2007-01-23-OA-FEA-WAIKIKI ALLURE CONDOMINIUM VOL 2

Final
ENVIRONMENTAL ASSESSMENT
VOLUME II OF II

ALLURE WAIKIKI CONDOMINIUM MIXED USE DEVELOPMENT

WAIKIKI, OAHU, HAWAII

TAX MAP KEY 2-6-13: 1, 3, 4, 7, 8, 9, 11, 12 and Pau Lane and Makaoe Lane

FIFIELD COMPANIES
19900 MacArthur Blvd., Ste. 655
Irvine, California 92612

APPLICANT

Kusao & Kurahashi, Inc.
Planning and Zoning Consultants
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

AGENT

December 2006

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ARCHAEOLOGICAL INVENTORY SURVEY REPORT

Archaeological Inventory Survey Report for the Allure Waikīkī Development, Waikīkī Ahupua‘a, Honolulu (Kona) District, O‘ahu TMK [1] 2-6-13: 1, 3, 4, 7, 8, 9, 11 and 12

Prepared for
Fifield Companies

Prepared by
Matthew J. Bell, BA
and
Matt McDermott, MA

Cultural Surveys Hawai‘i, Inc.
Kailua, Hawai‘i
(Job Code: WAIKI 6)

November 2006

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Management Summary

Reference	Archaeological Inventory Survey Report for the Allure Waikīkī Development, Waikīkī Ahupua'a, Honolulu (Kona) District, O'ahu TMK [1] 2-6-13: 1, 3, 4, 7, 8, 9, 11 and 12 (Bell and McDermott 2006)
Date	November 2006
Project Number (s)	Cultural Surveys Hawai'i Inc. (CSH) Job Code: WAIKI 6
Investigation Permit Number	The archaeological inventory survey fieldwork was carried out under archaeological permit number 0605 issued by the Hawai'i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR).
Project Location	The project area – TMK 2-6-13: 1,3,4,7,8,9,11 and 12 – comprises the southeast quarter of the block bounded by Ala Wai Boulevard, Kalākaua Avenue, 'Ena Road, Hobron Lane, and Līpe'epe'e Street in Waikīkī, O'ahu. It is shown on the 1998 USGS 7.5 Minute Series topographic map, Honolulu Quadrangle. A portion of this property was the former Wave Waikīkī nightclub.
Project Land Jurisdiction and Funding	Private, Fifield Companies
Agencies	SHPD/DNLR
Project Description and Related Ground Disturbance	The project area is proposed for development of a residential condominium comprising 30 floors of apartments, five parking levels, and a commercial component. Ground disturbance associated with the condominium project will include borings related to foundation pile installation and excavation related to the project area's development, to include structural footings, utility installation, roadway and parking area installation, and landscaping.
Project Acreage	2.3 acres
Area of Potential Effect (APE) and Survey Acreage	For this inventory survey investigation, the project's APE is defined as the entire approximately 2.3-acre footprint of the proposed condominium and commercial development. The project area's surrounding built environment is urban (paved streets and low rise and high rise buildings) and the proposed construction poses no additional auditory, visual or other environmental impacts to any surrounding potential historic properties (for example historic buildings or structures) Accordingly, for the current inventory survey investigation the survey area and the project APE are one and the same.

Historic Preservation Regulatory Context and Document Purpose	As a privately funded project on privately owned land, the proposed condominium development is subject to Hawai'i state historic preservation review legislation [Hawai'i Revised Statutes (HRS) Chapter 6E-42/Hawai'i Administrative Rules (HAR) Chapter 13-284]. At the request of SHPD, CSH wrote an archaeological inventory survey plan (Tulchin et al. 2006) for the project. The plan was subsequently approved by SHPD in their letter of July 17, 2006 (Log No 2006.2424; Doc No 0607AJ18). Designed to fulfill the state requirements for archaeological inventory survey (HAR Chapter 13-276), this document is intended to support project-related historic preservation consultation among state and county agencies and interested Native Hawaiian and community groups.
Fieldwork Effort	Matthew Bell, BA; Owen O'Leary, MA; Jon Tulchin, BA; Erika Stein MA; Darienne Dey, BA; Dominique Cordy, BA; Michelle Pammer; Hallett H. Hammatt PhD; and Matt McDermott, MA (principal investigator), completed the fieldwork intermittently between September 14 and October 20 2006. The field effort required approximately 36 person-days to complete. No surface historic properties were identified during pedestrian inspection. The historic property identification effort focused on a subsurface testing program. Thirty-five trenches were excavated, documented, and sampled.
Number of Historic Properties Identified	Three: State Inventory of Historic Properties (SIHP) 50-80-14-6873 – an isolated traditional Hawaiian burial of undetermined age SIHP 50-80-14-6874 – a subsurface cultural layer, of pre- and post-Contact origin SIHP 50-80-14-5875 – an isolated traditional Hawaiian burial of undetermined age
Historic Properties Recommended Eligible to the Hawai'i Register of Historic Places (Hawai'i Register)	Three: SIHP -6813 and -6874 are recommended eligible to the Hawai'i Register under criteria D (for their information content) and E (for their traditional cultural significance to an ethnic group). SIHP -6875 is recommended eligible to the Hawai'i Register under criterion D (for its information content)
Historic Properties Recommended Ineligible to the Hawai'i Register	None

Burial Ethnicity and Treatment Jurisdiction	Two burials, by definition "previously identified" because they were found during inventory survey investigations (HAR Chapter 13-300-2), were documented in jaucas sand deposits. They lacked associated grave goods (including historic artifacts), and, where information is available, appear to be in flexed, or at least semi-flexed burial position. Following the procedures of HRS Chapter 6E-43/HAR Chapter 13-300, SHPD determined the remains were over 50 years old and most likely Native Hawaiian. As previously identified Native Hawaiian burials on O'ahu, their treatment falls under the jurisdiction of the O'ahu Island Burial Council (OIBC).
Effect Recommendation	The proposed project will potentially affect three historic properties recommended eligible to the Hawai'i Register. CSH's project specific effect recommendation is "effect, with agreed upon mitigation commitments" (HAR Chapter 13-284-7).
Mitigation Recommendation	Project development should proceed under an archaeological monitoring program to facilitate the identification and treatment of any additional burials that might be discovered during project construction and to alleviate the project's effect on non-burial archaeological deposits. Further, in order to alleviate the project's effect on human burial deposits, a project specific burial treatment plan (a requirement of HAR Chapter 13-300) should be prepared for consideration of the OIBC.

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Section 1 Introduction

1.1 Project Background

At the request of Fifield Companies, Cultural Surveys Hawai'i (CSH) completed this archaeological inventory survey of a 2.3-acre project area in Waikīkī Ahupua'a, Kona District, Island of O'ahu (TMK 2-6-13: 1,3,4,7,8,9,11 and 12). The project area comprises the southeast quarter of the block bounded by Ala Wai Boulevard, Kalākaua Avenue, 'Ena Road, Hobron Lane, and Līpe'epe'e Street. Figure 1 shows this project area on a USGS topographic map, Figure 2 on a tax map key (TMK) map and Figure 3 on an aerial photograph.

The project area presently comprises an empty lot that, until recent demolition, included low-rise buildings (including the site of the Wave Waikīkī nightclub), a parking lot, as well as a vacant lot (refer to Figure 3). The project area is privately owned and the proposed development is privately funded by Fifield Companies. The proposed Allure Waikīkī Development will consist of a residential condominium comprising 30 floors of apartments, five parking levels, and a commercial component. Ground disturbance associated with the project will include borings related to foundation pile installation and excavation related to the project area's development, to include structural footings, utility installation, roadway and parking area installation, and landscaping.

For this inventory survey investigation, the project's area of potential effect (APE) is defined as the entire approximately 2.3-acre footprint of the proposed condominium and commercial development. The project area's surrounding built environment is urban (paved streets and low rise and high rise buildings) and the proposed construction poses no additional auditory, visual or other environmental impacts to any surrounding potential historic properties (for example historic buildings or structures) Accordingly, for the current inventory survey investigation the survey area and the project APE are one and the same.

1.2 Historic Preservation Regulatory Context and Document Purpose

As a privately funded project on privately owned land, the proposed condominium development is subject to Hawai'i state historic preservation review legislation [Hawai'i Revised Statutes (HRS) Chapter 6E-42/Hawai'i Administrative Rules (HAR) Chapter 13-284]. Based on the project's scope, cultural setting, and the results of previous cultural resource management investigations in the vicinity, the State Historic Preservation Division (SHPD), requested that an archaeological inventory survey plan be prepared for the project. CSH completed this plan (Tulchin et al. 2006), which was subsequently approved by SHPD in their letter of July 17, 2006 (Log No 2006.2424; Doc No 0607AJ18). Appendix F is a copy of this SHPD approval letter.

Under Hawai'i state historic preservation legislation, archaeological inventory surveys are designed to identify, document, and provide significance and mitigation recommendations for historic properties. Under this legislation, historic properties are defined as any "building, structure, object, district, area, or site, including *heiau* and underwater site, which is over fifty years old" (HAR Chapter 13-284-2) A project's effect and potential mitigation measures are

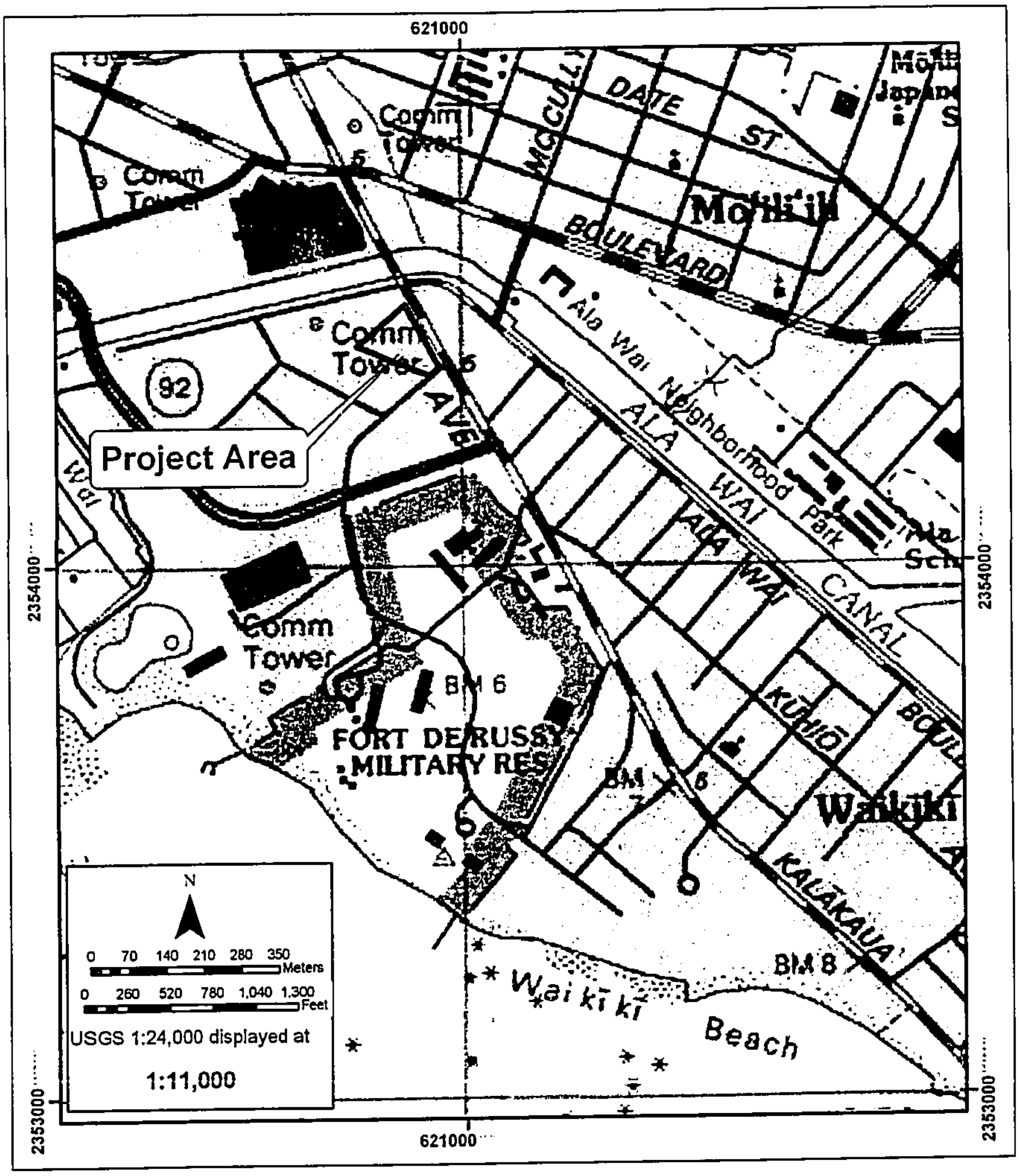


Figure 1. Portion of the 1998 USGS Topographic Map, Honolulu Quadrangle, showing location of project area

