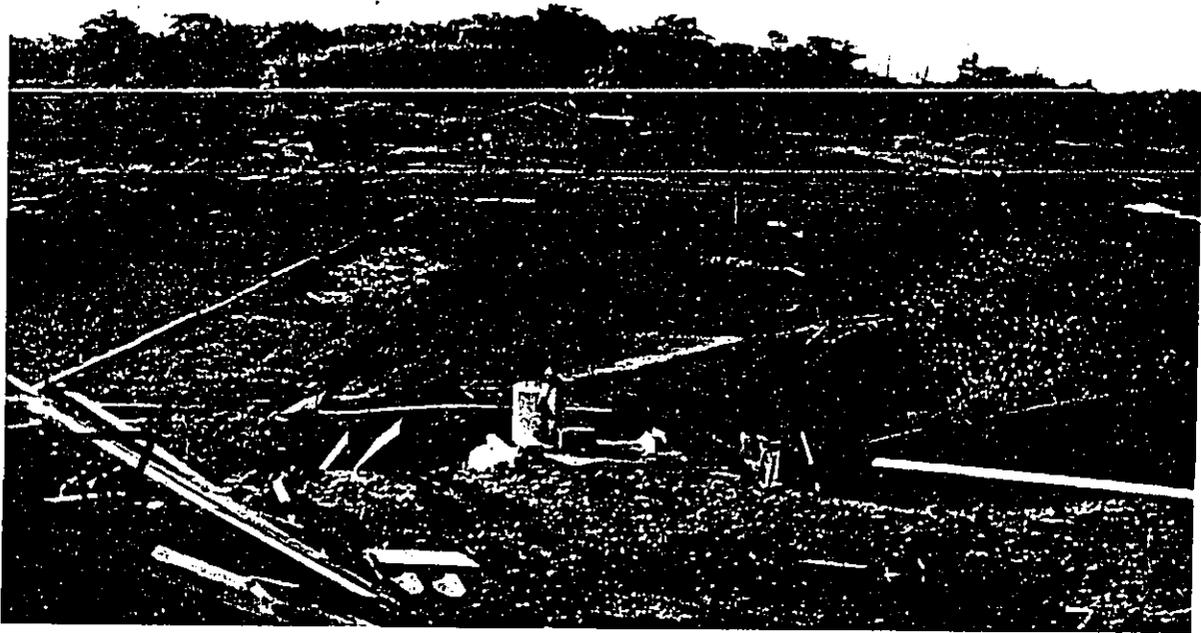


Figure 3. Watercress farm in Waiawa spring wetland below proposed bike route, Waiawa, Oahu, Hawaii, November 22, 2000.

**ARCHAEOLOGICAL ASSESSMENT
OF THE LEEWARD BIKE PATH, WAIAWA AHUPUA`A,
ISLAND OF O`AHU
(TMK 9-6-03)**

by

Jared H. Hammatt, B.A.
David Shideler, A.B.D.
and
Hallett H. Hammatt, Ph.D.

Prepared for
Kimura International, Inc.

Cultural Surveys Hawai`i, Inc.
November 2000

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I. INTRODUCTION

A. Project Background

At the request of Kimura International, Inc., Cultural Surveys Hawai'i, Inc. conducted an archaeological assessment for a proposed bike path that will follow an existing road corridor that runs through parcels owned by Kamehameha Schools and the Magoon Estate. The project area is within Waiawa *Ahupua`a*, on the island of O`ahu (TMK 9-6-03) (Figures 1 & 2). The parcel is bounded to the west by an unmarked boundary with Waipi`o *Ahupua`a*, to the east by an unmarked boundary with the Mānana *Ahupua`a*, to the north by the University of Hawai'i, Leeward Community College campus, and to the south by the Middle Loch of Pearl Harbor and the Pearl City peninsula. Currently, the study area is the site of an existing single lane road (Waiawa Rd.) approximately 16 feet wide with portions both roughly paved and graveled. The proposed bike path will connect to a section of the existing Pearl Harbor Bike Path, which runs east-west along the *makai* portion of the project area.

B. Scope of Work

The scope of the work for this archaeological assessment comprised:

1. Historic research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near this property.
2. Field inspection of the project area to identify any surface archaeological features and to investigate and assess the potential for impact to such sites. This assessment will identify any sensitive areas that may require further investigation of mitigation before the project proceeds.
3. Preparation of a report to include the results of the historical research with an assessment of archaeological potential based on that research, with recommendations for further archaeological work, if appropriate.

C. Methods

The study area was inspected by two archaeologists Douglas Borthwick and Jared Hammatt on November 14, 2000. Field notes and photographs were taken during a walk-through examination of the entire route of the proposed bike path. Background research included: a review of previous archaeological studies on file at the State Historic Preservation Division of the Department of Land and Natural Resources; the Hawaii Public Library and study of historic maps at the Survey Office of the Department of Accounting and General Services. The Land Commission Award information for the *ahupua`a* was gleaned from the Waihona `Āina database. Many of the sources and maps utilized were also available in Cultural Surveys Hawai'i, Inc.'s library.

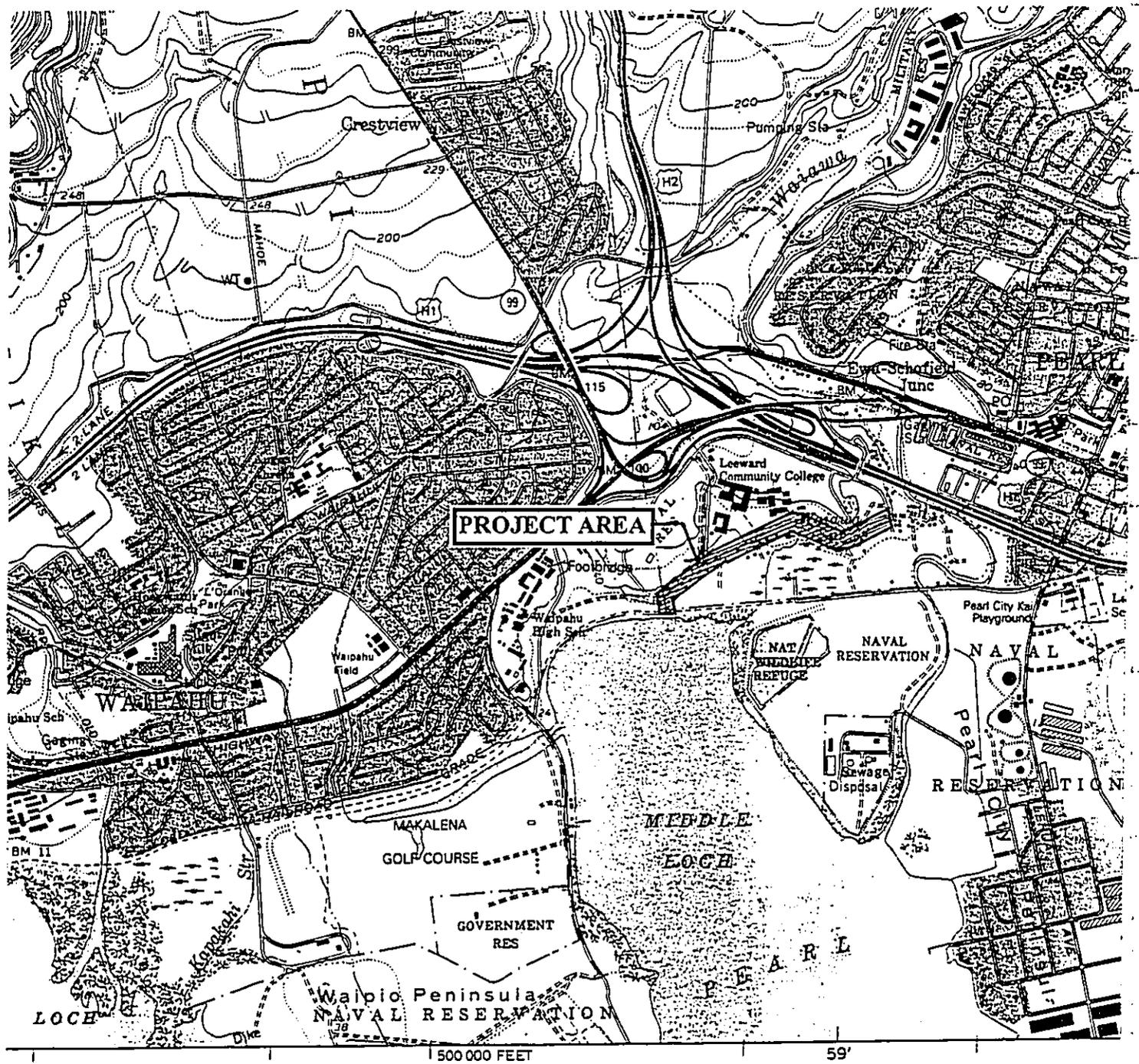


Figure 1 Portion of USGS 7.5 Minute Series Topographical Map, Waipahu Quadrangle, showing present study area

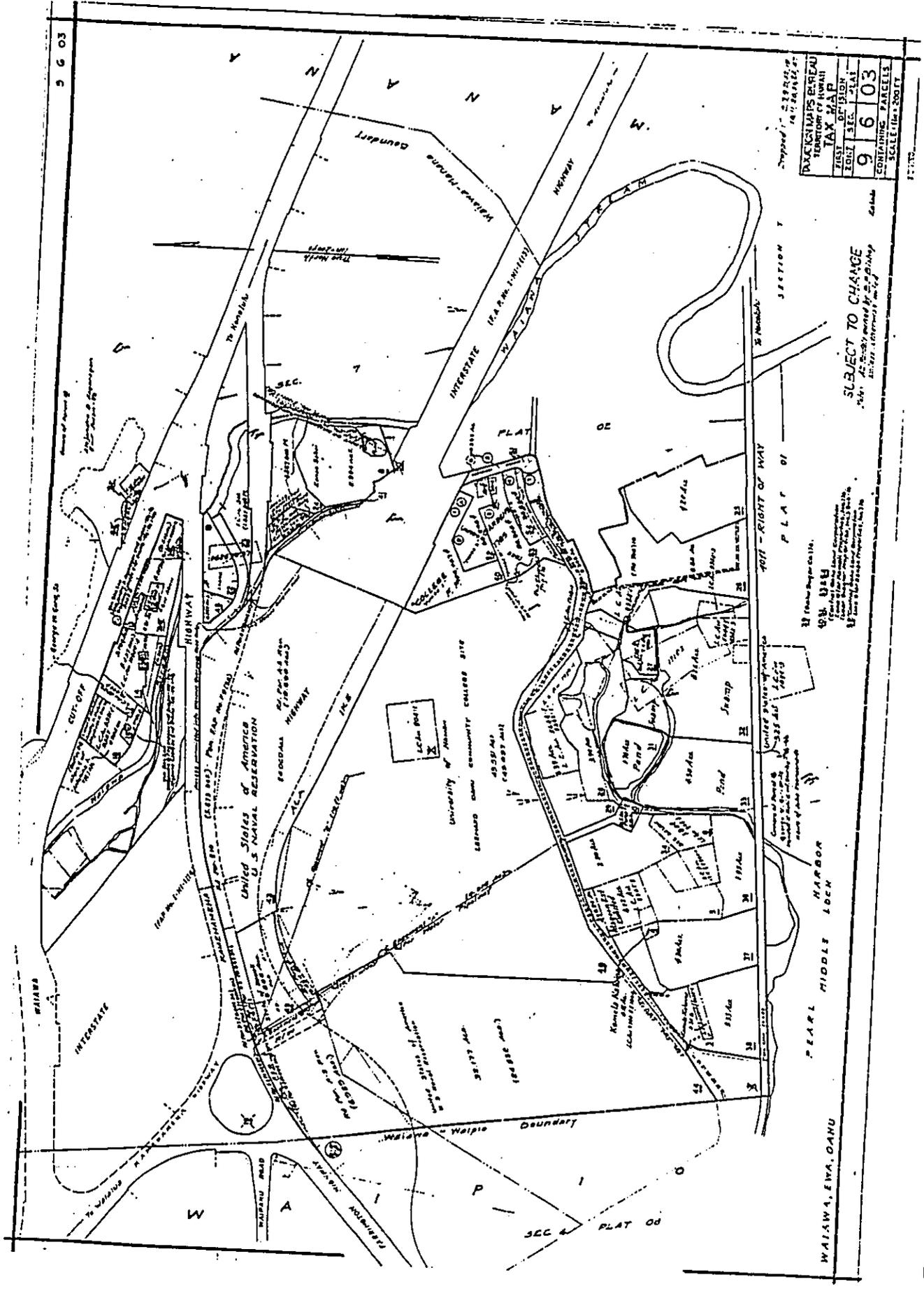


Figure 2 Tax map (9-6-03) showing study area

D. Project Area Description

The bulk of the project area is an existing road corridor approximately 80% paved, 10% gravel and 10% bulldozed soil and fill. The road is approximately 16 to 18 feet wide and 2500 feet long. Both the Kamehameha Schools and Magoon Estate portions of the project area, are leased to various individuals for both commercial and residential uses. The eastern portion of the project area is comprised of small farms and residences, while the western portion is comprised of a parcel leased by Okada Trucking Company and appears to be used as a storage area and refuse dump. A defunct concrete irrigation ditch lies just outside the northern end of the project area. (Figs. 3-7)

E. Geography and Environment

Waiawa *Ahupua`a* stretches from the Middle Loch of Pearl Harbor northeast to the crest of the Ko`olau Mountains, and encompasses the low-lying freshwater springs and wetlands around Middle Loch as well as the leeward slopes and mountainous terrain in the higher elevations of the *ahupua`a* providing abundant resources for native Hawaiian subsistence.