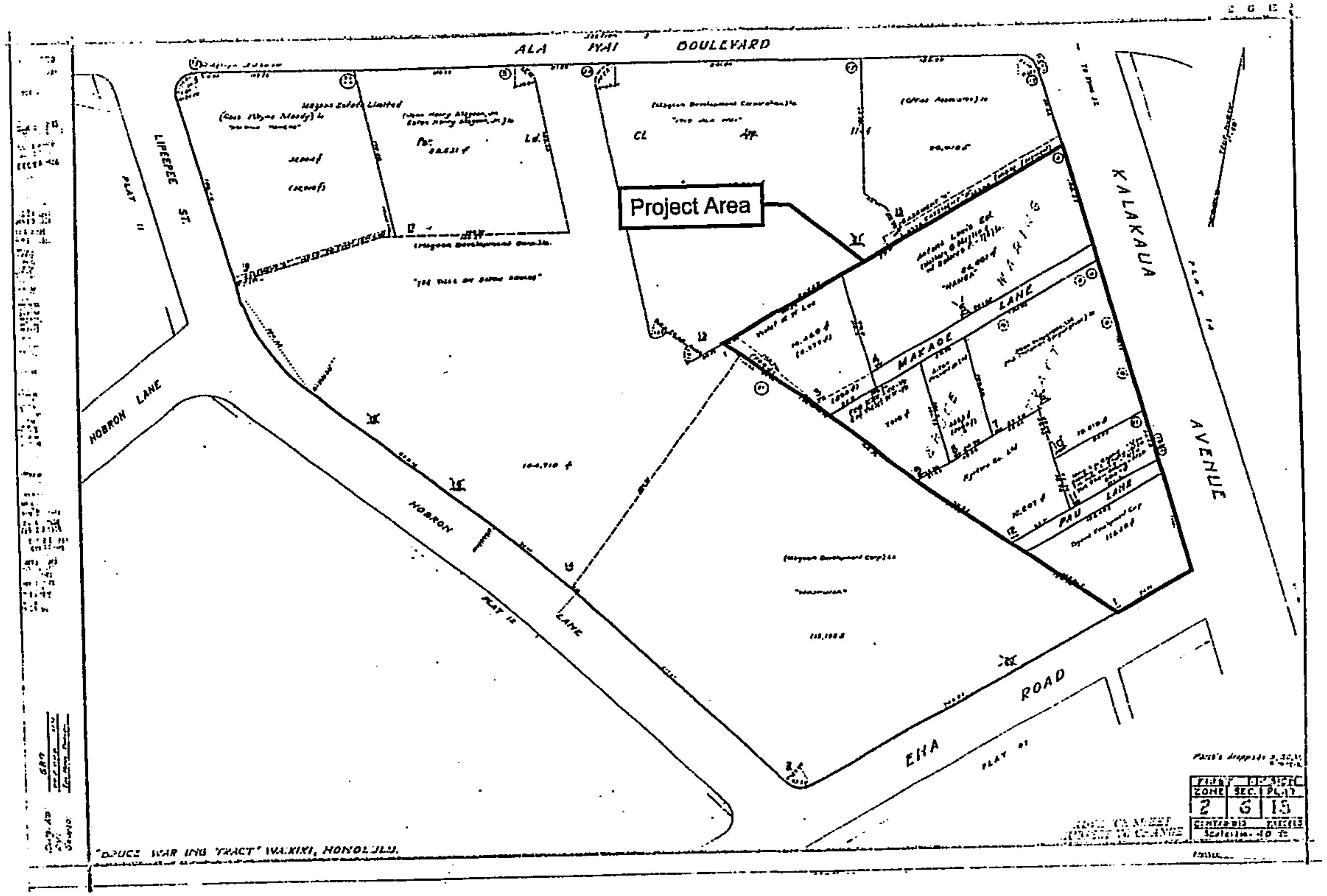


Figure 2 Tax map showing the project area

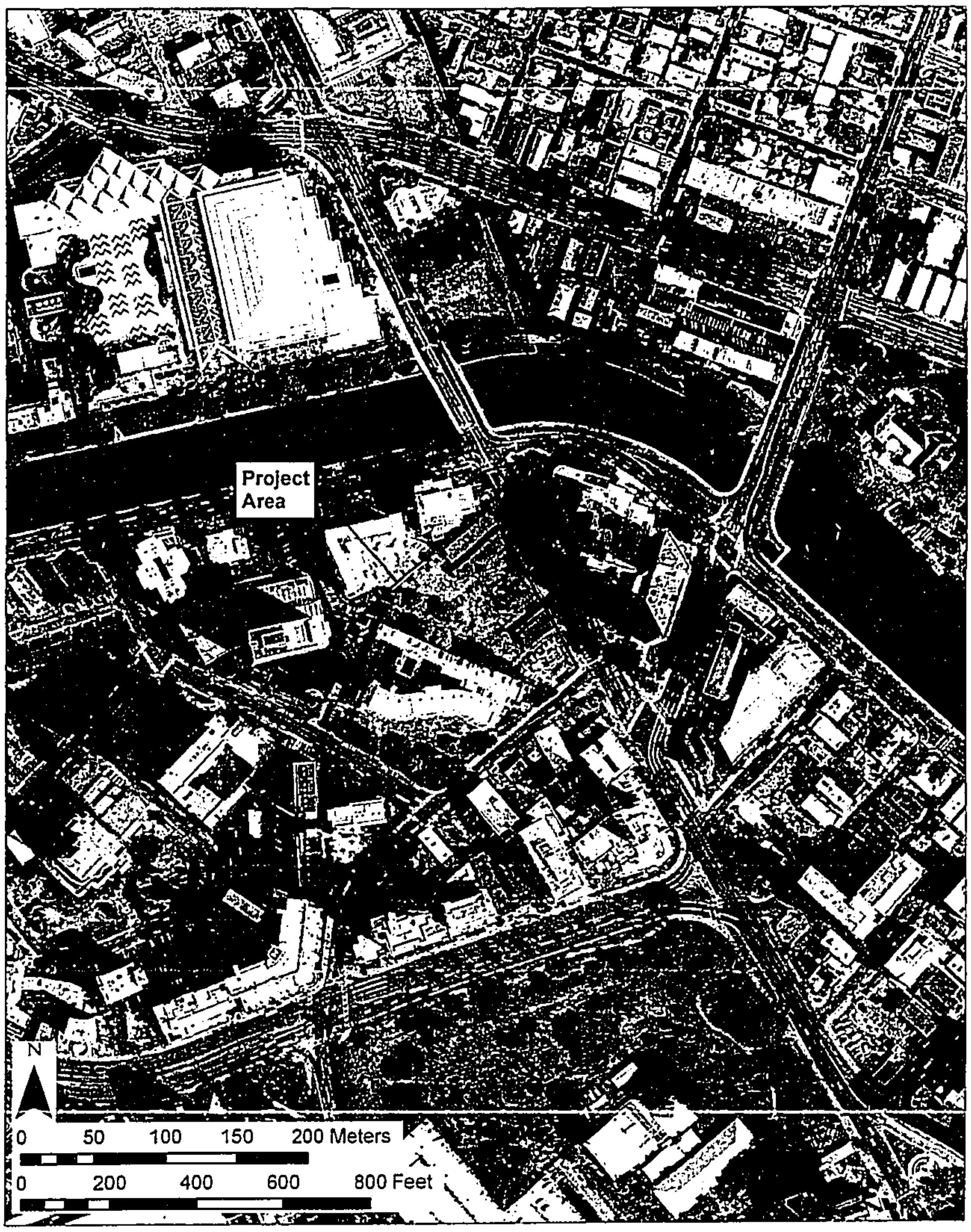


Figure 3. 2005 USGS orthophoto quad showing the project area, the former low apartment buildings and nightclub and the surrounding urban area of Waikīkī.

evaluated based on the project's potential impact to "significant" historic properties (those historic properties determined eligible, based on established significance criteria, for inclusion in the Hawai'i Register of Historic Places [Hawai'i Register]). Determinations of eligibility to the Hawai'i Register result when a state agency official's historic property "significance assessment" is approved by SHPD, or when SHPD itself makes an eligibility determination for an historic property (HAR Chapter 13-284).

Designed to fulfill the state requirements for archaeological inventory surveys (HAR Chapter 13-276), this investigation included an extensive subsurface testing program. This inventory survey report was prepared to support the proposed project's historic preservation review. The report includes a project-specific effect recommendation and mitigation recommendations for the project area's historic properties that are recommended eligible to the Hawai'i Register. This document is intended to support project-related historic preservation consultation among state and county agencies and interested Native Hawaiian and community groups.

1.3 Scope of Work

The following archaeological inventory survey scope of work was designed to satisfy the Hawai'i state and City and County of Honolulu requirements:

1) Research on historic and archaeological background, including a search of historic maps, written records, and Land Commission Award documents. This research focused on the specific area with general background on the *ahupua'a* and district and emphasizes settlement patterns.

2) A 100 percent pedestrian inspection of the project area to identify any potential surface historic properties.

3) Subsurface testing with a combination of hand and backhoe excavation to identify and document subsurface cultural deposits. Appropriate samples from these excavations were analyzed for cultural and chronological information.

4) Preparation of this survey report, which includes the following:
   a) A project description;
   b) A topographic map of the survey area showing all recorded historic properties;
   c) Historical and archaeological background sections summarizing prehistoric and historic land use of the project area and its vicinity;
   d) Descriptions of all historic properties, including selected photographs, scale drawings, and discussions of age, function, and significance, per the requirements of HAR 13-276;
   e) A section concerning cultural consultations [per the requirements of HAR 13-276-5(g) and HAR 13-284-8(a)(2)].
   f) A summary of historic property categories, integrity, and significance based upon the Hawai'i Register criteria;

g) A project effect recommendation;

h) Treatment recommendations to mitigate the project's adverse effect on any historic properties recommended eligible to the Hawai'i Register identified in the project area.

This scope of work included consultation with the SHPD Archaeology and Culture and History Branches relating to identified historic properties.

1.4 Environmental Setting

1.4.1 Natural Environment

The project area is flat and averages 2 meters (6 feet) above mean sea level. The water table is typically 0.7 m to 1.5 m below the current land surface.

The modern shoreline at the man-made Ala Wai Boat Harbor and present day Waikīkī Beach is 550 meters (1800 ft) to the east-southeast and 750 meters (2460 feet) to the southeast, respectively. The old, natural shoreline is approximately 450 meters (1480 feet) southeast of the current project area, but this shoreline is now buried under historic and modern fill.

The average rainfall in this coastal area of Waikīkī is between 20-30 inches per year, with temperatures ranging from 60 to 85 degrees Fahrenheit (Armstrong 1973:56). Northeasterly trade winds prevail throughout the year, although their frequency varies from more than 90% during the summer months to 50% in January; the average annual wind velocity is approximately 10 miles per hour (Wilson Okamoto 1998:2-1). At the start of the inventory survey fieldwork, vegetation within the project area was limited to a few ornamental trees and shrubs in grass dividers bordering the sidewalks along the project area margins and large ornamental trees located along a fence on the southwest edge of the project area.

The USDA Soil Survey (Foote et al. 1972) classifies the project area's soils as "fill" (FL) (Figure 4). Fill is described as:

> This land type occurs mostly near Pearl Harbor and in Honolulu, adjacent to the ocean. It consists of areas filled with material dredged from the ocean or hauled from nearby areas, garbage, and general material from other sources. (Foote et al. 1972)

Prior to the deposition of these fill layers, the project area and its vicinity consisted of high sand berms, low marshy areas, irrigation canals and fishponds (refer to the historical documentation section, below). The filling and subsequent development of Waikīkī permanently changed the area and allowed for its current, fully urbanized character.

Though the surface layers of sediment throughout the project area are classified as fill, natural jaucas sand (JaC) deposits were found at the surface of the former empty lot in much of the northwestern corner of the project area – a significant portion of the project's total land area. This sand was also found immediately beneath these fill layers over in the southern portion of the project area. As a whole, the project area exhibits a high percentage of intact natural land surface, primarily of jaucas sand. The USDA Soil Survey describes jaucas sand as:

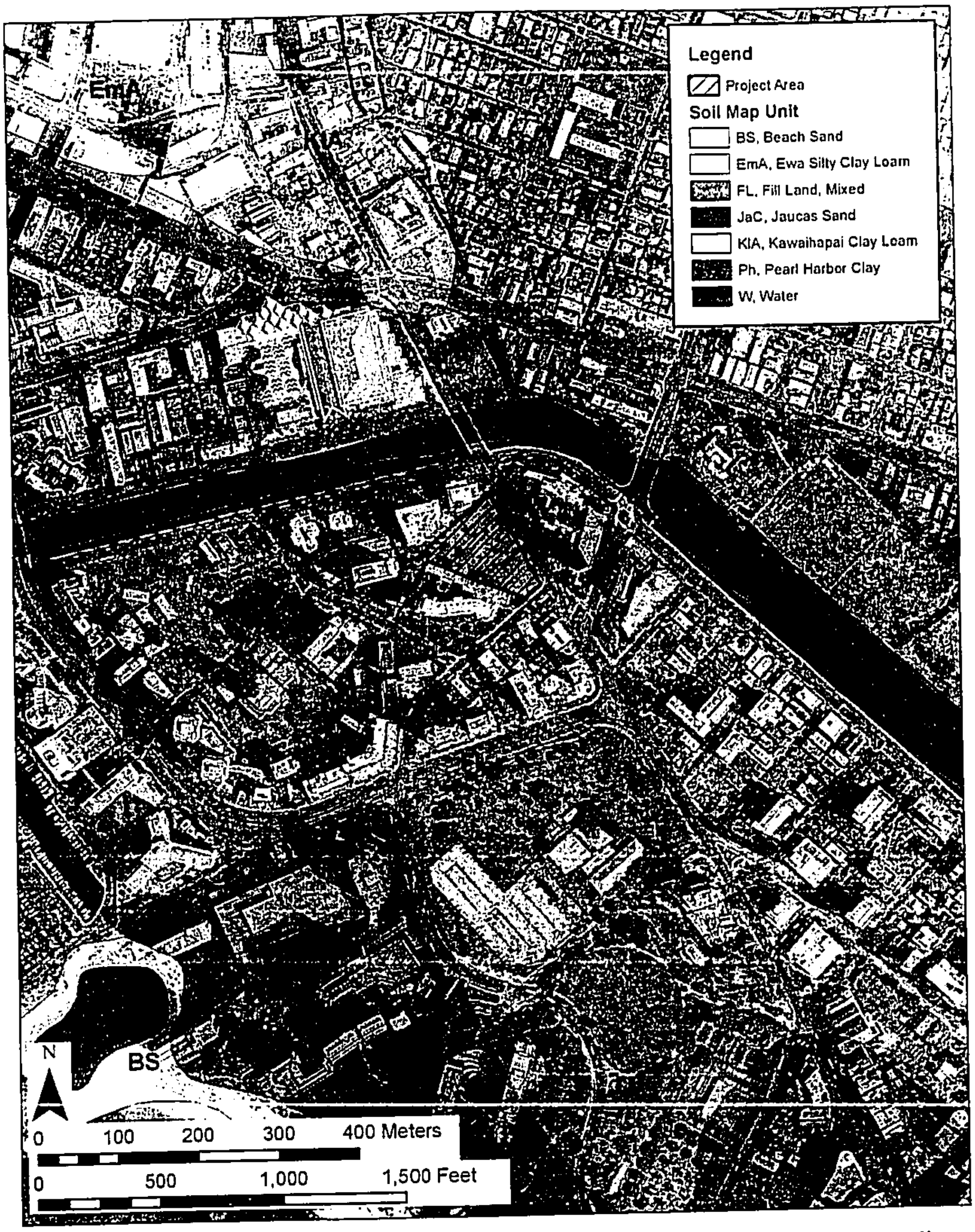


Figure 4. Overlay of Soil Survey of the State of Hawai'i (Foote et al. 1972), indicating sediment types within the project area. Source: Soils Survey Geographic Database (SSUGRO) 2001. U.S. Department of Agriculture

> The slope range of this soil is 0 to 15 percent, but in most places the slope does not exceed 7 percent. Included in mapping were narrow strips of Beaches and areas of Pulehu, Mokuleia, and Keaau soils.
>
> In a representative profile the soil is single grain, pale brown to very pale brown, sandy, and more than 60 inches deep. In many places the surface layer is dark brown as a result of accumulation of organic matter and alluvium. The soil is neutral to moderately alkaline throughout the profile.
>
> Permeability is rapid, and runoff is very slow to slow. The hazard of water erosion is slight, but wind erosion is a severe hazard where vegetation has been removed. The available water capacity is 0.5 to 1.0 inch per foot of soil. In places roots penetrate to a depth of 5 feet or more. Workability is slightly difficult because the soil is loose and lacks stability for use of equipment. [Foot et al. 1972]

1.4.2 Built Environment

The project area is located within central Honolulu and is surrounded by modern urban development including high-rise condominiums, apartments and hotels, streets, sidewalks, and utility infrastructure. The project area is the southeast quarter of the block bounded by Ala Wai Boulevard, Kalākaua Avenue, ʻEna Road, Hobron Lane, and Līpeʻepeʻe Street in Waikīkī. The project area itself is bounded by Kalākaua Avenue to the east, ʻEna Road to the south, and retaining walls and chain link fences encircling high-rises to the west and north. The southeast portion of the project area once contained the Wave Waikīkī nightclub and a small parking lot. The central project area and the west edge were largely undeveloped lots landscaped with grass and ornamental trees. The northeast corner of the project area was a pair of two story apartment complexes. The remainder of the project area was an asphalt parking lot (refer to Figure 3).

In preparation for the current project and prior to this inventory survey, the buildings and much of the landscaping formerly a part of the project area were demolished. During demolition, Cultural Surveys Hawaiʻi monitored all excavation, especially those removing building footings. Some natural sediments were observed during this monitoring, but no significant archaeological material was encountered.

Section 2 Methods

This section details the methods used by CSH personnel during fieldwork, background research, laboratory analysis, cultural consultation, and the preparation of this report.

2.1 Document Review

Background research included: a review of previous archaeological studies on file at SHPD; review of documents at Hamilton Library of the University of Hawai'i, the Hawai'i State Archives, the Mission Houses Museum Library, the Hawai'i Public Library, and the Archives of the Bishop Museum; study of historic photographs at the Hawai'i State Archives and the Archives of the Bishop Museum; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhele records were examined from the Waihona 'Aina database (<www.waihona.com>).

This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the project area.

2.2 Field Methods

Matthew Bell, BA; Owen O'Leary, MA; Jon Tulchin, BA; Erika Stein MA; Darienne Day, BA; Dominique Cordy, BA; Michelle Pammer; Hallett H. Hammatt PhD; and Matt McDermott, MA (principal investigator), completed the fieldwork intermittently between September 14 and October 20 2006. The field effort required approximately 36 person-days to complete. CSH completed the investigation's fieldwork under state archaeological permit number 0605 issued by SHPD, per HAR Chapter 13-282.

A brief 100 percent pedestrian inspection of the project area confirmed that all standing architecture was less than 50 years old and that there were no surface historic properties. Accordingly, the inventory survey focused on a program of subsurface testing to locate any buried cultural deposits, which, based on the results of background research, CSH expected to find beneath layers of historic and modern fill. For this report, historic is defined as anything older than 50 years and modern is defined as anything younger than 50 years.

The sub-surface testing program consisted of the excavation of 35 backhoe trenches. Trenches were distributed throughout the project area to provide representative coverage and assess the stratigraphy and potential for subsurface cultural resources for all areas of the project area. Trench locations were also selected to test specific portions of the project area where, based on background research, subsurface cultural deposits were thought more likely. These trenches provided additional documentation of specific cultural features and/or stratigraphic layers and better established their geographic distribution. The testing program also focused on characterizing the project area's buried land surface that predated the historic and modern fill layers. This older land surface, which was found to be pervasive throughout the project area, was more likely to be associated with significant cultural deposits.

A standard backhoe with a two-foot wide bucket was used to excavate at least portions of each trench. Trenches varied in length and width depending on the trench's purpose and its associated documentation requirements. Generally, trenches excavated to assess subsurface stratigraphy and prospect for subsurface cultural deposits were one backhoe bucket width wide (c. 0.80 m) by approximately six meters long. All trenches were excavated down to the underlying coral shelf or to below the water table, which was generally between approximately 0.7 and 1.5 meters below the present land surface.