The geology of the area is marked prominently by the formation of the Schofield Plateau and its subsequent erosion, the formation of limestone areas of Pearl Harbor, and the deposition of alluvium at the lower elevations. There are two main soil types inside the project area, Pearl Harbor Clay defined as a very poorly drained soils on nearly level coastal plains ranging from sea level to 5 feet in elevation, with 18- 40 inches of annual rainfall, very dark gray, mottled clay with very slow permeability and runoff with a slight erosion hazard (Foote et al. 1972: 112). The other type of soil is Waipahu silty clay defined as well drained soils on marine terraces that are nearly level to moderately sloping with elevations ranging from sea level to 125 feet the rainfall amounts to 25-35 inches annually (Foote et al. 1972: 135).

The area around Pearl Harbor is predominantly alluvium and limestone from old reef formations formed during periods of higher sea level (MacDonald and Abbot 1974:354-356; Sterns 1939:37). The environment surrounding the project area is well suited for agriculture with its productive soils and freshwater springs, as well as for marine harvesting activities with its protected bays for canoes and level shallow areas, which were easily enclosed and converted into fish ponds.

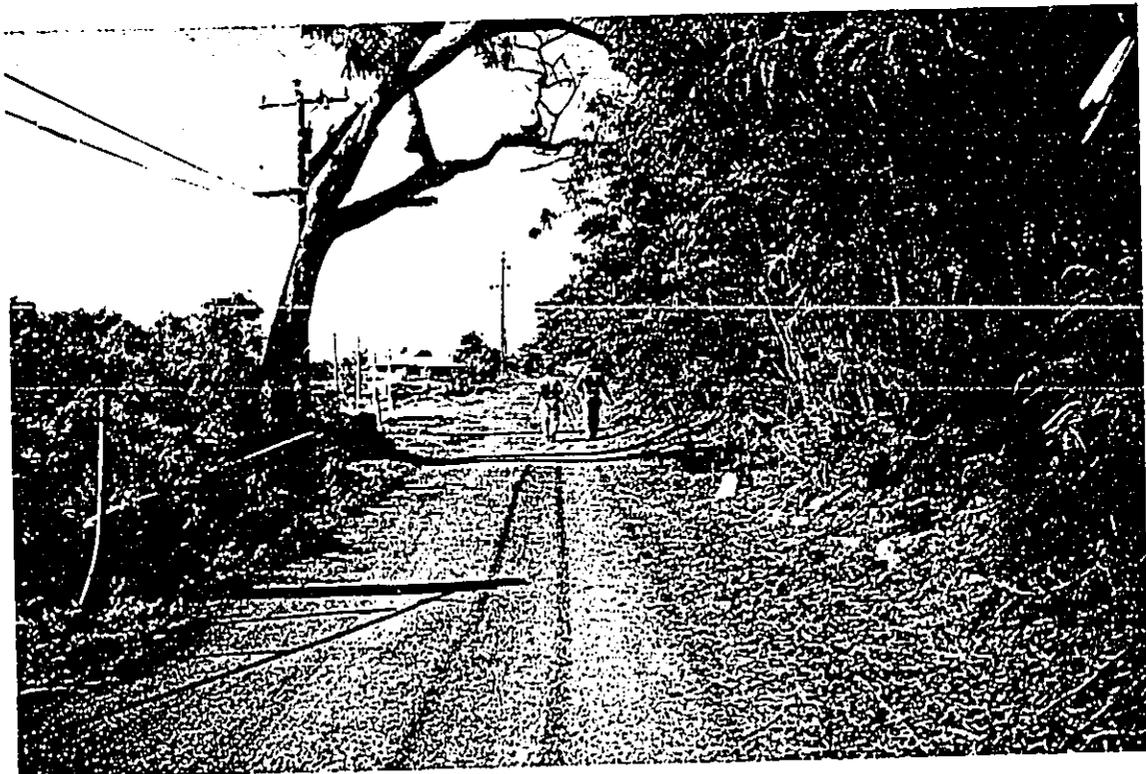


Figure 3 Project area road corridor (view west)



Figure 4 Okada Trucking Co. junk yard southwest portion of project area (view north)

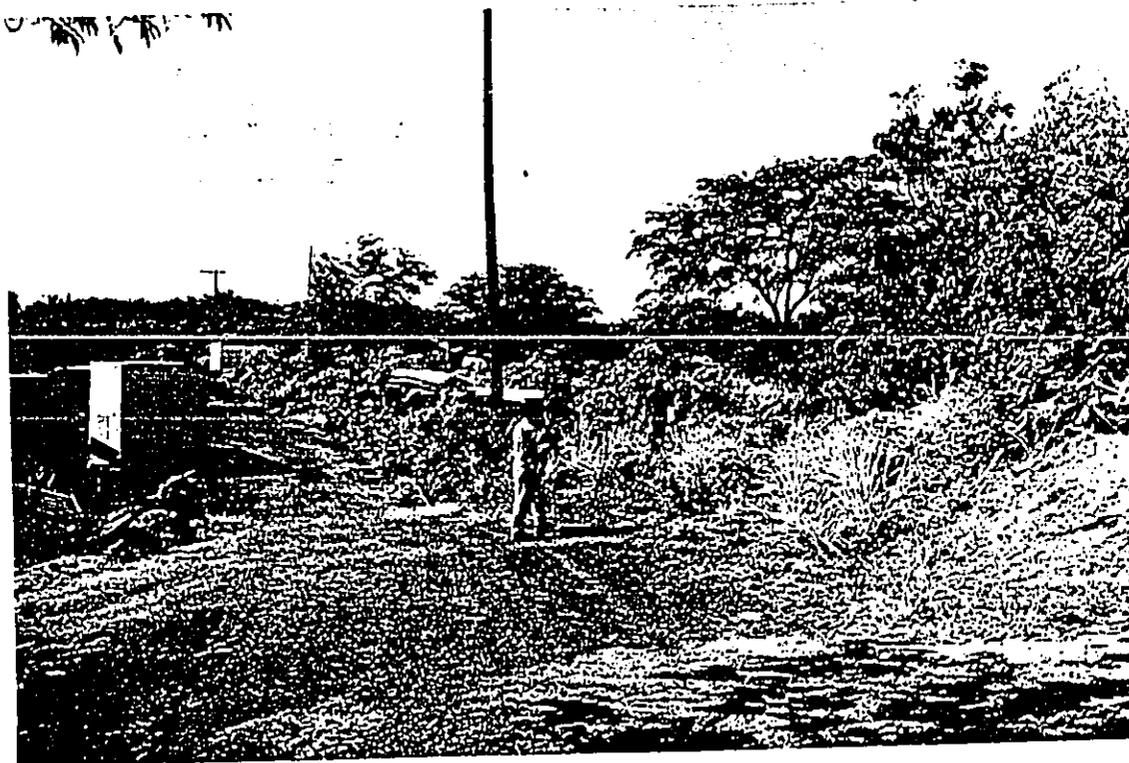


Figure 5 Gravel section of project area Okada Trucking Co. Southwest portion of project area (view south)



Figure 6 Paved section eastern portion of project corridor (view east)

II. HISTORICAL BACKGROUND

This section reviews the documentary evidence to characterize the *makai* portion of Waiawa *Ahupua`a* by general time periods from Late prehistoric to early historic and provides a general overview of transitions that affected the region through the 19th and into the 20th century.

A. Traditional Accounts

There are relatively few references to Waiawa in the traditional literature. Most of these references emphasize the rich agricultural and aquacultural environment. Specifically mentioned are the prized "Kai" variety of taro and the highly valued fresh water springs. Also mentioned are the naturally occurring abundance of shellfish and other marine resources as well as the man-made fishponds and fish traps located along the of the coastal fringes of Pearl Harbor.

The name Waiawa literally means "milkfish water" (Pukui *et al.* 1984:221) a designation which refers to the ancient fishponds which were often stocked with awa or milkfish. The large concentration of fishponds around Pearl Harbor is considered "The primary reason for `Ewa's prominence in history and as an *ali`i* stronghold..."(Handy 1972:470).

B. Historic Land Use Documentation

Fresh water, good agricultural land and marine resources were plentiful around Pearl Harbor. From both historic references and historical documentary data, it seems clear that, at least in the late pre-historic/early historic period, the population of Waiawa was concentrated in the *makai* (southern) areas around these abundant resources. George Vancouver was anchored off the entrance to West Loch in 1793 and was told of the area at "a little distance from the sea, [where] the soil is rich and all the necessaries of life are abundantly produced" (Sterling and Summers 1978:36). A Mr. Whitbey, one of Vancouver's crew, observed "from the number of houses within the harbor it should seem to be very populous; but the very few inhabitants who made their appearance were an indication of the contrary" (*ibid.*). E.S. Craighill Handy notes that:

In the flatland, where the Kamehameha Highway crosses the lower valley of Waikele Stream [northwest of the project and similar in character to Waiawa], there are the remains of terraces on both sides of the road, now planted in bananas, beans, cane and small gardens. For at least 2 miles upstream there were small terrace areas. (Handy 1940:82)

The presence of permanent streams and springs, and productive soil in combination with the occurrence of these terraces clearly indicates high agricultural productivity for native Hawaiians.

There are also references to the abundant marine resources that Pearl Harbor had to offer. Charles Wilkes, leader of the Wilkes Expedition of 1838 to 1842, recorded: "Pearl-River Harbor affords an abundant supply of fine fish. Two species of clams are procured here, called by the natives *`ōkupe* and *`ōlepe*" (in Sterling and Summers 1978:49). Gilbert McAllister reports that the entire West Loch of Pearl Harbor was known as Ka-i-hu-o-Pala`ai and this body of water was renowned for the large schools of mullet which arrived every year between March and April (Sterling and Summers 1978:52).

The numerous fishponds of Waiawa are another resource that would have greatly increased the productivity of the area. Apple and Kikuchi (1975:2) discuss the impact that such fishponds have on the general population of an area (Figs. 7 and 8):

Accessibility- to these ponds and their products was limited to the elite minority of the native population - the chiefs and priests. Prehistoric ponds and pond products appear to have been taboo to the vast majority of Hawaiians and to have yielded them no direct benefit. However, indirect public benefit came from ownership by the chiefs of exclusive food sources. Royal fishponds, ..insured less demand on the commoners' food production resources. Every fish taken from a royal fishpond left its counterpart in the natural habitat available to lesser chiefs and commoners.

There are three fishponds listed in the vicinity of the project area were recorded by Gilbert J. Mcallister During the 1930s:

- 1) Site 118. Loko Apala, described as "...only a few acres in area and completely surrounded by a wall 225 feet long, undoubtedly of modern construction. Formerly, the pond is said to have been 76 acres in extent".
- 2) Site 119. Loko Kuhialoko, " A long, narrow pond, now only a few acres in size, with the wall running the length of one of the long sides. It formerly covered 133 acres. The wall is about 3000 feet in length and there are three makaha".
- 3) Site 120. Loko Mo`o described as being "... just north of the railroad track in Waiawa. It formerly covered 13 acres, but is now a very small pond". The fishponds of Waiawa, although not necessarily representing beneficial resources for the commoners, can be seen as evidence for a thriving chiefly class in the ahupua'a. (McAllister 1933:p105)

The size of the population of Waiawa in the late prehistoric/early historic period can only be speculated, the earliest missionary census - accomplished between 1831 and 1832 - counted in Waiawa to Waipi`o a total of 913 inhabitants: 386 adult males, 362 adult females, 97 male children, and 68 female children (Schmitt 1973:19). Total population counted in the thirteen *ahupua`a* comprising `Ewa District was 4,015 (Schmitt 1973:38).