All jaucas sand deposits were excavated solely by hand, with the help of the backhoe only when there was need to remove overlying fill layers. Hand excavation in sand deposits was specifically undertaken to identify potential burial deposits. These shovel trenches were one shovel width wide (25 cm) and dug from the upper jaucas sand surface to the water table. The sand was carefully scraped off in thin layers in order to reduce any possible burial disturbance. Because there is a remote possibility of burials right at the water table, smaller shovel test probes, c. 25 by 25 cm, were excavated down from the base of the shovel trench, below the water table. This was an extra precaution to identify particularly deep burial deposits.

The stratigraphy in each trench was drawn and photographed. The sediments were described for each of the trenches using USDA soil description observations/terminology. Sediment descriptions include Munsell color, texture, consistence, structure, plasticity, cementation, origin of sediments, descriptions of any inclusions such as cultural material and/or roots and rootlets, lower boundary distinctiveness and topography, and other general observations. Where burial pits or other cultural features were exposed, these were carefully represented on the trench profile. Feature documentation included profiles and/or plan views, collected samples, stratigraphic descriptions, and photographs. When exposed in plan view within trenches, pit features were drawn and sampled.

Where human burials were discovered, the SHPD Archaeology Branch (Mr. Adam Johnson) and Burials Program (Ms. Pi'ilani Chang) were notified immediately. Unavoidably, trench excavation through sand, though by hand, resulted in the partial disturbance of the burials. Where necessary, sand from burial contexts was screened through 1/8-inch (3.2 mm) mesh to collect disturbed remains. In these instances, disturbed skeletal remains were collected and deposited with the in situ remains.

Skeletal element inventory forms, plan view and profile drawings, and written descriptions were prepared to document each burial. Burial locations were recorded with GPS (submeter horizontal accuracy). Skeletal remains were left in place and covered with clean sand. Prior to the trench's backfill, a wooden plank was positioned in the back fill sand 15-20 cm above the remains. This was done to protect the remains during trench backfilling and to mark the burial location, should relocation be required.

To delineate burial areas, additional trenches were excavated on four sides of the initial discovery to search for additional burials in the vicinity. These trenches were similar in size to the other trenches, or one-backhoe bucket width (0.80 m) wide, though length was shorter when necessary to avoid overlapping trenches. The shovel excavation precautions described above were implemented. Again, initially the backhoe was only used to remove the fill overburden. Hand shovel trenching was then undertaken in the jaucas sand layers. As appropriate, plan views were prepared to record horizontal provenience of finds, such as burials or pit features associated with a cultural layer. Burials within the project area were assigned sequential Arabic numerals, for example Burial 1, in the order they were discovered. In this way burial features were easily distinguishable from the other component cultural features that were part of the project area's historic properties.

The sampling of subsurface cultural layers and/or A horizons was carried out to characterize the cultural content of these layers. Sampling also helped establish geographic boundaries to these layers and the general time frame of their deposition (prehistoric/traditional Hawaiian, and/or historic, and/or modern). The sampling was undertaken on both pit features associated with the stratigraphic layer, and "sample areas" taken from the portion of the stratigraphic layer that was not part of a particular cultural feature. The distinction between samples from pit features and sample areas was hoped to reflect the difference in cultural material content between sediment from specific events, such as the excavation and use of a pit, and the more general accumulation of sediment as part of a culturally enriched stratigraphic layer. The sample areas also indicated if the land surface was enriched at all, giving some indication as to the type and frequency of use of this land surface.

Pit features were identified and labeled as distinct protuberances of either a culturally enriched layer or an organic A horizon down into the underlying culturally sterile layer. In all cases within the current project area, this was an extension of the overlying sand cultural layer or A horizon down into the underlying sterile jaucas sand. These pit features were given Roman letter designations within distinct historic properties. Pit features were depicted in trench profiles and plan views. Information was collected regarding their shape, content, distinctness and degree of protrusion below the A horizon.

Often times pit features extending down from the overlying modern fill layers were distinguished in trench profiles. These clearly more recent features were sometimes sampled to confirm that they were modern features related to utility installation, prior construction activity, and landscaping excavations. Based on available evidence, including the cultural material found within these features (construction rubble, PVC piping fragments, etc.), these features were not older than fifty years and were not considered component features of historic properties.

Pits that were isolated were considered features and were investigated as described above, but were not designated as a historic property unless they occurred in a higher density, indicating a repeated use of the same surface for similar activity. This designation was designed to identify activity areas where repeated use of the same land surface could provide some insight into land use patterns in the area. Isolated trash pits provide information in their own right, but unless they yielded dramatic evidence themselves or were in close association with other features, they were not individually or cumulatively designated as a historic property.

The samples from pit features and sample areas were excavated out of the sidewall, or from the base of the excavation if exposed in profile, into five gallon (c. 20 liter) buckets. The sediment was then screened through 1/8-inch (3.2 mm) mesh and all cultural materials were collected, bagged by provenience, and returned to the laboratory. During the collection of cultural material from the screen, careful attention was made to distinguish between water-rounded, bleached, natural marine, sedimentary shell, and the unbleached, un-rounded, often relatively freshly broken shell derived from human activity. The volume of each screened sample, usually between two and ten gallons (7.5 to 38.0 liters), was recorded so that comparisons could be made between samples.

The boundaries of the subsurface deposits that make up the historic properties located within the project area were established through interpolation. Trench stratigraphic documentation and the results of cultural content sampling of specific layers established where these culturally enriched layers were extent. Boundaries were drawn mid-way between trenches that had these layers and the surrounding trenches that did not. Burials designated historic properties did not have associated cultural layers and so the boundaries of the historic property are limited only to the burial itself.

The location of each of the trenches, burials, and some features were recorded using a Trimble Pro XR backpack GPS unit with a TSCI Datalogger and real-time differential correction. This unit provides submeter horizontal accuracy in the field. GPS field data were post-processed, yielding horizontal accuracy between 0.5 and 0.3 m. GPS location information was converted into GIS shape files using Trimble's Pathfinder Office software, version 2.80, and graphically displayed using ESRI's ArcGIS 9.1. UTM coordinates for the historic property boundaries are included in Appendix D .

2.3 Laboratory Methods

Following the completion of fieldwork, all collected materials were analyzed using current standard archaeological laboratory techniques. Historic materials collected in the field were returned to the CSH laboratory, washed, examined, and, as appropriate, photographed. Historic artifacts were identified using standard reference materials and the resources available over the internet (Elliot and Gould 1988; IMACS 1992; Lebo and Wall 1997; Leidemann 1988; Bureau of Land Management 2004).

All materials collected from the identified subsurface cultural layers were sorted, identified, measured, and quantified. Marine shell was identified using standard comparative reference works (Kay 1979; Morris 1966). CSH personnel identified the small amount of vertebrate material.

In general, artifact analysis focused on establishing, to the greatest extent possible, material type, formal/function type, cultural affiliation and/or age of manufacture. A comprehensive catalogue of all collected cultural material was prepared and is included with this report as Appendix B.

One sample of wood charcoal was sent to Beta Analytic, Inc. of Miami, Florida for radiocarbon dating analysis. The sample was analyzed using the Accelerator Mass Spectrometer (AMS). Appendix C shows the Beta Analytic results. The resulting conventional radiocarbon ages were calibrated into calendar ages AD/BC using the OxCal Calibration Program, version 3.9, developed by the Oxford Radiocarbon Accelerator Unit (ORAU) and available as share-ware over the Internet.

2.4 Historic Property Evaluation for Hawai'i Register Eligibility

Under state of Hawai'i historic preservation legislation, historic property significance is evaluated and expressed as eligibility for listing on the Hawai'i Register of Historic Places (Hawai'i Register). To be considered eligible for listing on the Hawai'i Register, a historic property must possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the following broad cultural/historic significance criteria: "A" reflects major trends or events in the history of the state or nation; "B" is associated with the lives of persons significant in our past; "C" is an excellent example of a site type/work of a master; "D" has yielded or may be likely to yield information important in prehistory or history; and, "E" has traditional cultural significance to an ethnic group, includes religious structures and/or burials. For this report, historic property integrity and significance were assessed based on the guidance provided in National Register Bulleting # 15, "How to Apply the National Register Criteria for Evaluation."

2.5 Consultation Effort

Pursuant to cultural consultation requirements for archaeological inventory surveys [HAR Chapter 13-276-5(g), Chapter 13-284-6(c), and 13-284-8(a)(2)] CSH's cultural consultation effort sought information from individuals knowledgeable about the project area's history and past land use. The focus of this consultation was to identify historic properties within the project area and, once identified, determine their function and cultural significance. Information was also sought from cultural informants regarding the proposed mitigation measures to alleviate the project's potential impact to historic properties.

CSH's cultural consultation for the Allure Waikīkī project began in 2006 with a cultural impact assessment investigation (Mitchell and Hammatt 2006). This assessment was designed to fulfill the requirements of Hawai'i state environmental review legislation (HRS Chapter 343), which mandates project proponents take into account the potential effects of a project on on-going cultural practices. The State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), the O'ahu Island Burial Council, and Hui Mālama I Nā Kūpuna O Hawai'i Nei were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the study area and the surrounding vicinity. The names of potential community contacts were also provided by colleagues at CSH and from the researcher's familiarity of the families who frequent the area. During the CIA process, Kama'aina interviews of Paulette Kaleikini, Robert Clark Paoa, and Samuel Alapai Taula Kahanamoku III were taken by Auli'i Mitchell with CSH (Mitchell and Hammatt 2006). During the CIA consultation effort, informants were asked about potential historic properties within the project area. The results of this CIA cultural consultation are discussed in the Background Research Section below.

Following the completion of the inventory survey's fieldwork, a summary letter was sent out to the Office of Hawaiian Affairs (OHA) and Hui Malama I Na Kupuna o Hawai'i Nei. This letter described the inventory survey fieldwork effort, the historic properties documented within the project area, and asked for these organizations' input regarding historic property significance and mitigation. Appendix E contains copies of these consultation letters. Additionally, Kuiwalu, the communications firm representing the project proponents, made information presentations to the O'ahu Island Burial Council (OIBC) regarding the Allure Waikīkī Development and its inventory survey results, at the OIBC's June 14, 2006 and October 11, 2006 meetings, respectively.

Following the discovery of Native Hawaiian burial deposits within the project area during the inventory survey, Kuiwalu contacted potential lineal and cultural descendant claimants. Persons notified about the burial discoveries include JoAnne Kahanamoku, Bob Paoa, Kealoha Kuhea, Emalia Keohokalole, Adrian Keohokalole, Ka'imi Keohokalole, Paulette Kaleikini, Nalani Olds, Likeke Papa, Cy Harris, Nalani Gersaba, and Van Horn Diamond. The OIBC Chairperson and the Kona representatives on the OIBC were contacted when the burial remains were initially discovered. The process of identifying and consulting with potential descendants is ongoing and will continue with the preparation of the project's burial treatment plan.

Section 3 Historical Background

This section begins with a review of the available documentary evidence for the general character of the Waikīkī area as it had evolved in the years before western contact in the later 18th century. The development of Waikīkī lands adjacent to and including the present project area during the 19th century and into the early 20th century was recorded in increasingly detailed documentation – including photographs, maps and government records. Finally, during subsequent decades of the 20th century, abundant documentation of the Waikīkī area allows a more precise focus on the development of the project area itself up to the 1950s.

3.1 Traditional and Historical Background of Waikīkī Ahupua'a

3.1.1 Pre-Contact to Early 1800's

By the time of the arrival of Europeans in the Hawaiian Islands during the late eighteenth century, Waikīkī had long been a center of population and political power on O'ahu. According to Martha Beckwith (1940), by the end of the fourteenth century Waikīkī had become "the ruling seat of the chiefs of Oahu." The preeminence of Waikīkī continued into the eighteenth century and is betokened by Kamehameha's decision to reside there upon wresting control of O'ahu by defeating the island's chief, Kalanikūpule. The 19th-century Hawaiian historian John Papa 'Ī'ī (1959:17), himself a member of the *ali'i* (chiefly class), described the king's Waikīkī residence:

> Kamehameha's houses were at Puaaliilii, *makai* of the old road, and extended as far as the west side of the sands of 'Apuakehau. Within it was Helumoa where Ka'ahumanu *mā* went to while away the time. The king built a stone house there, enclosed by a fence . . . ('Ī'ī 1959:17).

'Ī'ī further noted that the "place had long been a residence of chiefs. It is said that it had been Kekuapoi's home, through her husband Kahahana, since the time of Kahekili" ('Ī'ī 1959:17).

Chiefly residences, however, were only one element of a complex of features – that characterized Waikīkī up to pre-contact times. Beginning in the fifteenth century, a vast system of irrigated taro fields was constructed, extending across the littoral plain from Waikīkī to lower Mānoa and Pālolo valleys. This field system – an impressive feat of engineering the design of which is traditionally attributed to the chief Kalamakua – took advantage of streams descending from Makiki, Mānoa and Pālolo valleys which also provided ample fresh water for the Hawaiians living in the *ahupua'a*. Water was also available from springs in nearby Mō'ili'ili and Punahou. Closer to the Waikīkī shoreline, coconut groves and fishponds dotted the landscape. A sizeable population developed amidst this Hawaiian-engineered abundance. Captain George Vancouver (1798:161-164), arriving at "Whyteete" in 1792, captured something of this profusion in his journals:

> On shores, the villages appeared numerous, large, and in good repair; and the surrounding country pleasingly interspersed with deep, though not extensive valleys; which, with the plains near the sea-side, presented a high degree of cultivation and fertility.

> [Our] guides led us to the northward through the village, to an exceedingly well-made causeway, about twelve feet broad, with a ditch on each side.
>
> This opened our view to a spacious plain, which, in the immediate vicinity of the village, had the appearance of the open common fields in England; but, on advancing, the major part appeared to be divided into fields of irregular shape and figure, which were separated from each other by low stone walls, and were in a very high state of cultivation. These several portions of land were planted with the eddo or taro root, in different stages of inundation; none being perfectly dry, and some from three to six or seven inches under water. The causeway led us near a mile from the beach, at the end of which was the water we were in quest of. It was a rivulet five or six feet wide, and about two or three feet deep, well banked up, and nearly motionless; some small rills only, finding a passage through the dams that checked the sluggish stream, by which a constant supply was afforded to the taro plantations.
>
> [We] found the plain in a high state of cultivation, mostly under immediate crops of taro; and abounding with a variety of wild fowl, chiefly of the duck kind . . . The sides of the hills, which were at some distance, seemed rocky and barren; the intermediate vallies, which were all inhabited, produced some large trees, and made a pleasing appearance. The plain, however, if we may judge from the labour bestowed on their cultivation, seemed to afford the principal proportion of the different vegetable productions on which the inhabitants depend for their subsistence.

Further details of the exuberant life that must have characterized the Hawaiians use of the lands that included the *ahupua'a* of Waikīkī are given by Archibald Menzies (1920:23-24), a naturalist accompanying Vancouver's expedition:

> The verge of the shore was planted with a large grove of cocoanut palms, affording a delightful shade to the scattered habitations of the natives. Some of those near the beach were raised a few feet from the ground upon a kind of stage, so as to admit the surf to wash underneath them. We pursued a pleasing path back to the plantation, which was nearly level and very extensive, and laid out with great neatness into little fields planted with taro, yams, sweet potatoes and the cloth plant. These, in many cases, were divided by little banks on which grew the sugar cane and a species of Draecena without the aid of much cultivation, and the whole was watered in a most ingenious manner by dividing the general stream into little aqueducts leading in various directions so as to be able to supply the most distant fields at pleasure, and the soil seemed to repay the labour and industry of these people by the luxuriancy of its productions. Here and there we met with ponds of considerable size, and besides being well stocked with fish, they swarmed with water fowl of various kinds such as ducks, coots, water hens, bitterns, plovers and curlews.

However, the traditional Hawaiian focus on Waikīkī as a center of chiefly and agricultural activities on southeastern O'ahu was soon to change – disrupted by the same Euro-American contact which produced the first documentation (including the records cited above) of that traditional life. The *ahupua'a* of Honolulu - with the only sheltered harbor on O'ahu - became the center for trade with visiting foreign vessels, drawing increasing numbers of Hawaiians away from their traditional environments. Kamehameha himself moved his residence from Waikīkī to the coast near Honolulu harbor, likely in order to maintain his control of the lucrative trade in sandalwood that had developed. By 1828, the missionary Levi Chamberlain(1957:26), describing a journey into Waikīkī, would note:

> Our path led us along the borders of extensive plats of marshy ground, having raised banks on one or more sides, and which were once filled with water, and replenished abundantly with esculent fish; but now overgrown with tall rushes waving in the wind. The land all around for several miles has the appearance of having once been under cultivation. I entered into conversation with the natives respecting this present neglected state. They ascribed it to the decrease of population. (Chamberlain 1957:26)

Tragically, the depopulation of Waikīkī was not simply a result of the attractions of Honolulu (where, by the 1820's, the population was estimated at 6,000 to 7,000) but also of the European diseases that had devastating effects upon the Hawaiian population.