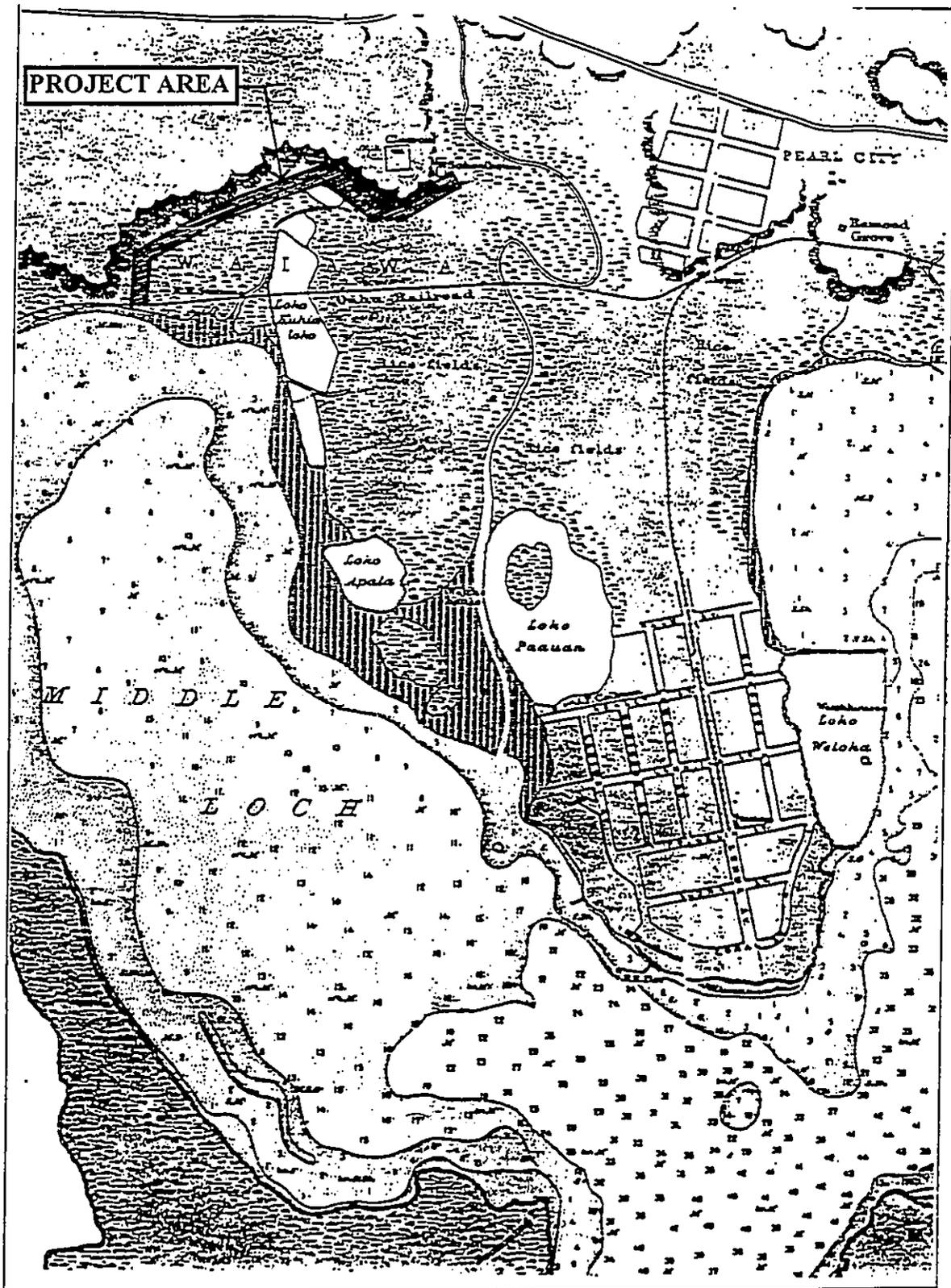


Figure 7 1897 USS Bennington Map showing fishponds and rice fields (Henry and Rosendahl 1993:5)

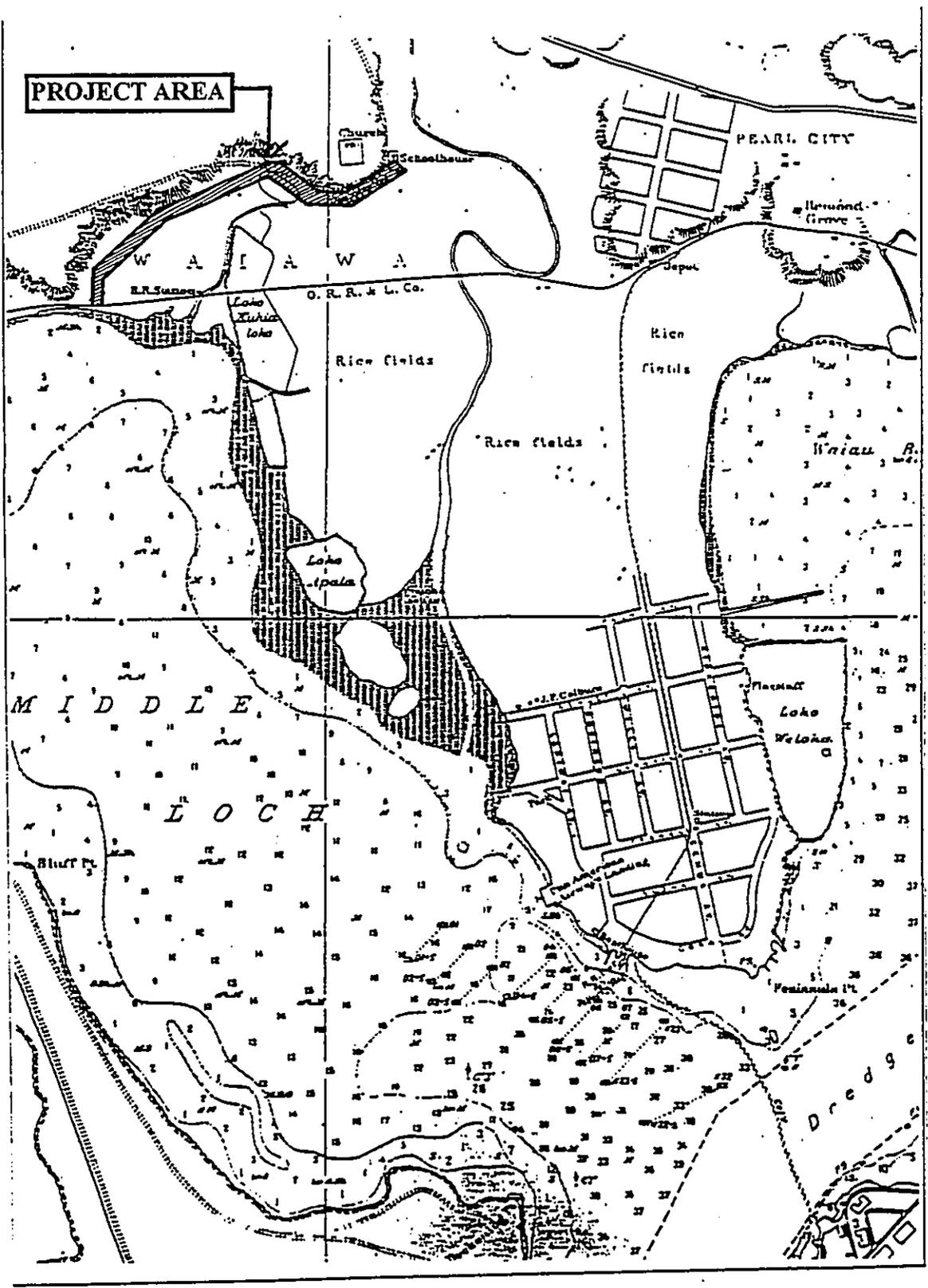


Figure 8 1941 USS Bennington Map showing fishponds and rice fields (Henry and Rosendhal 1993:6) showing irrigation ditch in northern section of map.

Native Hawaiian activity and habitation at the middle of the 19th century continued to be clustered in the *makai* (coastal) lowlands around the meander of Waiawa Stream and the Fishponds near the coast. Land Commission Award (LCA) documents from the Māhele indicate that the present study area was comprised of taro *lo`i* (irrigated fields), and associated house lots that continued to be utilized well into the 19th century (Fig. 9).

During the later 1800's, the taro fields and fishponds in and adjacent to the present study area were converted to rice fields as Chinese immigrants began to lease and purchase Waiawa lands. By 1892, the study area was located within an expanse of rice fields that extended from Waiawa to Waiau.