3.1.2 Mid-Nineteenth Century and the Māhele

The depopulation of Waikīkī, however, was not total and the *ahupua'a* continued to sustain Hawaiians living traditionally into the mid-19th century. The Organic Acts of 1845 and 1846 initiated the process of the Māhele (the division of Hawaiian lands) which introduced private property into Hawaiian society. In 1848, the crown (Hawaiian government) and the *ali'i* (royalty) received their land titles. Subsequently in the Māhele, Land Commission Awards (LCAs) for *kuleana* parcels were awarded to commoners and others who could prove residency on and use of the parcels they claimed. Land Commission Award records document awardees continuing to maintain fishponds and irrigated and dryland agricultural plots, though on a greatly reduced scale than had been previously possible with adequate manpower.

3.1.3 Mid to Late 1800s

As the 19th century progressed, Waikīkī was becoming a popular site among foreigners – mostly American – who had settled on O'ahu. An 1865 article in the Pacific Commercial Advertiser mentioned a small community that had developed along the beach. The area continued to be popular with the *ali'i* – the Hawaiian royalty – and several notables had residences there. A visitor to O'ahu in 1873 described Waikīkī as "a hamlet of plain cottages, whither the people of Honolulu go to revel in bathing clothes, mosquitoes, and solitude, at odd times of the year" (Bliss 1873).

Other developments during the second half of the 19th century a prelude of changes that would dramatically alter the landscape of Waikīkī during the 20th century – include the improvement of the road connecting Waikīkī to Honolulu (the route of the present Kalākaua

Ave.), the building of a tram line between the two areas, and the opening of Kapi'olani Park on June 11, 1877. Traditional land-uses in Waikīkī were abandoned or modified. By the end of the 19th century most of the fishponds that had previously proliferated had been neglected and allowed to deteriorate. The remaining taro fields were planted in rice to supply the growing numbers of immigrant laborers imported from China and Japan, and for shipment to the west coast of the United States.

As the sugar industry throughout the Hawaiian kingdom expanded in the second half of the 19th century, the need for increased numbers of field laborers prompted passage of contract labor laws. In 1852, the first Chinese contract laborers arrived in the islands. Contracts were for five years, and pay was $3 a month plus room and board. Upon completion of their contracts, a number of the immigrants remained in the islands, many becoming merchants or rice farmers. As was happening in other locales, in the 1880's, groups of Chinese began leasing and buying (from the Hawaiians of Waikīkī) former taro lands for conversion to rice farming. The taro lands' availability throughout the islands in the late 1800's reflected the declining demand for taro as the Native Hawaiian population diminished.

The Hawaiian Islands were well positioned for rice cultivation. A market for rice in California had developed as increasing numbers of Chinese laborers immigrated there since the mid-19th century. Similarly, as Chinese immigration to the islands also accelerated, a domestic market opened.

> The primary market for both husked rice and paddy raised in all parts of the Hawaiian Islands was in Honolulu. The number of Chinese in the islands created a large home demand.
>
> In 1880 the home market was made more secure by an increase in the duty on rice imported into Hawai'i to 1½ cents on paddy and 2½ cents on hulled rice. It resulted in further checking the importation of foreign rice and giving an immense impetus to the home product [Coulter and Chun, 1937: 13]

By 1892, Waikīkī had 542 acres planted in rice, representing almost 12% of the total 4,659 acres planted in rice on O'ahu. Most of the former taro *lo'i* converted to rice fields were located *mauka* of the present Ala Wai Boulevard.

3.1.4 1900 to 1920

During the first decade of the 20th century, the U.S. War Department acquired more than 70 acres in the Kālia portion of Waikīkī for the establishment of a military reservation called Fort DeRussy, named in honor of Brig. Gen. R.E. DeRussy of the Army Corps of Engineers.

> On 12 November 1908, a detachment of the 1st Battalion of Engineers from Fort Mason, California, occupied the new post...
>
> Between 1909 and 1911 the engineers were primarily occupied with mapping the island of O'ahu. At DeRussy other activities also had to be attended to - especially the filling of a portion of the fishponds which covered most of the Fort. This task fell to the Quartermaster Corps, and they accomplished it through the

> use of an hydraulic dredger which pumped fill from the ocean continuously for nearly a year in order to build up an area on which permanent structures could be built. Thus the Army began the transformation of Waikīkī from wetlands to solid ground, [Hibbard and Franzen 1986:79].

All the fishponds were filled by 1928.

A fire insurance map of 1914 shows that there were five areas in Waikīkī where residential and commercial structures were concentrated in the early 20th century (Figure 5). These areas were located: 1) clustered at Saratoga Road and Lewers Road; 2) near the intersection of Ena Road and Kalākaua Avenue; 3) *makai* of Kālia Road on the east side of Ft. DeRussy; 4) clustered around the Moana Hotel on Kalākaua Avenue; and 5) in Kapahulu on the *'Ewa* side of Makee Road (the present Kapahulu Avenue). The fire insurance map also reveals the relative isolation of Waikīkī, in the early 20th century, from the encroaching grid of modern Honolulu streets.

3.1.5 1920's to 1930's

During the 1920's, the Waikīkī landscape would be transformed when the construction of the Ala Wai Drainage Canal, begun in 1921 and completed in 1928, resulted in the draining and filling in of the remaining ponds and irrigated fields of Waikīkī (Figure 6). The canal was one element of a plan to urbanize Waikīkī and the surrounding districts:

> The [Honolulu city] planning commission began by submitting street layout plans for a Waikīkī reclamation district. In January 1922 a Waikīkī improvement commission resubmitted these plans to the board of supervisors, which, in turn, approved them a year later. From this grew a wider plan that eventually reached the Kapahulu, Mō'ili'ili, and McCully districts, as well as lower Makiki and Mānoa...
>
> The standard plan for new neighborhoods, with allowances for local terrain, was to be that of a grid, with 80-foot-wide streets crossing 70-foot-wide avenues at right angles so as to leave blocks of house lots about 260 by 620 feet. Allowing for a 10-foot-wide sidewalk and a 10-foot right-of-way [alley] down the center of each block, there would be twenty house lots, each about 60 by 120 feet, in each block [Johnson 1991:311]

During the course of the Ala Wai Canal's construction, the banana patches and ponds between the canal and the *mauka* side of Kalākaua Avenue were filled and the present grid of streets was laid out. These newly created land tracts spurred a rush to development in the 1930's. An article in the Honolulu Star-Bulletin in 1938 extolled the area's progress:

> The expansion of apartment and private residence construction is no secret. Examination of building permits will show that more projects have been completed during the past year, and more are now underway in this area, than in any other section of the territory.

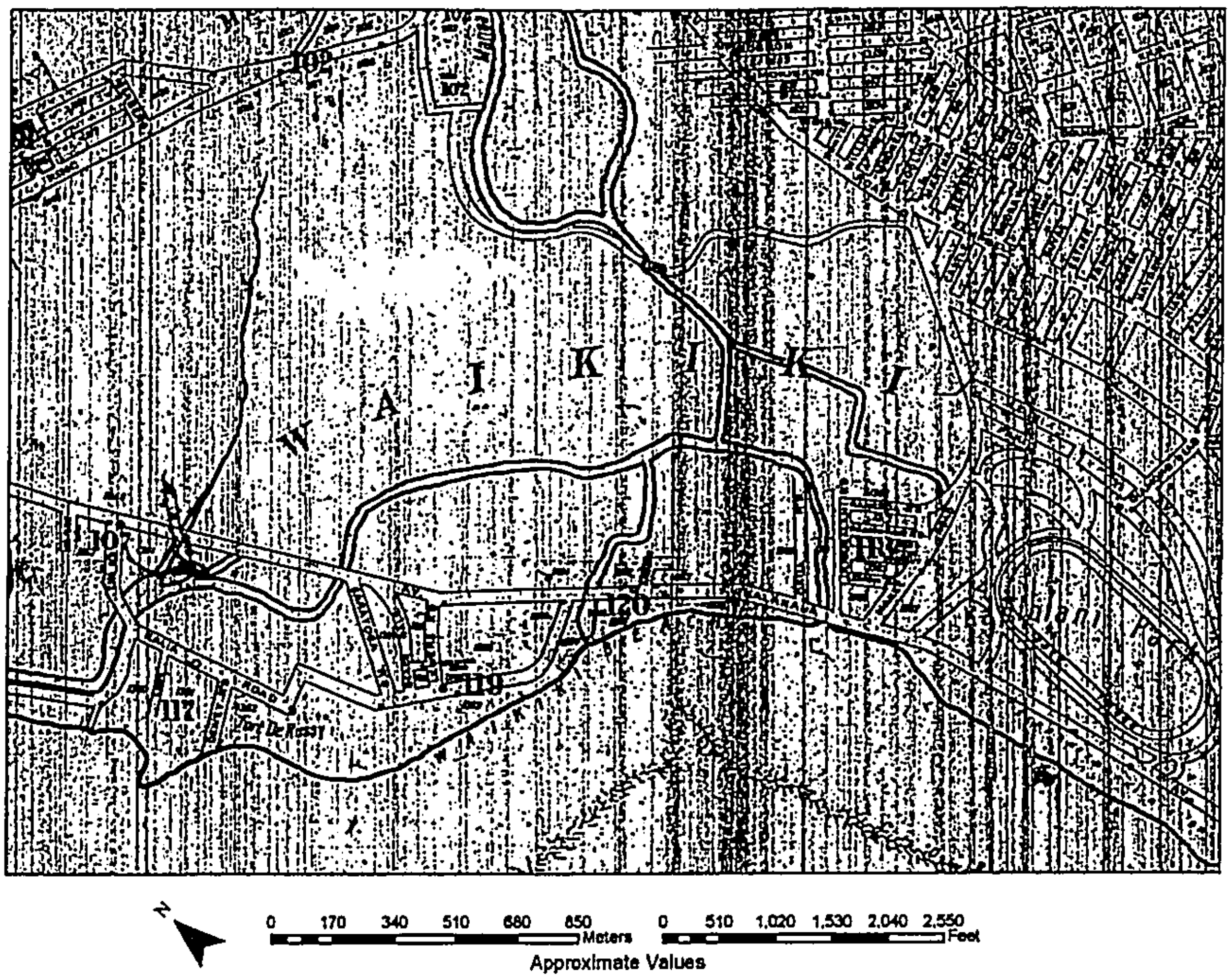


Figure 5. Portion of 1914 Sanborn Fire Insurance Map of Waikīkī

> These developments are being made by island residents who have recognized the fact that Waikīkī presents the unparalleled possibility for safe investment with excellent return. (Newton 1938: 10)

The writer speculated that the "future of Waikīkī is assured."

3.1.6 1940's

The entrance of the United States into World War II following the Japanese bombing of Pearl Harbor on December 7, 1941 put on hold plans for the development of Waikīkī as a tourist destination. Until the war's end in 1945, the tourist trade was non-existent "...since the Navy controlled travel to and from Hawai'i and did not allow pleasure trips" (Brown 1989: 141). For the duration of the war, Waikīkī was transformed into a recreation area for military personnel.

> It was not the same Waikīkī as before the war, though; barbed wire barricades now lined its sands, and there were other changes too. Fort DeRussy became a huge recreation center, with a dance hall called Maluhia that attracted thousands of men at a time. The Moana Hotel continued to function, but many other establishments and private homes in the area were taken over by the military. [Brown 1989:141]

Nearing the war's end, concerns began arising over the future of Waikīkī. An article in the Honolulu Advertiser of July 16, 1945 decried "honky-tonks" that had sprung up in Waikīkī during the course of the war, and asked: "Can anyone look at present-day Kalākaua Ave. – lined with makeshift curio shops, noisy 'recreation' centers, eyesores that pass under the name of lunchrooms and miscellany of 'joints' – and hope that Waikīkī can stage a comeback [as a tourist destination]?"

3.1.7 1950's

By the mid-1950's there were more than fifty hotels and apartments from the Kālia area to the Diamond Head end of Kapi'olani Park. The Waikīkī population, by the mid-1950's, was not limited to transient tourists but included 11,000 permanent residents living in 4,000 single dwellings and apartments in stucco or frame buildings.

3.2 Historic Documentation of the Project Area

The present project area is located on the *mauka* fringe of a portion of Waikīkī that, in traditional Hawaiian times and before the massive drainage accomplished by the Ala Wai Canal, comprised a complex of numerous large fishponds that extended between the present Saratoga Road and the grounds of Fort DeRussy to present Atkinson Drive and Ala Moana Shopping Center. An 1881 Hawaiian Government survey map by S.E. Bishop provides a detailed record of the physical landscape of Waikīkī before the transformations of the 20th century. When the map was copied in 1922, additional material from subsequent government surveys was added, including locations of road corridors not present in 1881. A portion of the 1922 copy, with the location of the present project area indicated, shows the fishponds located between the project area and the Waikīkī coast line (Figure 4).

The 1881 map also indicates locations of mid-nineteenth century Land Commission Awards. Māhele records for these awards provide the first specific documentation of land use in the vicinity of the present project area. Two *apana* (parcels) associated with two Land Commission Awards – LCA 1999 to Nalimu and LCA 2081 to Jane Laeau – are located immediately adjacent to the project area.

In LCA documents, Nalimu's parcel – located immediately northwest of the project area – is described as a "land and house at Kalia in Waikiki" (Native Register vol.3, pg. 319) which he acquired "from his wife, Kamakani, who had received it from her grandfolks before the time of Kamehameha I" (Native Testimony vol. 3, pg. 574). The parcel is described as bounded:

> Mauka by Napahuelima's land
>
> Waialae by the same
>
> Makai by Loeau's land
>
> Honolulu by a water course belonging to Kapahoulima (Foreign Testimony vol. 3, pg. 237-238)

Māhele records indicate that LCA 2081, comprising two parcels – was actually awarded to Kaoneanea who claimed the land "for my hanai, Loeau", i.e. the Jane Loeau identified on the 1881 map (Native Register vol. 3, pg. 350). Apana (parcel) 1 of LCA 2081 – located immediately west of the project area – is described as "3 taro patches" bounded:

> Mauka, [by land of] Kamoanahula
>
> Waialae, [by land of] Kauhao
>
> Makai, [by land of] Maoli
>
> Honolulu, Kekuanaoa's land (Native Testimony vol. 3, pg. 634)

Documents for LCA 1999, LCA 2081 and other nearby awards suggest that, in the vicinity of the present project area, land usage and activity by the mid-nineteenth century included habitation and wetland agriculture. This may reflect the continuation into that century of traditional Hawaiian land use, along with the farming of fishponds, in this portion of Waikīkī.

The 1881 map appears to indicate that the present project area, during the second half of the nineteenth century, was a dryland environment with fencing delineating some of its sides and running across a portion of its interior. The only apparent water feature indicated within the project area is an *'auwai* (irrigation channel), running through its northeastern corner, that feeds a pond or irrigated taro field located just outside its northern boundary. Drawn before the extensive drainage and landfilling of the Waikīkī landscape accomplished by the construction of the Ala Wai Canal in the 1920s, the 1881 map likely represents the project area as it had appeared in traditional Hawaiian times: a dryland environment elevated above the surrounding fishpond ponds and wetland fields. Such an environment would have provided a base for habitation, work, and recreational activities of the Hawaiian population.

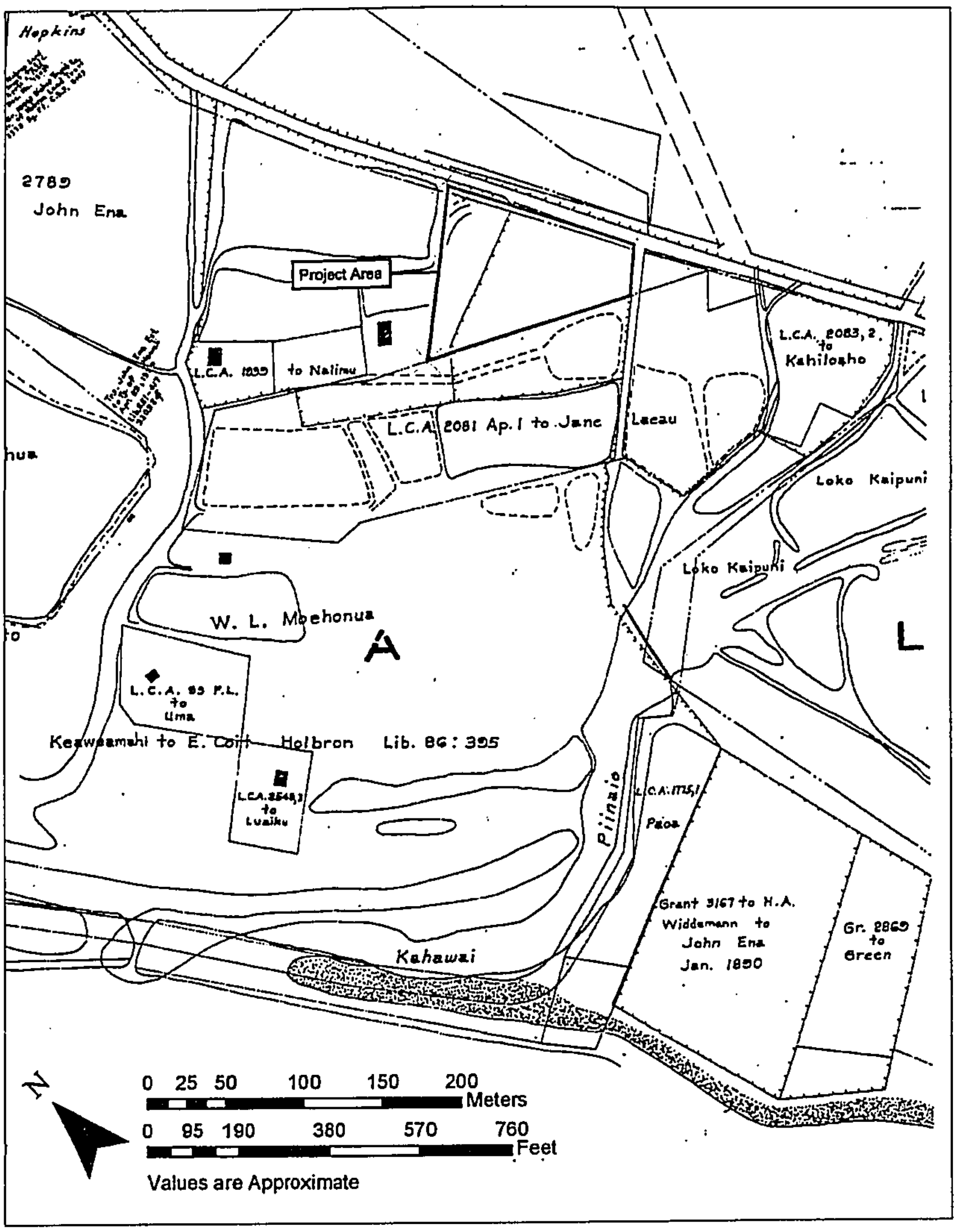


Figure 6. Portion of Registered Map 1398, a 1881 map by S.E. Bishop with location of present project area outlined in black

Subsequent documents – including historic maps and photographs – record the development of the project area through the first half of the twentieth century. A map of Waikīkī based on military surveys between 1909 and 1913 indicate rows of buildings laid out across the project area (Figure 7). A 1927 Sanborn Fire Insurance map the early identifies the buildings within the project area, constructed during the first quarter of the twentieth century, as single-story, wooden dwellings (Figure 8).

A 1927 aerial photograph of Waikīkī shows the project area in the year before the completion of the Ala Wai Canal (Figure 9). The presence of structures and mature trees within the project area and its surroundings further confirm that the area was an original dryland environment. It was not a drained and filled construct related to the canal's construction.

A 1951 Sanborn Fire Insurance map showing the project area reflects mid-twentieth century changes occurring within Waikīkī (Figure 10). Dwelling structures away from Kalākaua Avenue shown on the 1927 fire insurance map continue in place. However, along Kalākaua Avenue itself: two dwelling structures have been converted to commercial use; one has been demolished and a furniture store and warehouse have been constructed in its place; and a bar and store have been constructed on the formerly empty lot at the corner of Kalākaua Avenue and Ena Road.

In summary, from traditional Hawaiian times to the modern era the present project has comprised continuously a dryland environment. Originally elevated above surrounding fishponds and wetland fields, the project area, from the latter nineteenth century into the twentieth century, was integrated into development of Waikīkī as a residential area and subsequently as a resort and commercial district.

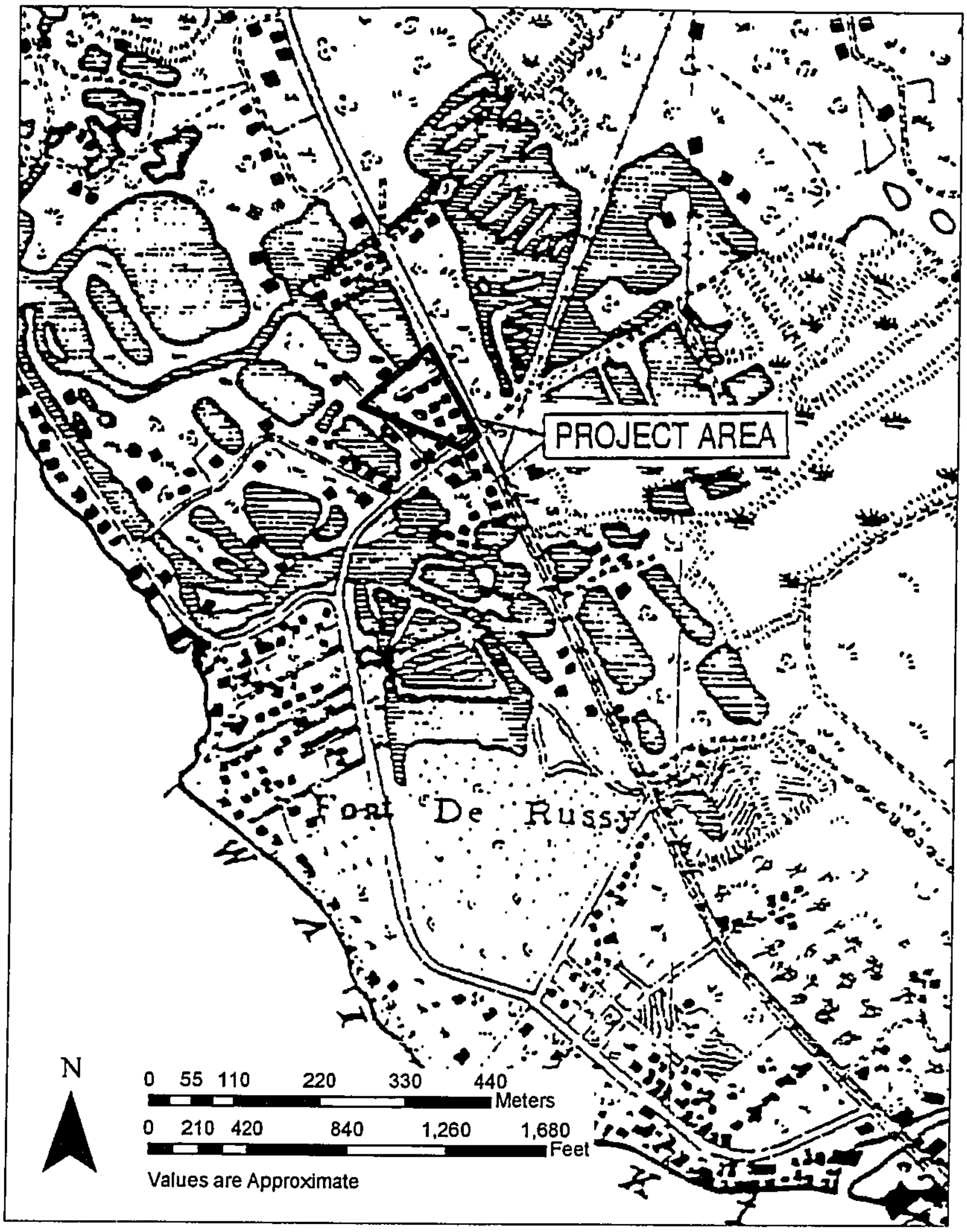


Figure 7. Portion of U.S. Army Engineers map, based on military surveys from 1909 to 1913, with location of present project area indicated

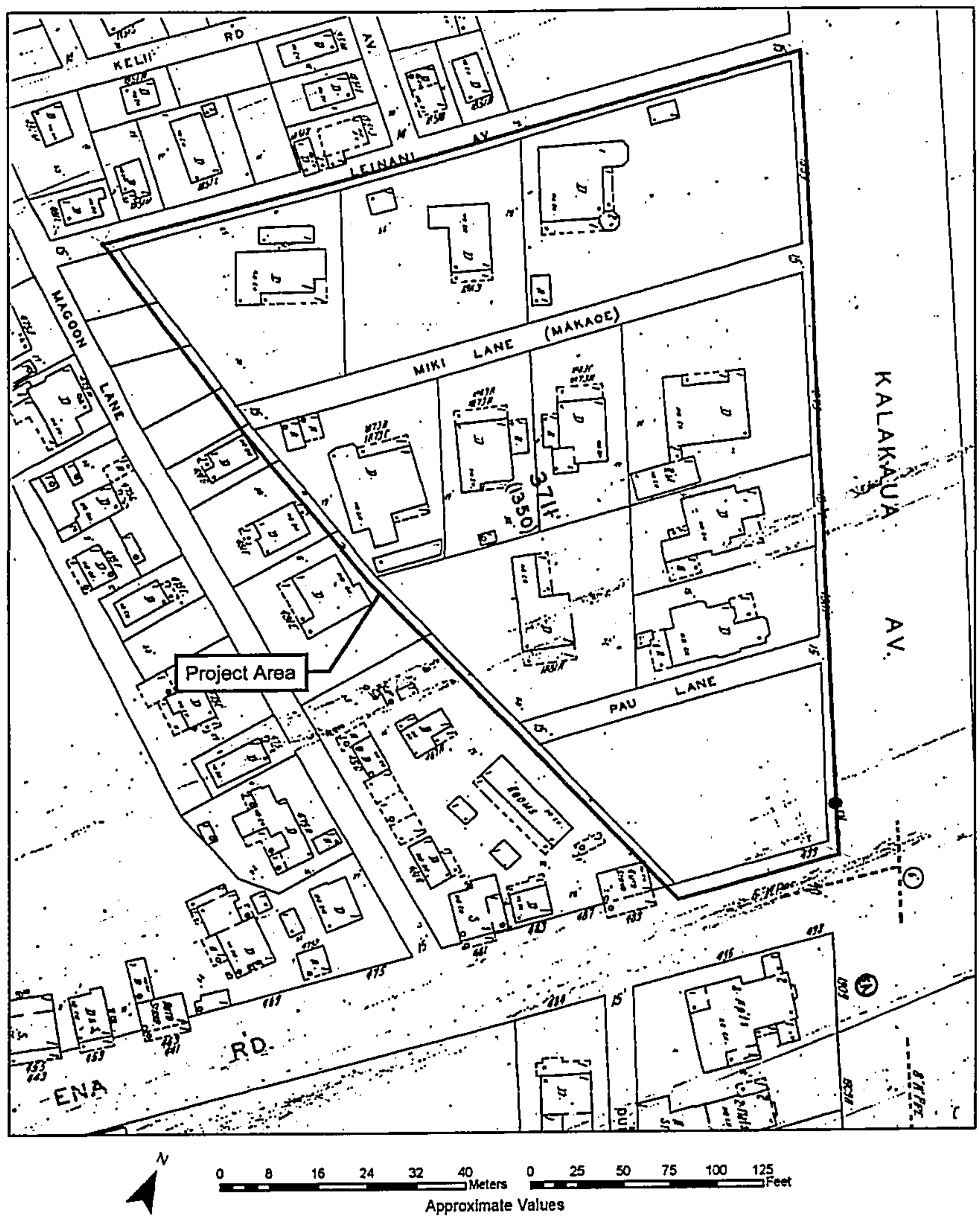


Figure 8. 1927 Sanborn Fire Insurance map of project area

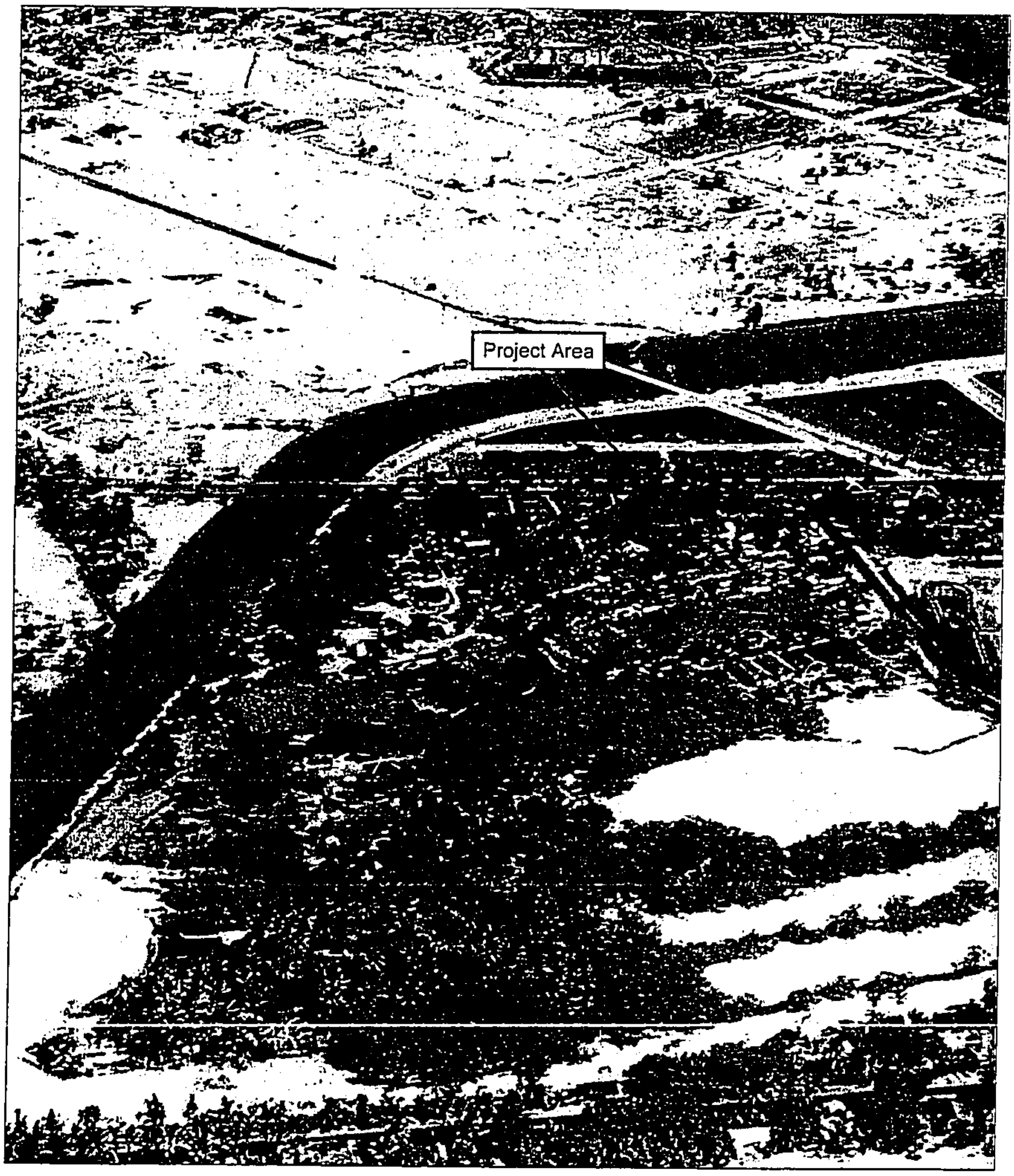


Figure 9. 1927 aerial photograph of Waikīkī with location of present project area indicated