A substantial Chinese population developed in the area of Waiawa:

Some of the new Chinese residents had left their homeland solely to work in Hawaii's rice fields. Others had completed sugar contracts or bought releases with funds provided by Chinese rice planters. Soon, Waipahu land purchased from taro growers and larger landholders sprouted with grain ... (Nedbalek 1984:6)

The sugar plantation that had brought the original Chinese immigrants to Waiawa was the O`ahu Sugar Company — based in Waipahu — which had incorporated on March 30, 1897. Already in November of that year, 2000 acres had been cleared. By the mid-1920s, the company's fields extended through much of Waiawa but had not extended *makai* as far as the present study area. However the lands of Leeward Community College immediately north of the project area are former sugar cane fields. Evidence of commercial sugar cane adjacent to the project area includes the concrete ditch paralleling Waiawa Road and the abandoned Oahu Sugar Co. Pumping Station in the remnant Loko Mo`o *makai* (south) of the project area. Additionally, the existing Bike Path utilizes the O.R.&L berm (See Fig.8).

When the United States entered World War II in 1941, portions of the Pearl Harbor area not already developed for military purposes were taken over by the U.S. government and restricted to civilian access. It was also during the war that the large fishponds and portions of the Pearl Harbor shore line were filled in [information provided by DeSoto Brown of the Bernice Pauahi Bishop Museum whose family owned Waipi`o Peninsula prior to the war]. It is probable that the fishponds and other wetland areas of the *makai* portion of Waiawa were filled during this period. Presently the former *lo`i* are a mix of diversified agriculture - primarily watercress- and base yards for a variety of businesses. In addition, Leeward Community College and a housing development abut the northern side of Waiawa Road. Thus, the project area is utilized for a mixture of urban and agricultural purposes.

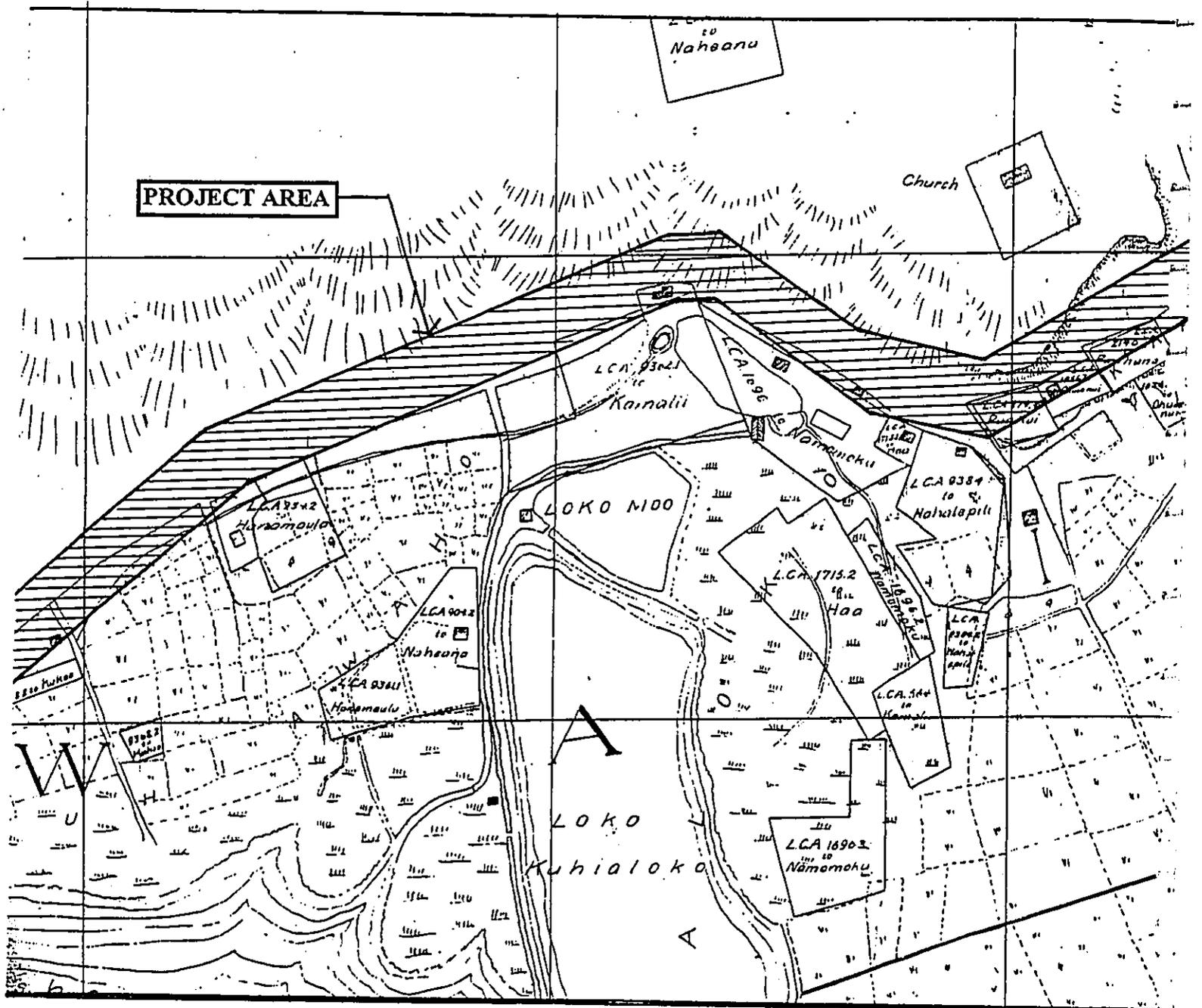


Figure 9 1887 S.E. Bishop map of Waiawa, Manana and Waimano, Oahu. R.M. 1258 Scale 1:2400, showing proposed bike path in relation to LCA's.

III. PREVIOUS ARCHAEOLOGICAL STUDIES IN WAIAWA

A review of reports currently on file in the library of the State Historic Preservation Division indicates that no inventory-level archaeological surveys have been conducted within the present study area. The Hawai'i Register of Historic Places lists the Pearl Harbor Naval Base Site (Site 50-80-09-9992), made up of the large historic district of Pearl Harbor that includes all three lochs of Pearl Harbor. No National Register of Historic Places sites are located within the project area.

State site 50-80-09-5302 (Fig. 10) is the only State site closely associated with the project corridor. This site involves human skeletal remains uncovered during excavation of a sewer line trench located south of the project corridor (at 96-035 Waiawa Road) directly south of the Leeward Community College tennis courts. Scientific Consultant Services, Inc. was hired by to remove the skeletal remains; further information regarding removal, findings and subsequent re-interment is not presently available. (Figure 10 map- showing location of burial adjacent to road corridor)

Summarized below in chronological order are the archaeological studies within Waiawa *Ahupua`a* currently on file in the library' of the State Historic Preservation Division. The studies are listed by the author(s) and date of publication.

Table 1: Archaeological Studies in the Waiawa *Ahupua`a*, Island of O`ahu

Author(s)/Date	Location	Nature of Work	Findings (all sites 50-80-09-***)
McAllister 1933	Waiawa	Island-wide Survey	Identified five sites within Waiawa: (Site 117) Loko Paauau fishpond. (Site 118) Loko Apala fishpond. (Site 119) Loko Kuhialoko fishpond. (Site 120) Loko Moo fishpond. (Site 121) Puoiki Heiau
Hammatt and Borthwick 1985	37-Acre wetland parcel Waiawa	Reconnaissance	Severe modern modification and no trace of archaeological sites or features of historical significance.
Barrera 1987	Waiawa Ridge	Reconnaissance	four sites were recorded and given State site numbers 1469, 1470, 1471, 1472.
Pietrusewsky and Mahoney 1988	Leeward Community College (Waiawa)	Analysis of Skeletal Remains	Analysis of small assortment of human skeletal remains found at a construction site on the campus of Leeward Community College. Minimum of six individuals, possibly of Chinese ancestry.

Goodman and Nees 1991	3,600 acres in Waiawa (inland from coast)	Reconnaissance and Inventory Survey	Four pre-contact sites were found, including a complex of rock shelters with terraces and associated petroglyphs (site -2263; a complex of six rock mounds; Site -2265 (B4-12); a trail; -2264 (B5-18); and a lithic scatter -2262 (B-408). No evidence was found for permanent habitation or dry land agriculture
Bishop Museum 1991	Waiawa Ridge (Waiawa & Manana stream junction)	Site Survey	a field trip to investigate Puoiki Heiau, State site -121, included site descriptions
Henry and Rosendahl 1993	Waiawa Floodplain	Inventory Survey	One archaeological site, State Site -(50-80-09-4607) identified as an alignment of indeterminate function, assessed as significant solely for information content. The site has been recorded and tested.
Sinoto and Pantaleo 1991	Phase development of Waipio Gentry	Data Recovery	Data recovery at State site -2262, a lithic scatter and -2271, an historic complex.
Jourdane 1995 (SHPD Record)	Sewerline at 96-035 Waiawa Road, Waiawa	Inadvertent Discovery of Skeletal Remains	(State site -5302) Skeletal remains uncovered during excavation of trench paralleling Waiawa Road on makai side of Leeward Community College. SHPD staff concluded the bones belonged to at least one individual of undetermined ethnicity. Burial age may be more than 50 years and recommended location of lineal descendants and relocation of burial
Hammatt et al. 1996	1339-acre Parcel within Portions of Waipi'o and Waiawa	Impact Assessment	The minimal impact due to geographic location of parcel, set back from coast
Cultural Resource Management, Aki Sinoto Consulting 1996-?	Waiawa	Data Recovery Plan	Mitigation procedures for State site -22761; feature 3, an undocumented Japanese cemetery

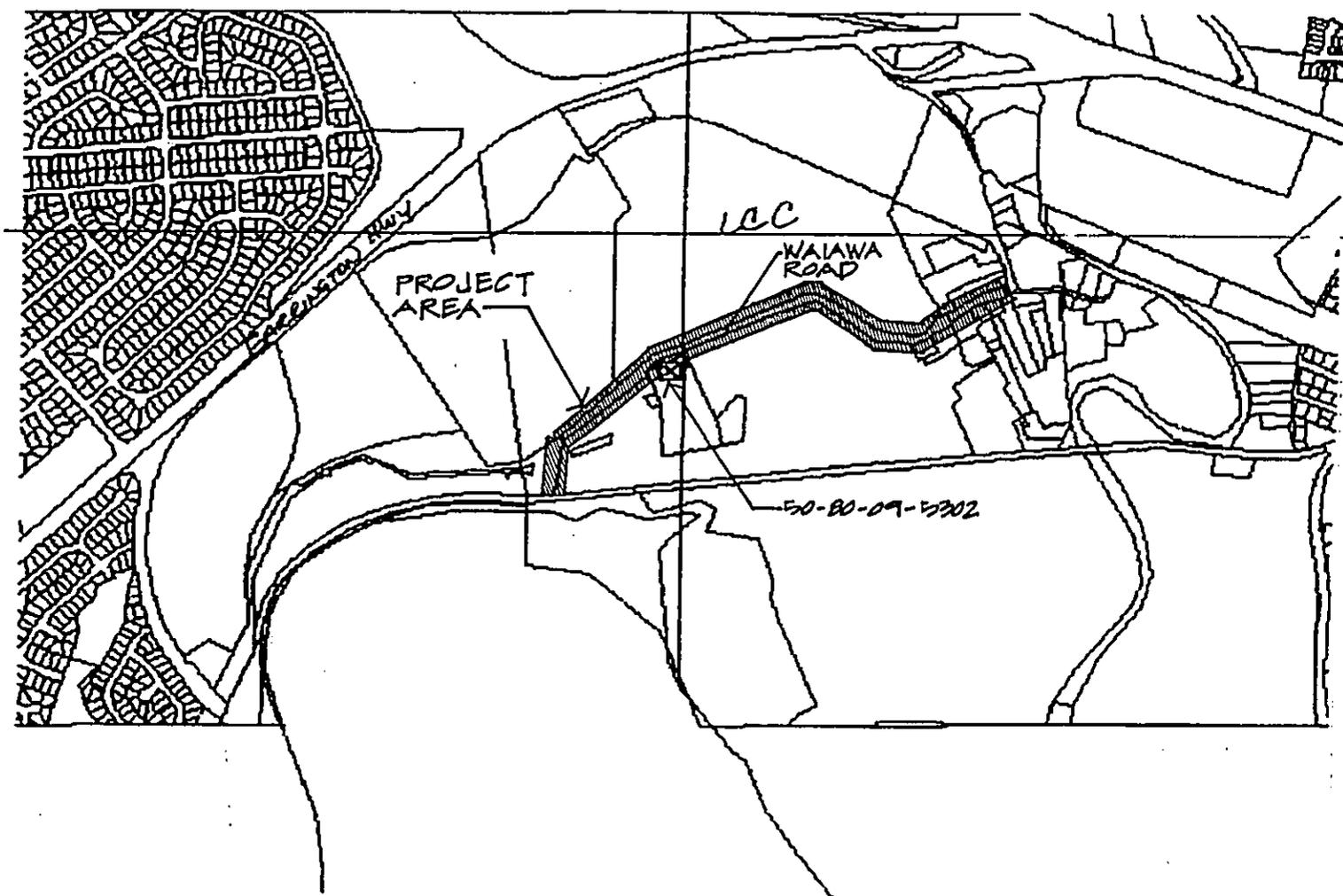


Figure 10 Computer drawing from SHPD showing location of State site 50-80-09-5302

IV. FIELD INSPECTION

The study area was inspected by Douglas Borthwick and Jared Hammatt on November 14, 2000. Field notes and photographs were taken(See Figures 3-6).