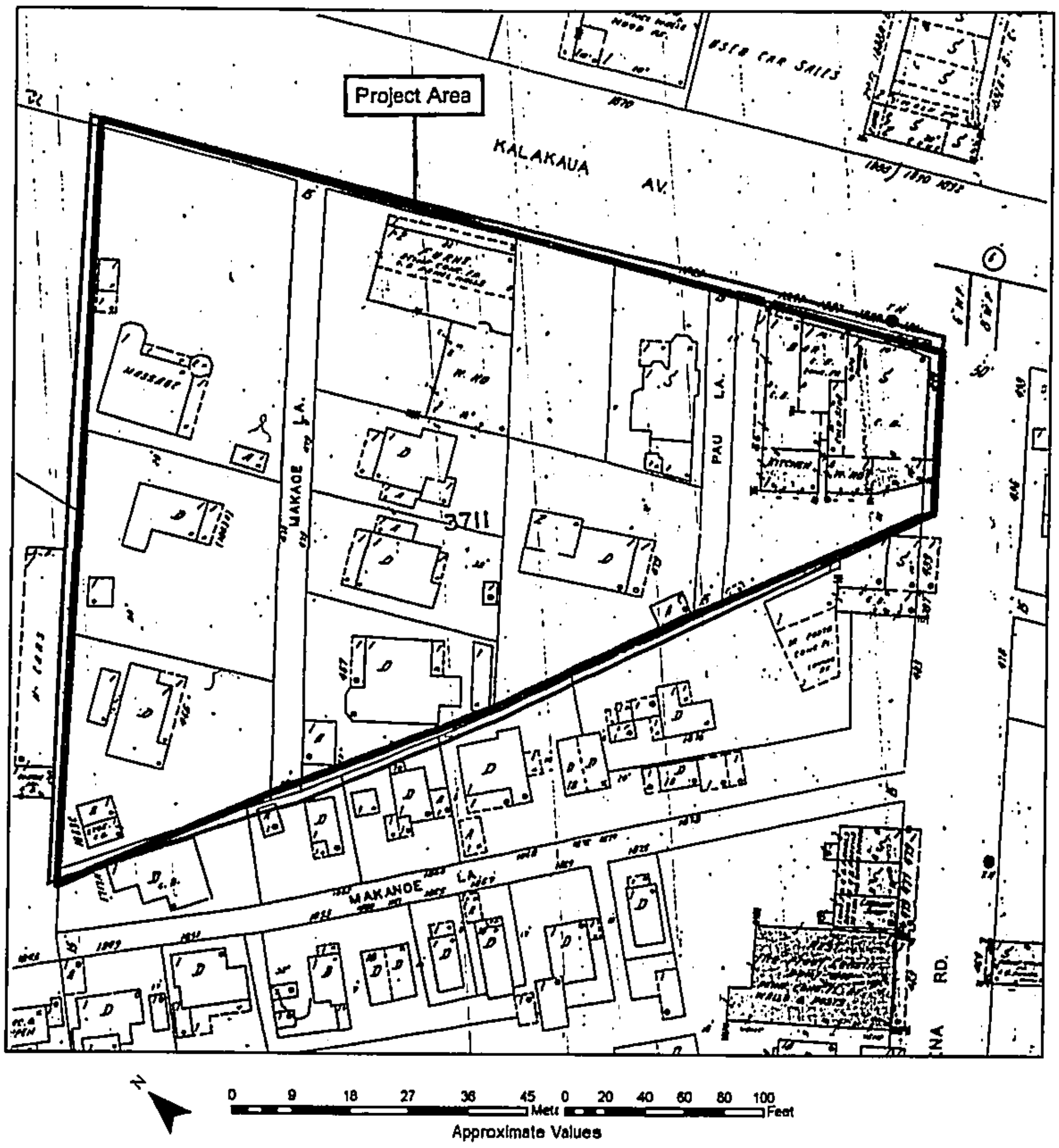


Figure 10. 1951 Sanborn Fire Insurance map of the project area

Section 4 Previous Archaeological Research

The *ahupua'a* of Waikīkī, in the centuries before the arrival of Europeans, was an intensely utilized area, with abundant natural and cultivated resources, that supported a large population. In the nineteenth and early twentieth centuries, after a period of depopulation, Waikīkī was reanimated by Hawaiians and foreigners residing there, and by farmers continuing to work the irrigated field system, which had been converted from taro to rice. Farming continued up to the first decades of this century until the Ala Wai Canal drained the remaining ponds and irrigated fields. Remnants of the pre-contact and historical occupation of Waikīkī have been discovered and recorded in archaeological reports, usually in connection with construction activities related to urban development, or infrastructural improvements. These discoveries, which have occurred throughout Waikīkī, have included many human burials, traditional Hawaiian and historic, as well as pre-contact Hawaiian and historic cultural deposits. A full list of projects conducted in the Waikīkī area is listed in Table 1. A discussion of projects focusing on burials (Figure 11) follows.

N.B. Emerson reported on the uncovering of human burials during the summer of 1901 on the property of James B. Castle - site of the present Elks Club - in Waikīkī during excavations for the laying of sewer pipes (Emerson 1902:18-20). Emerson noted:

> The soil was white coral sand mixed with coarse coral debris and sea-shells together with a slight admixture of red earth and perhaps an occasional trace of charcoal. The ground had been trenched to a depth of five or six feet, at about which level a large number of human bones were met with, mostly placed in separate groups apart from each other, as if each group formed the bones of a single skeleton. Many of the skulls and larger bones had been removed by the workmen before my arrival, especially the more perfect ones [Emerson 1902:18].

Emerson's report on the find describes the remains of at least four individuals, all presumed to be Hawaiian. Associated burial goods were also exposed during excavation; these included "a number of conical beads of whale-teeth such as the Hawaiians formerly made" and "a number of round glass beads of large size". The glass beads "can be assigned with certainty to some date subsequent to the arrival of the white man" (Emerson 1902:19). Also located with the beads was "a small sized *niho-palaoa*, such as was generally appropriated to the use of the chiefs" which had been "carved from the tooth of the sperm-whale" and which was "evidently of great age" (Emerson 1902:19).

In the 1920s and 30s the first systematic archaeological survey of O'ahu was conducted by J. C. McAllister (1933). He recorded four *heiau* (temples), three of which were located at the *mauka* reaches of Waikīkī *Ahupua'a* in lower Mānoa Valley. The fourth *heiau* – Papa'ena'ena - was located at the foot of Diamond Head crater in the environs of the present Hawai'i School for Girls. Papa'ena'ena Heiau is traditionally associated with Kamehameha I, who was said to have visited the *heiau* before setting off to battle for Ni'ihau and Kaua'i in 1804. Five years later, according to John Papa 'Ī'ī, Kamehameha placed at Papa'ena'ena the remains of an adulterer - "all prepared in the customary manner of that time" ('Ī'ī 1959:50-51).

Table 1.Previous Archaeological Investigations in Waikīkī Ahupua'a

Reference	Type of Investigation	General Location	Findings
McAllister 1933	Island-wide survey	All of O'ahu	Waikīkī listed as Site 60.
Nakamura 1979	History Graduate Thesis	Waikīkī	History of Waikīkī with focus on the radical changes in land use that occurred in the early 20th century.
Neller 1980	Monitoring Report	Kālia Burial Site: Hilton Hawaiian Village	Brief field inspection: partial recovery of 3 historic Hawaiian burials, trash pit from 1890's, no prehistoric Hawaiian sites.
Bishop Museum 1981	Testing, Excavations, & Monitoring	Halekulani Hotel	Intact cultural deposits found.
Neller 1981	Reconnaissance Survey	Halekulani Hotel	Limited background research on area
Acson 1983	Historical Research	'Ewa to Diamond Head	Nine walks through Waikīkī, photos, maps and historical info.
Bishop Museum 1984	Burial Remains List	Waikīkī Ahupua'a	Listing of burial remains found in Waikīkī Ahupua'a at the Bishop Museum
Davis 1984	Archaeological and Historical Investigation	Halekulani Hotel	48 historic and prehistoric features excavated.
Neller 1984	Informal Narrative Report	Paoakalani Street	Recovery of human skeletons at construction site
Center for Oral History 1985	Oral Histories, Volumes I-IV	Waikīkī	Oral Histories of Waikīkī, 1900-1985, Volumes I-IV
Griffin 1987	Burial Recovery Report	Along Kalākaua Ave. near corner of Kai'ulani St.	Bones removed and bagged by construction crew, burial found in *makai* wall of gas pipe excavation.
SHPD 1987	Burial, PA Report	Kalākaua Ave.	From excavation adjacent to Moana Hotel (site -9901).
Davis 1989	Reconnaissance Survey & Historical Research	Fort DeRussy	Fishponds and other features are buried in this area. Sites -4573 thru -4577 are fishponds, 4570 is a remnant cultural deposit.
Riford 1989	Background Literature Search	TMK: 2-6-014:039	List of literature pertaining to Waikīkī area.
Rosendahl 1989	Inventory Survey, Prelim. Report	Fort DeRussy	Historic artifacts, no human remains

Reference	Type of Investigation	General Location	Findings
Athens 1990	Letter	TMK: 2-6-023:025	Letter to SHPD listing human remains at IARII lab from Pacific Beach Hotel, and Barbers Point Generating Station.
Hurst 1990	Historical Literature Search	Waikikian Hotel	Background and planning document. No fieldwork was done.
Chigioji 1991	Assessment	2 parcels, TMK 2-6-24:65-68 and 80-83, TMK 2-6-24:34-40 & 42-45	Formerly a corner of the 'Āinahau estate; remainder of parcels, former *'auwai*, *kalo* and rice fields; test excavations and specific sampling strategy recommended.
Davis 1991	Monitoring Report	Fort DeRussy	See also Davis 1989. Subsurface features and material remains date to early post-contact times (c. 1780s to 1790s) through the mid-19th century.
Kennedy 1991	Monitoring Report	TMK: 2-6-022:014 IMAX theatre location	Pollen and bulk-sediment ^{14}C samples from ponded sediments were recovered. The three ^{14}C dates and pollen sequence were inverted.
SHPD 1991	Public Inquiry	TMK: 2-6-024:036	Bones were determined to be non-human and part of the extensive fill material present
Simons et al. 1991	Interim Field Study, Monitoring & Data Recovery	Moana Hotel Area	8 burials, preliminary osteological analysis indicates pre-contact type; pre- and post artifactual material recovered.
Hurlbett 1992	Monitoring Report	TMK: 2-6-008:001	Site -2870 (3 burials) found by Neller in 1980. This report is on testing and monitoring in same area.
Pietru-sewsky 1992a	PA Report	Moana Hotel	Right half of human mandible found by hotel guest.
Pietru-sewsky 1992b	PA Report	Lili'uokalani Gardens Site, Hamohamo	Human Remains from the Lili'uokalani Gardens Site, Hamohamo, Waikīkī, O'ahu
Rosendahl 1992	Monitoring Report	Hilton Hawaiian Village	Identified12 historic refuse pits, 3 historic to modern trenches.
Streck 1992	Memorandum for Record	Fort DeRussy	Human burial discovery (believed to be late prehistoric Hawaiian) during data recovery excavations, May, 20, 1992.
Cleghorn 1993	Inadvertent Discovery of Human Remains	Waikīkī Aquarium	Remains of one human individual, mandible identified.

Reference	Type of Investigation	General Location	Findings
Dagher 1993	Inadvertent Discovery of Human Remains	Waikīkī Aquarium	Human remains of at least one person identified, excavation recommended.
Dega & Kennedy 1993	Inadvertent Discovery of Remains	Waikīkī Aquarium	Discovery of unidentified bone fragments, all remains turned over to SHPD.
Hammatt & Chiogioji 1993	Archaeological Assessment	16-Acre Portion of the Ala Wai Golf Course	Not associated with any know surface archaeological site, however prehistoric and early historic occupation layers associated with *lo'i* system remain intact below modern fill. Specific sampling strategy and potential burial testing recommended.
Maly et al. 1994	Archaeological and Historical Assessment Study	Convention Center Project Area	Recommend subsurface testing to determine presence or absence of cultural deposits and features.
McMahon 1994	SHPD Burial Report	Intersection of Kalākaua and Kuamo'o Streets	Inadvertent Burial Discovery: misc. bones uncovered in back dirt pile during construction. Follow up by CSH.
Hammatt & Shideler 1995	Sub-surface Inventory Surface	Hawai'i Convention Center Site, 1777 Kalākaua Ave.	No further work recommended.
Jourdane 1995	Inadvertent Discovery of Human Remains	Paoakalani Avenue	Human skeletal remains discovered in planted strip between street and sidewalk fronting hotel.
Simons et al. 1995	Data Recovery Excavations	Fort DeRussy	Historic and prehistoric artifacts, and midden materials collected from 7 occupation layers. 6 prehistoric cultural features recorded: *'auwai* bunds and channels, fishpond walls and sediments, a possible *lo'i*, and hearths.
Cleghorn 1996	Inventory Survey	TMK: 2-6-016:23, 25, 26, 28, 61, 69	7 backhoe trenches excavated, no sites located.
Grant 1996	Historical Reference	Waikīkī	Historical information about Waikīkī prior to 1900.
Hammatt & Shideler 1996	Data Recovery	Hawai'i Convention Center Site	No clear evidence that Kuwili Pond sediments present in project area; no further work recommended.
McDermott et al. 1996	Inventory Survey	'Āinahau Estate	Buried remnants of *'auwai* and *lo'i* and human burial found. ^{14}C dates

Reference	Type of Investigation	General Location	Findings
Denham et al. 1997	Data Recovery Report	Fort DeRussy	Excavations conducted at fishponds, ^{14}C dates mid-17th C.
Denham & Pantaleo 1997	Monitoring and Excavations Report	Fort DeRussy	Final Report does not include SHPD recommendations. 10 subsurface features and 9 burial locations found. ^{14}C dates
Beardsley & Kaschko 1997	Monitoring and Data Recovery Report	Pacific Beach Hotel Office Annex	Traditional Hawaiian cultural deposits and 2 human burials. 3 ^{14}C dates
Hammatt & Chiogioji. 1998	Assessment	King Kalākaua Plaza Phase II	No surface archaeological sites, documented human burials, presence of subsurface cultural deposits (both of pre-contact Hawaiian and historic provenance).
Hammatt & McDermott 1999	Burial Disinterment Plan and Report	Kalākaua Avenue	Two human burials found
Perzinski et al. 1999	Monitoring Report	Along Ala Wai Blvd., Kalākaua Ave., Ala Moana Blvd., & 'Ena Rd.	Two human burials found (1 preceding monitoring); pockets of undisturbed layers still exist. Burial #2 previously disturbed.
Rosendahl 1999	Interim Report: Inventory Survey	Fort DeRussy	This area is part of the old shoreline.
Hammatt & Chiogioji 2000	Archaeological Assessment	Honolulu Zoo Parcel	Majority of zoo parcel unlikely to yield significant cultural deposits. However, strong possibility of significant subsurface cultural deposits in the SW portion. Monitoring is recommended in this area.
LeSuer et al. 2000	Inventory Survey	King Kalākaua Plaza Phase II	Site -5796 has been adversely affected by land alteration of the project area. Site -4970, has been adequately documented.
Perzinski et al. 2000	Burial Findings	Kalākaua Ave. between Kai'ulani & Monsarrat Avenues	44 sets of human remains; 37 disinterred, 7 left in place; believed to be Native Hawaiian, interred prior to 1820.
Cleghorn 2001	Mitigation	Burger King Construction Site	Concerning three incidents of uncovered human remains while locating a buried sewer-line for the ABC's store.
Corbin 2001	Inventory Survey	Hilton Waikikian Property	No arch. sites were found during excavations of the area

Reference	Type of Investigation	General Location	Findings
Elmore & Kennedy 2001	Burial Report	Royal Hawaiian Hotel	Human remains found during trench excavations for conduit. The in situ remains were left in place, while the disturbed remains were re-interred with the others.
McGuire & Hammatt 2001	Cultural Assessment for Waikīkī Beach Walk Project	Along Lewers St., Beach Walk, Kālia Rd. & Saratoga Rd.	Primary cultural concern identified as inadvertent burial discovery. Cultural monitoring recommended for all subsurface work within project area.
Perzinski & Hammatt 2001a	Monitoring Report	Kapi'olani Bandstand	A charcoal layer was observed, concentrated on the SW side of the bandstand; recovered indigenous basalt lamp with a handle, from the SE end of the bandstand.
Perzinski & Hammatt 2001b	Monitoring Report	Kapi'olani Park	No cultural layer, artifacts, midden or human burials were encountered during the excavations.
Perzinski & Hammatt 2001c	Monitoring Report	Kalākaua Avenue from the Natatorium to Poni Mo'i Road	No cultural layer, artifacts, midden or human burials were encountered during the excavations.
Rosendahl 2001	Assessment Study	Outrigger Beach Walk	Assessment of previous archaeology and historical literature.
Winieski & Hammatt 2001	Monitoring Report	TMK: 1-2-6-025:000	There is a possibility that Hawaiian or Historic materials as well as human burials may still be present within the project area.
Borthwick et al. 2002	Inventory Survey	71,000 sq. ft. parcel, TMK: 2-6-016:002	No burials were found during testing; absence of dry jaucas sand deposits indicate that burial finds are unlikely in project area.
Bush et al. 2002	Monitoring Report	Kalākaua Avenue, between Ala Moana Blvd. and Kapahulu Ave.	Encountered 4 human burials, probably pre-contact Native Hawaiians; several historic trash pits; entire pig within an *imu* pit (estimated date, A.D. 1641-1671); gleyed muck associated with former ponds.
Calis 2002	Monitoring Report	Lemon Road	No historic deposits, major previous disturbance
Elmore & Kennedy 2002	Monitoring Report	Fort DeRussy	No findings.

Reference	Type of Investigation	General Location	Findings
Mann & Hammatt 2002	Monitoring Report	Lili'uokalani Avenue and Uluniu Avenue	5 burial finds of 6 individuals; two historic trash pits.
Putzi & Cleghorn 2002	Monitoring Report	Hilton Hawaiian Village	No findings during monitoring of trench excavations for sewer connections.
Winieski, Perzinski, Shideler et al. 2002	Monitoring Report	Kalākaua Ave. between Ka'iulani and Monsarrat Avenues.	44 human burials encountered, 37 disinterred; buried habitation layer identified, with traditional Hawaiian artifacts, midden, firepits, & charcoal; fragment of light gauge rail, remnant of Honolulu Transit trolley system, observed; low energy alluvial sediments associated with the now channelized *muliwai* Kukaunahi also observed.
Winieski, Perzinski, Souza et al. 2002	Monitoring Report	Kūhiō Beach	Skeletal remains of 10 individuals, six disinterred, only 2 in situ. 4 indigenous artifacts, none in situ. Discontinuous cultural layer, historic seawall.
Bush et al. 2003	Monitoring Report	International Marketplace	Historic trash found.
Tome & Dega 2003	Monitoring Report	Waikīkī Marriot	One isolated not in situ possible human bone fragment found. Recommends monitoring during future work.
Tulchin & Hammatt 2003	Archaeological & Cultural Impact Assessment	2284 Kalākaua Ave.	Notes possibility of burials in the project area; recommends an inventory survey with subsurface testing.
Freeman et al. 2005	Archaeological Inventory Survey	Hobron Lane	Four sites identified during subsurface testing; 1 disturbed burial; 1 coffin burial with two individuals; 1 cultural deposit; and, 1 fishpond sediment
O'Hare et al. 2005	Archaeological Inventory Survey	Kaio'o Drive	Site 50-80-14-6848, a pre-contact firepit radiocarbon dated to AD 1470-1660, was recorded.

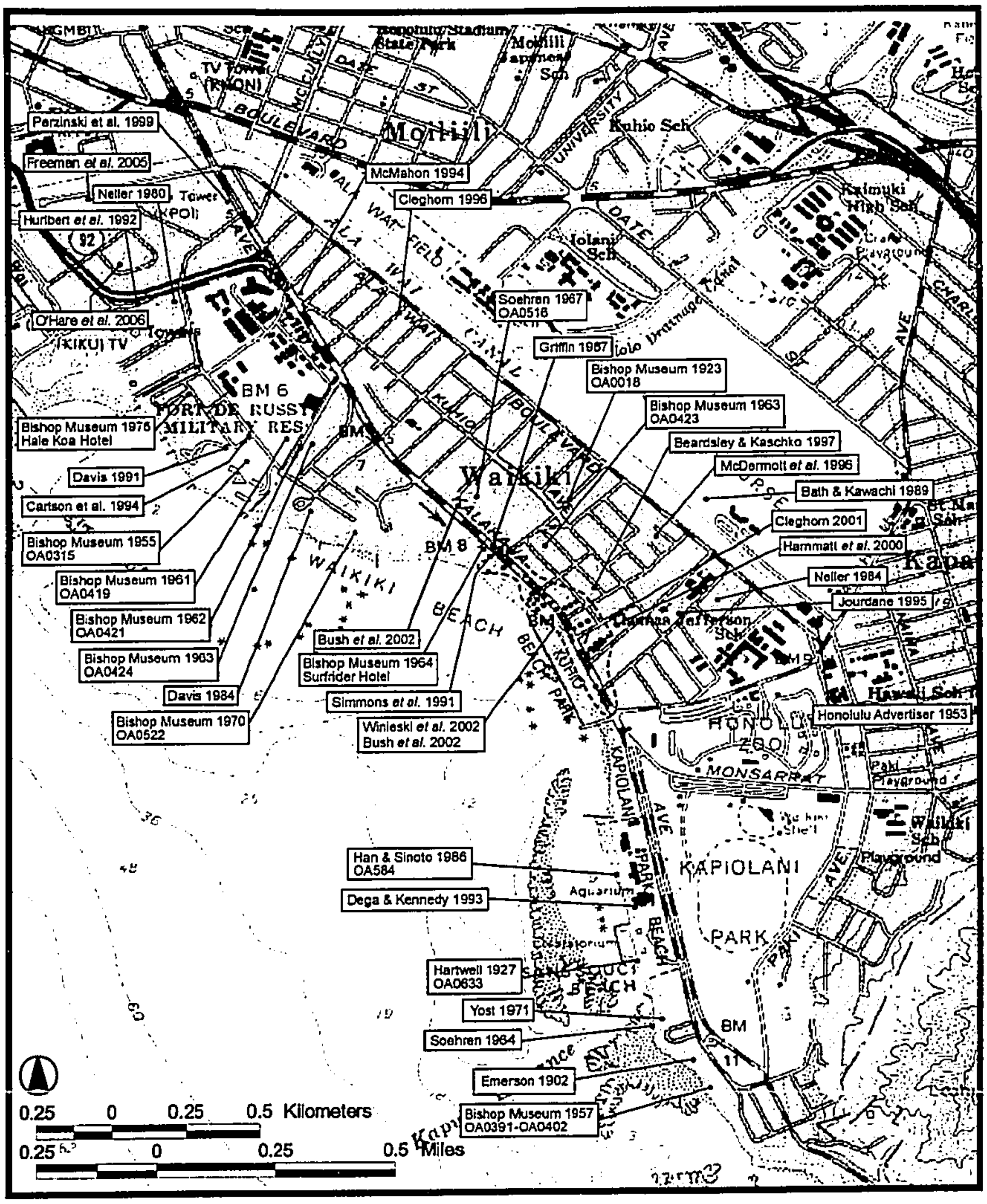


Figure 11. Previous Archaeological Work in Waikīkī, focusing on locations of burials

In 1963, two human skulls and other human remains were discovered in a construction trench at 2431 Prince Edward St. (Bishop Museum site Oa-A4-23, cited in Neller 1984. Multiple burials were encountered in 1963 during excavation for the construction of the present Outrigger Canoe Club at the Diamond Head end of Kalākaua Avenue. As reported in a newspaper article on Jan. 24, 1963:

> The Outrigger Canoe Club yesterday dedicated its new site [on land adjacent to and leased from the Elks Club], an ancient Hawaiian burial ground in Waikīkī. . .
>
> Robert Bowen of the Bishop Museum has been working closely with Ernest Souza, Hawaiian Dredging superintendent, on the removal of skeletons unearthed on the site, between the Colony Surf and the Elks Club. . . .
>
> Most of the bodies were buried in the traditional hoolewa position, with the legs bound tightly against the chest.
>
> One of the skeletons, Bowen said, shows evidence of a successful amputation of the lower forearm, indicating that the Hawaiians knew this kind of operation before the arrival of Europeans.
>
> The ages of the skeletons ranged from children to 40-year-old men and women. The average life span of the Hawaiians at the time was about 32 years [*Honolulu Star-Bulletin*; Jan. 24, 1963: 1A].

A total of 27 burials were encountered (Yost 1971: 28). Apparently, no formal archaeological report on the burials was produced.

In 1964, sand dune burials, a traditional Hawaiian mortuary practice, were revealed as beach sand eroded fronting the Surfrider Hotel (Bishop Museum Site Files).

In 1976, during construction of the Hale Koa Hotel, adjacent to the Hilton Hawaiian Village Hotel, six burials were unearthed, five of apparent prehistoric or early historic age, and one of more recent date (Bishop Museum Site Files).

In 1980, three burials were exposed at the Hilton Hawaiian Village during construction of the hotel's Tapa Tower. Earl Neller of the (then named) State Historic Preservation Program was called in upon discovery of the burials and conducted fieldwork limited to three brief inspection of the project area. Neller's (1980) report noted:

> The bones from three Hawaiian burials were partially recovered; one belonged to a young adult male, on a young adult female, and one was represented by a single bone. An old map showed that rapid shoreline accretion had occurred in the area during the 1800s, and that the beach in the construction area was not very old. It is possible the burials date back to the smallpox epidemic of 1853. It is likely that burials will continue to be found in the area. It is also possible that early Hawaiian sites exist farther inland, beneath Mō'ili'ili, adjacent to where the shoreline would have been 1000 years ago [Neller 1980:5].

Neller also documented the presence of trash pits, including one from the 1890s which contained "a large percentage of luxury items, including porcelain tablewares imported from China, Japan, the United States, and Europe" (Neller 1980:5). He further notes:

> It is suspected that other important historic archaeological sites exist in the highly developed concrete jungle of Waikīkī, with discrete, dateable trash deposits related to the different ethnic and social groups that occupied Waikīkī over the last 200 years [Neller 1980:5].

Between December 1981 and February 1982, archaeologists from the Bishop Museum led by Bertell Davis conducted a program of excavations and monitoring during construction of the new Halekūlani Hotel (Davis 1984). Six human burials were recovered along with "animal burials [and] cultural refuse from prehistoric Hawaiian firepits, and a large collection of bottles, ceramics, and other materials from trash pits and privies dating to the late 19th century" (Davis 1984:i). Age analysis of volcanic glass recovered from the site led Davis to conclude: "For the first time we can now empirically date . . . settlement in Waikīkī to no later than the mid-1600s" (Neller 1980:5). Just as significant to Davis was the collection of historic era material at the Halekūlani site; he states:

> [The] Halekūlani excavations clearly demonstrate...that there is a definite need to consider historic-period archaeology as a legitimate avenue of inquiry in Hawaiian research. Furthermore, archaeology in the urban context can yield results every bit as significant as in less developed areas. Development in the 19th and early 20th centuries clearly has not destroyed all archaeological resources in Waikīkī, Honolulu, or in any of the other urbanized areas of Hawai'i [Neller 1980:5].

In 1983, at the Lili'uokalani Gardens condominium construction site, seven traditional Hawaiian burials were recovered (Neller 1984). This had been the site of a bungalow owned by Queen Lili'uokalani at the end of the nineteenth century. In addition to the burials, the site contained plentiful historic artifacts, and a pre-historic cultural layer pre-dating the burials.

In 1985, International Archaeological Research Institute, Inc. performed archaeological monitoring and data recovery at the Pacific Beach Hotel Office Annex (Beardsley and Kaschko 1997). Two traditional Hawaiian burials were discovered and removed. Intact buried traditional Hawaiian cultural deposits, including a late pre-contact habitation layer, contained pits, firepits, post molds, artifacts, and food debris. The artifacts included basalt and volcanic glass flakes and cores, a basalt adze and adze fragments, worked pearl shells, a coral file and abraders, and a pearl shell fishhook fragment. Additionally, a late nineteenth century trash pit was discovered, which contained a variety of ceramics, bottles, and other materials.

During 1985 and 1986, archaeologists from Paul H. Rosendahl, Ph.D. Inc. conducted archaeological monitoring at the site of the Mechanical Loop Project at the Hilton Hawaiian Village, Waikīkī. Much of this project area was disturbed by historic and modern construction and modification. Fifteen subsurface features were uncovered during the monitoring, all of which were determined to be historic trash pits or trenches. The dating of these features was based on dating the artifactual material they contained. All 15 features are thought to post-date 1881 based on this artifact analysis. The three partial burials reported by Neller (1980) were found within this project area (see above). No further burials were encountered during the PHRI field work (Hurlbett et. al. 1992).

In 1987, a human burial was discovered and removed at the intersection of Kalākaua Avenue and Ka'iulani Street during excavations for a gas pipe fronting the Moana Hotel (Griffin 1987).

In1988, the Moana Hotel Historical Rehabilitation Project (Simons et. al. 1991) encountered human remains that amounted to at least 17 individuals. Based on stratigraphic association these burials were interred over time as the land form at the site changed. The sediment surrounding these burials yielded traditional midden and artifact assemblages. The burials and human remains were found in the Banyan Court and beneath the hotel itself.

In 1989, skeletal remains were unearthed on the grounds of the Ala Wai Golf Course during digging of an electrical line trench for a new sprinkler system. The trench had exposed a pit containing two burials (Bath and Kawachi 1989: 2). The report suggests that one of the burials may have been disturbed earlier during grading for the Territorial Fair Grounds. The osteological analysis included in the report concludes that both sets of remains "appear ancient." (Bath and Kawachi 1989: 2)

Davis' (1989, 1991) excavation and monitoring work at Fort DeRussy documented substantial subsurface archaeological deposits, prehistoric, historic, and modern. These deposits included buried fishpond sediments, *'auwai* [irrigation ditch] sediments, midden and artifact enriched sediments, structural remains such as post holes and fire pits, historic trash pits, and a human burial. Davis' (1991) report documents human activity in the Fort DeRussy beach front area from the sixteenth century to the present.

The work at Fort DeRussy continued in 1992 when BioSystems researchers built upon Davis' work (Simons et al. 1995). BioSystems research documents the development and expansion of the fishpond and *'auwai* system in this area. The *'auwai* system was entered on the State Inventory of Historic Places (SIHP) as State Site 50-80-14-4970. As indicated on the 1881 map by S. E. Bishop discussed above, this *'auwai* enters the Fort DeRussy grounds through the present project area). Remains of the fishpond and *'auwai* deposits, as well as habitation deposits, were documented below modern fill deposits. This research, along with that of Davis (1991), clearly demonstrates that historical document research can be an effective guide to locating late prehistoric/early historic subsurface deposits, even amidst the development of Waikīkī.

In 1992, Hurlbett et al. (1992) conducted additional monitoring and testing in this same area as Neller (1980). The state site -2870 was given to the three burials first found by Neller. Additional subsurface features, postdating 1881, were found during trenching operations.

The realignment of Kālia Road at Fort DeRussy in 1993 uncovered approximately 40 human burials. A large majority of these remains were recovered in a large communal burial feature (Carlson et. al. 1994). The monitoring and excavations associated with this realignment uncovered a cultural enriched layer that contained post holes.

In 1993, during construction activities at the Waikīkī Aquarium, directly adjacent to the present project area, fragmentary human remains were discovered scattered in a back dirt pile, although no burial pit was identified (Dega and Kennedy 1993).

On April 28, 1994, an inadvertent burial discovery was made during excavation for a water line at the intersection of Kalākaua Avenue and Kuamo'o Street (just *mauka* of Fort. DeRussy). These remains represented a single individual (McMahon 1994).

In 1995, the remains of one individual were discovered in situ during construction activities on Paoakalani Street, fronting the Waikīkī Sunset Hotel (Jourdane 1995).

In 1996, Pacific Legacy, Inc. conducted an archaeological inventory survey of the block bounded by Kalākaua Avenue, Kūhiō Avenue, 'Olohana Street, and Kālaimoku Street (Cleghorn 1996). The survey included excavation of seven backhoe trenches. The subsurface testing indicated that

> . . . this area was extremely wet and probably marshy. This type of environment was not conducive for traditional economic practices. . . . The current project area appears to have been unused because it was too wet and marshy. Several peat deposits, containing the preserved remains of organic plant materials were discovered and sampled. These deposits have the potential to add to our knowledge of the paleoenvironment of the area [Cleghorn 1996:15].

The report concluded that no further archaeological investigations of the parcel were warranted since "no potentially significant traditional sites or deposits were found", but cautioned of the "possibility, however remote in this instance, that human burials may be encountered during large scale excavations" (Cleghorn 1996:15).

In 1996, a traditional Hawaiian burial was discovered and left in place during test excavations on two lots at Lili'uokalani Avenue and Tusitala Street (McDermott et al. 1996). Indigenous Hawaiian artifacts and historic artifacts were also found within the project area.

In 1997, during archaeological monitoring by CSH for the Waikīkī Force Main Replacement project, scattered human bones were encountered on 'Ōhua Street (Winieski and Hammatt 2000). These included the proximal end and mid-shaft of a human tibia, a patella, and the distal end and mid-shaft of a femur. These remains occurred within a coralline sand matrix that had been heavily disturbed by previous construction, and by the on-going construction project. No precise location for the original burial site was identified.

In April 1999, two human burials were inadvertently encountered near the intersection of Ena Road and Kalākaua Avenue during excavation activities for the first phase of the Waikīkī Anti-Crime Lighting Improvements Project (Perzinski et al. 1999). These discoveries were the closest to the current project area on the *makai* side of Kalakaua Avenue.

From July 1999 to October 2000, four sets of human remains were inadvertently encountered during excavation activities relating to the Waikīkī Anti-Crime Street Lighting Improvement project along portions of Kalākaua Avenue (Bush et al. 2002). The first burial was encountered on Kalākaua Avenue, just before Dukes Lane and assigned State Site 50-80-14-5864. The burial was left in place however, and the light post was repositioned. The second burial was encountered at the intersection of Kalākaua Avenue and Ka'iulani Avenue. Earlier, during archaeological monitoring for the water mains project, two burials were encountered in the immediate area of the second burial find; they were assigned state site 50-80-14-5856 features A and B. Due to the close proximity to the previously encountered burials, the second burial was assigned the same State Site 50-80-14-5856, and designated feature C. Burials 3 and 4 were recovered at the intersection of Kalākaua Avenue and Kealohilani, near an area of concentrated burials assigned State Site 50-80-14-5860 during monitoring for the water mains project. Consequently, burials 3 and 4 were also assigned State Site 50-80-14-5860, features U and V. In addition to human remains, pre-contact deposits, historic and modern rubbish concentrations, and pond sediments were also encountered.