No surface archaeological sites were observed in any portion of the study area. Survey stakes were located (B-1 through B-4) at equal intervals along the road corridor.

As was also indicated earlier in this assessment, the bulk of the study area is a paved road corridor (Waiawa Road). The unpaved section at the western end is owned by Okada Trucking and consists of an area of heavy surface and subsurface disturbance due to bulldozing, the use of imported landfill material, and deposits of modern rubbish including abandoned vehicles. During archaeological investigations on Waipi'o Peninsula immediately southwest of the present study area, the fill layer was observed to measure up to 3 meters deep. In the immediate project area the fill has covered over and obliterated any evidence of the former taro *lo'i*, fishponds, and rice fields this assessment has documented as formerly present in the area.

V. SUMMARY

Historic documentation and modern scholarship have identified the southern, makai portion of Waiawa *Ahupua`a* — where the present study area is located — as an extensive complex of fishponds, agricultural fields, house lots, and pasture land that had evolved in traditional Hawaiian times before western contact. Waiawa itself was known for intense aquaculture and wetland agriculture.

Native Hawaiian activity and habitation at the middle of the 19th century continued to be clustered in the makai lowlands around the meander of Waiawa Stream and the Fishponds near the coast. Land Commission Award (LCA) documents from the Māhele indicate that the present study area was comprised of taro lo'i (irrigated fields), and associated house lots that continued to be utilized well into the 19th century.

During the later 1800's, the taro fields and fishponds in and adjacent to the present study area were converted to rice fields as Chinese immigrants began to lease and purchase Waiawa lands. By 1892, the study area was located within an expanse of rice fields that extended from Waiawa to Waiau.

It appears that portions of the study area continued to be planted in rice until the end of the 1930s. With the United States' entry into World War II, lands and fishponds of Waiawa that had not been previously developed for military purposes were appropriated by the United States government and filled in.

During field inspection, no surface archaeological sites associated with traditional Hawaiian occupation were observed in any portion of the study area. Any landfill and modern building activities including construction of the existing road would probably have eliminated any remnant sites. The only historic review process concerns would be related to the inadvertently discovered human remains (State Site # 50-80-09-5302) and the possibility of other similar finds. If the project does not include any subsurface work then no further archaeological research appears warranted. However, if subsurface work is a component of bike path construction, archaeological monitoring may be necessary.

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F.
Letter re. Bike Path Easement
from Cheryl Soon, Director, City & County of Honolulu
Department of Transportation Services to
James E. Bassett, Land Manager, Kamehameha Schools,
July 16, 2001

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA-711 KAPIOLANI BOULEVARD, SUITE 1200-HONOLULU, HAWAII 96813
TELEPHONE: (808)523-4529-FAX: (808)523-4730-INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
6/15/01



CHERYL D. SOON
DIRECTOR

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

July 16, 2001

RECEIVED

JUL 18 2001

HAWAII PACIFIC
ENGINEERS INC.

Mr. James E. Bassett
Land Manager
Kamehameha Schools
567 South King Street, Suite 200
Honolulu, Hawaii 96813

Dear Mr. Bassett:

Subject: Honolulu Bicycle Master Plan Improvements
College Access Project #28
LCC Spur

This is to confirm our willingness to accept the proposed 15-year revocable easement to be granted by Kamehameha Schools Bishop Estate (KSBE) to the City for the subject bikepath. We request that your drafting of the said easement documents for our review be done quickly to allow for the expeditious construction of this project. We understand that you are aware of our plans to realign the path as previously designed on KSBE lands (Ewa boundary) to the adjacent property proposed for purchase by the City for the Middle Loch Park.

Should there be any questions, please contact Mark Kikuchi of my staff at 527-5026.

Sincerely,

Cheryl D. Soon

CHERYL D. SOON
Director

cc: Lester Fukuda, Hawaii Pacific Engineers

G.
Letter re. Crossing the Energy Corridor
from Thomas Fujikawa, Harbors Administrator,
State Department of Transportation to
Lester Fukuda, Hawaii Pacific Engineers
December 20, 2000

BENJAMIN J. CAYETANO
GOVERNOR



RECEIVED

DEC 22 2000

HAWAII PACIFIC
ENGINEERS INC.



STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
HARBORS DIVISION
79 SO. NIMITZ HWY. • HONOLULU, HAWAII 96813-4898

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAII
GLENN M. OKIMOTO

December 20, 2000

IN REPLY REFER TO:

HAR-PM
0583.01

Mr. Lester H. Fukuda, P.E.
Hawaii Pacific Engineers, Inc.
1132 Bishop Street, Suite 1003
Honolulu, Hawaii 96813

Dear Mr. Fukuda:

Subject: Request Approval to Cross the Energy Corridor to Facilitate the Honolulu Bicycle Master Plan Improvements, College Access Project No. 28 and Bike Friendly Route Projects 1-4A, Pearl City/Aiea, Island of Oahu, Tax Map Key Nos. (Various)

Thank you for your letter dated November 20, 2000, together with the submittal of your plans dated November 21, 2000, detailing the above-referenced project that crosses the Energy Corridor in the Leeward Community College and Lehua Street areas.

We have reviewed your plans and hereby approve your proposed project subject to your compliance with the following conditions:

1. The proposed retaining wall with the chain link fence from Sta. 23+95 to Sta. 26+00+/- appears to be inside the Energy Corridor. This retaining wall should be constructed outside the Energy Corridor limits;
2. In the event the proposed improvements within the Energy Corridor shall be required to be removed, due to the maintenance of the existing pipelines or installation of new pipelines, the owner shall be responsible for the costs of their removal and reconstruction;
3. The contractor shall not allow the storage or use of any hazardous materials and/or waste within the Energy Corridor. Hazardous waste includes all solids or combinations of solid wastes that pose a substantial existing or potential hazard to

Mr. Lester H. Fukuda
Page 2
December 20, 2000

HAR-PM
0583.01

human health or the environment when improperly treated, stored, transported, disposed of or otherwise managed. If hazardous materials and/or waste are found within the Energy Corridor, the contractor shall decontaminate the premises, making the soil free and clear of all contaminants and hazardous material at the contractor's own cost and expense. In addition, the contractor may be required to provide the State with a soils analysis report for review and approval; and,

4. All information provided by The Gas Company and Tesoro Hawaii Corporation, including, but not limited to, maps, prints and site indications, are approximations only of their facilities and pipelines. The party receiving such information shall have the sole responsibility for field verification to determine the actual locations of such facilities and pipelines. If there are any location questions, you may call Mr. Keith Yamamoto, Supervisor, Engineering, for The Gas Company, at 594-5574.

Should you have any additional questions, you may contact Mr. James Smith, Property Manager, at 587-1942.

Very truly yours,



Thomas T. Fujikawa
Harbors Administrator

c: Mr. Keith Yamamoto, The Gas Company
Mr. Alan Knox, Tesoro Hawaii Corporation