From November, 1999, to May, 2000, 44 human burials, with associated cultural deposits, were encountered during excavation for a waterline project on Kalākaua Avenue between the Ka'iulani and 'Ōhua Avenues (Winieski et al. 2002a). Except for previously disturbed partial burials in fill, the bulk of the burials were encountered within a coralline sand matrix. Additionally, a major cultural layer was found and documented.

From January 2000, to October 2000, 10 human burials were encountered during archaeological monitoring of the Kūhiō Beach Extension/Kalākaua Promenade project (Winieski et al. 2002b). Six of these were located within a coralline sand matrix. The four others were partial and previously disturbed within fill. Additionally, a major cultural layer was found and documented, apparently part of the same major cultural layer associated with the waterline project between Ka'iulani and 'Ōhua Avenues.

In April 2001 human remains were inadvertently disturbed during excavations associated with the construction of a spa at the Royal Hawaiian Hotel (Elmore et al. 2001). Archaeological Consultants of the Pacific, Inc was responsible for the documentation of the remainder of the burial and carrying out the instruction of DLNR/ SHPD. The burial and place it was encountered was assigned State Site # 50-80-14-5937. The burial was encountered on the North side of the hotel in the spa garden approximately 75 meters north of the current project area separated by a wing of the hotel. The burial was partially disturbed through the thoracic region and anatomical left side. The disturbed remains were wrapped in muslin cloth and placed with the in-situ remains and reburied. The burial was recorded as a post contact burial based on artifacts associated with it. The associated artifacts included one shell button found *in-situ* and three more shell buttons found in the disturbed material. A single drilled dog tooth was found also during excavation but could not be positively associated with the site.

On May 2nd and June 14th, 2001, two in situ and two previously disturbed human burials were encountered at the site of a new Burger King (Cleghorn 2001a) and an adjoining ABC Store (Cleghorn 2001b). The finds were located at the intersection of 'Ōhua Street and Kalākaua Avenue (Cleghorn 2001a and 2001b). Because of their proximity to five burials encountered during the Kalākaua 16" Water Main Installation (Winieski et al. 2002a), they were included in the previously assigned State Site 50-80-14-5861. Three of these burials were recovered, and one was left in place. Volcanic glass fragments were found in association with one of the burials. A cultural layer was also observed which contained moderate to heavy concentrations of charcoal and fragments of volcanic glass. Historic era artifacts, including a bottle fragment, plastic and glass buttons, a ceramic fragment, and metal fragments were also encountered within fill materials.

In 2001 and 2002, CSH (Mann and Hammatt 2002) performed archaeological monitoring for the installation of 8- and 12-inch water mains on Uluniu Avenue and Lili'uokalani Avenue During the course of monitoring, five burials finds, consisting of six individuals, were recorded within the project area. Four burial finds were recorded on Uluniu Avenue; three of these inadvertent finds were found in fill sediment. Due to the nature of the three burial finds in fill, it was concluded that no State Site number(s) be assigned to these three previously disturbed burials. The only primary in situ burial encountered on Uluniu Avenue was assigned State Site #50-80-14-6369. The fifth burial, consisting of two individuals in fill material, was recorded from Lili'uokalani Avenue. Since three burials had been found in the immediate vicinity during a previous project (Winieski et al. 2002b) and had been assigned to Site #50-80-14-5859, the two new individuals were recorded as Feature H of this previously recorded site.

In 2004, Cultural Surveys Hawai'i conducted an archaeological inventory survey and cultural impact evaluation for the Ala Wai Gateway project site (Freeman et al. 2005). The project site comprised TMK 2-6-011:001, 002, 004, 32, 37, and 40, which are bounded by Ala Wai and Ala Moana boulevards, Hobron Lane, and Līpe'epe'e Street. Four historic properties were documented in the survey:

Site 50-80-14-6700: disturbed, ethnicity undetermined, human skeletal remains;

Site 50-80-14-6701: historic coffin burial, with two individuals, ethnicity undetermined;

Site 50-80-14-6702: culturally enriched buried A horizon in geographic association with Land Commission Award (LCA) 99 FL to Uma; and,

Site 50-80-14-6703: fishpond remnant.

In 2005 Cultural Surveys Hawai'i conducted an archaeological inventory survey of a 72,135 square foot (1.67 acre) project area on Kaio'o Drive (TMK: [1] 2-6-012: 37, 38, 39, 40, 41, 42, 43, 44, 55, 56, 57) (O'Hare et al. 2005). One. Site 50-80-14-6848, a pre-contact firepit radiocarbon dated to AD 1470-1660, was recorded.

In summary, past archaeological research, from the beginning of the twentieth century to the present has produced evidence that traditional Hawaiian cultural deposits, historic trash deposits, and, most notably, human burials, do exist throughout the breadth of the Waikīkī area.

Section 5 Cultural Consultation Results

Based on the project's location and historical and cultural setting, it is most likely that the project would affect Native Hawaiian historic properties and/or ongoing traditional cultural practices related to Native Hawaiian cultural traditions. Accordingly, this cultural consultation effort focused on the assessment of the proposed project's impact to Native Hawaiian historic properties.

5.1 Results of the Project-Related Cultural Impact Assessment

CSH's cultural impact assessment investigation associated with the Allure Waikīkī Development (Mitchell and Hammatt 2006) provides a broad background for the archaeological inventory survey cultural consultation effort. This study evaluated the potential for ongoing cultural activities and the potential for Native Hawaiian historic properties within the project area.

In the course of this assessment, no ongoing traditional cultural practices or concerns were identified for the study area per se. None of the community contacts queried for this assessment identified any on-going traditional cultural practices specifically within the project area. Based on the results of this study (Mitchell and Hammatt 2006), the community feels that the proposed Allure Waikīkī Development should impose no adverse effect on on-going Native Hawaiian traditional cultural practices or activities in the project area's vicinity.

Based on Mitchell and Hammatt's (2006) investigation, the potential to disturb Native Hawaiian burials represents the project's only notable potential adverse impact upon native Hawaiian historic properties. Opinions differed among cultural consultants regarding the likelihood of encountering Native Hawaiian burials in the project area. Consulted *kama'āina* Mr. Samuel Kahanamoku indicated that the project area was not suitable for burials, as the ground before the Ala Wai Canal was swamp and not suitable for the purpose. Conversely, consulted *kama'āina* Mrs. Paulette Kaleikini indicated that it was a normal practice that the *'ohana* be buried where they lived, and that her great-great grandfather, Ialua, may be buried in flexed position somewhere in the project area or its vicinity. Mrs. Kaleikini also indicated that it is possible that the *kahu* Kauā is buried western style in a coffin somewhere in the project area or its vicinity. Native Hawaiian participants in the study were reassured that, should these burial concerns become a reality, the burial issue would be respectfully resolved through consultation and coordination with the Native Hawaiian community in general, as directed under applicable Hawai'i state burial law (HRS Chapter 6E-43 and HAR Chapter 13-300).

5.2 Results of Archaeological Inventory Survey Cultural Consultation

Following the completion of the archaeological inventory survey fieldwork, per the requirements of HAR Chapter 13-275-6(c), 13-275-8(a)(2), and Chapter 13-276-5(g), CSH undertook specific cultural consultation with Native Hawaiian organizations, including the Office of Hawaiian Affairs (OHA) and Hui Malama I Na Kupuna o Hawai'i Nei. CSH initiated this consultation with a letter-mailing program. Appendix E contains copies of the letters sent. The letters summarized the Allure Waikīkī Development project, the results of the archaeological inventory survey fieldwork, briefly described the three historic properties located in the project area, and discussed potential project effect and mitigation measures. The letter asked for specific input regarding the treatment of the Native Hawaiian burials located in the project area. These consultation letters were sent out November 2nd, 2006: as yet there has been no response.

CSH would like to thank all the Native Hawaiian organizations and individuals for their time and effort expended as part of this cultural consultation program. Although only limited cultural resource information was obtained through this particular consultation effort, such consultation is an important and required part of an archaeological inventory survey. Based on these consultation results, the Native Hawaiian burial issue is a prominent cultural concern for the Allure Waikīkī Development project. Project-related cultural consultation related to the burial issue is on-going as part of the project's burial treatment plan. The burial treatment plan is currently being written by CSH, with community consultation provided by the project proponents' communications firm, Kuiwalu.

Section 6 Background Summary and Predictive Model

The *ahupua'a* of Waikīkī in the centuries before the arrival of Europeans was a well-used locale with abundant natural and cultivated resources – including an expansive system of irrigated taro fields and numerous fishponds – supporting a large population that included the highest-ranking *ali'i* (Hawaiian royalty). In the second half of the nineteenth century, after a period of depopulation and desuetude, Waikīkī was reanimated by the Hawaiian *ali'i* and the foreigners residing there, and by farmers continuing to work the irrigated field system that had been converted from taro to rice. This farming continued up to the first decades of the twentieth century when the newly-constructed Ala Wai Canal drained the remaining ponds and irrigated fields of Waikīkī.

The present project area is located on the *mauka* fringe of a portion of Waikīkī that, in traditional Hawaiian times and before the massive drainage accomplished by the Ala Wai Canal, comprised a complex of numerous large fishponds. Also located in this portion of Waikīkī were wetland and dry land agricultural fields, and habitation sites. Land Commission Award documents from the mid-nineteenth century record continuing Native Hawaiian habitation and taro cultivation in parcels adjacent to the present project area. Subsequent nineteenth and twentieth century documents – including historic maps and photographs – indicate that the project area from traditional Hawaiian times to the modern era comprised a dry land environment elevated above the surrounding fishponds and wetland fields. In traditional Hawaiian times, such an environment would have provided a base for habitation, work, and recreational activities of the population.

Maps produced prior to the completion of the Ala Wai Canal in the late 1920s indicate that the project area contained houses associated with the early development of Waikīkī (refer to Figure 7). An historic map (Figure 8) and aerial photograph (Figure 9) indicate that, at the time of the completion of the Ala Wai Canal in the late 1920's, the project area remained developed with single-story residences. These same residences within the project area were nearly all still standing in the early 1950s, based on another historic map (Figure 10). There is an indication that by the early 1950s, residential structures were being supplanted by commercial structures in the project area, for example at the corner of Ena Road and Kalākaua Avenue (Figure 10).

Archaeological reports have documented human burials – both pre-contact Hawaiian and historic – throughout the breadth of Waikīkī as far *mauka* as the Ala Wai Golf Course. Especially relevant to the present project area are two burials that were encountered at the corner of Kalākaua Avenue and 'Ena Road, immediately adjacent to the project area, during trenching for an anti-crime lighting project in 1999. The burials were found at relatively shallow depths (80-120cm below surface). The archaeological monitoring report for the lighting project suggests that the potential for more inadvertent burial finds at shallow depths in the general area is high (Perzinski et al. 1999: 31). Additionally, *makai* of the present project area, within a parcel bounded by Ala Wai and Ala Moana boulevards, Hobron Lane, and Līpe'epe'e Street, human burials were also encountered (Freeman *et al.* 2005). Finally, cultural consultation carried out as part of the project's cultural impact assessment (Mitchell and Hammatt 2006) suggested that traditional Hawaiian and/or historic coffin burials may be located in the project area or its vicinity.

Several archaeological studies have recorded the presence within Waikīkī of subsurface cultural deposits of both pre-contact Hawaiian and historic provenance. These deposits had remained intact despite the years of construction activity that have altered the entire Waikīkī area. The authors of these studies emphasize that the potential for discovering similar intact deposits elsewhere in Waikīkī cannot be discounted. Based on stratigraphic documentation accomplished during archaeological monitoring for the anti-crime lighting project mentioned above, the subsequent monitoring report concluded that previously undisturbed stratigraphic layers, including calcareous beach sand, exist in the vicinity of the present project area (Perzinski et al. 1999).

It is possible that intact prehistoric and early contact cultural deposits associated with Hawaiian habitation, work, recreation, and burial interment are lying undisturbed beneath modern fill layers within the project area. Other cultural deposits, including historic trash pits, associated with late nineteenth century and early twentieth century residential sites may also be present.

Section 7 Results of Fieldwork

7.1 Results of pedestrian inspection

A one-hundred percent field inspection was conducted prior to building demolition for an archaeological literature review and field inspection (Hammatt and Chiogioji 2006) prepared for the project area preceding the initiation of the inventory survey. The report found that the buildings most recently standing in the project area are not more than 50 years old and would not be considered historic properties. In fact the inspection found no evidence of surface historic properties. There was no surface evidence for approximately 10 single story residences that once stood within the project area prior to the 1950s (refer to Figure 10). These historic buildings had clearly been demolished prior to the construction of the project area's most recent buildings, including an apartment building and the former location of the Wave Waikīkī (refer to Figure 3).

As part of the current archaeological inventory survey study, another one-hundred percent pedestrian inspection was made of the project area's surface. Again, no surface historic properties were identified.

7.2 Results of Building Demolition Monitoring

On the 24th and 25th of August 2006, Cultural Surveys Hawai'i was present during excavation in the project area to remove concrete slabs and footing from the demolished hollow tile apartment buildings and nightclub. This demolition was necessary before initiating a large scale subsurface inventory and only affected portions of the project area where the construction of the buildings had already had an impact to subsurface deposits.

No historic properties were encountered during this construction activity and though sand was seen in profiles, little natural sediment was observed. A small number of isolated bottles dating to the 1930s and 1940s were recovered. Because of the relatively small size of these buildings and the notably small area they occupied in the project area, very little of the natural surface is believed to have been significantly disturbed by the construction of the buildings and their recent demolition. No historic properties were located as a result of the building demolition monitoring.

7.3 Discussion of Subsurface Testing Sample Size

As there were no surface historic properties within the project area, the inventory survey focused on a program of subsurface testing.

Over the last 30 years of archaeological inventory survey investigations in the Waikīkī/Kaka'ako area, a general standard for the appropriate number of trenches, per acre of project area, has developed for subsurface testing programs. This general standard is 4 to 10 trenches per acre, with the number of trenches increasing or decreasing depending on observed stratigraphy and subsurface deposits. Generally, buried jaucas sand deposits, or the presence of potentially buried cultural deposits, indicate the need for more trenches per acre within a given project area. Evidence of substantial fill episodes and/or the cutting away of the former land surface that predates fill deposits, may indicate that fewer inventory survey trenches are needed for a given project area. The appropriate number of trenches per project area is necessarily dependent on the types of subsurface deposits that are found within each individual project area.

Table 2 summarizes the number of trenches per acre and the overall testing sample size for the seven archaeological inventory surveys most recently completed in the current project area's vicinity. Table 2 includes the same testing sample size summary information for the current Allure Waikīkī inventory survey investigation. Excluding the current investigation, the range of trenches per acre for these investigations is 1.03 to 11.9. With the exception of the current investigation, subsurface testing sample sizes range from 0.13 to 1.5 percent of the total project area's land surface. With the exception of the current investigation, all of these inventory survey investigations have been reviewed and approved by SHPD.

For the current inventory survey investigation, 28 trenches were excavated in the initial phase of trenching, providing even coverage of the project area. At this time, the number of trenches per acre was 12.17 and 1.57 percent of the project area was sampled. SHPD requested a small increase in the sample size of the project area, specifically to increase trench density in areas with jaucas sand was observed near the current land surface. At the request of SHPD, CSH excavated an additional trench, Trench 29, in the west corner of the project area. This trench uncovered Burial 2, the second burial to be discovered in the project area. Following the discovery of this burial, at the request of SHPD, CSH completed another six trenches in the west corner of the project area: four to bound Trench 29, and two to increase the density of trenches in the area to test for further deposits. These additional six trenches, bringing the total number of trenches to 35, found no significant cultural deposits. After this additional testing the number of trenches per acre increased to 15.2 and 1.95 percent of the project area had been tested for archaeological deposits.

This testing sample size was worked out in close consultation with SHPD. The project's archaeological inventory survey plan, which proposed a trench sample of 21-24 trenches, was approved by SHPD (refer to Appendix F). SHPD Assistant O'ahu Archaeologist, Adam Johnson made a site visit to discuss the inventory survey's trench placement and sample size on September 19th, 2006, following the excavation of the initial 28 trenches within the project area. Subsequently, the project's testing strategy and the need for additional test trenches was discussed with SHPD in several telephone conversations and emails.

Table 2's information provides a context for assessing the Allure Waikīkī project area's subsurface testing sample size in relation to many recent inventory survey subsurface testing programs conducted in the vicinity. Based on a comparison with these prior inventory survey investigations, the current investigation has one of, if not the most thorough archaeological inventory survey subsurface testing programs in Waikīkī.

Table 2. Summary of Subsurface Testing Sample Sizes from Recent Archaeological Inventory Survey Investigations in the Vicinity of the Current Project Area

Reference	Inventory Survey Project	Location	Project Area Acreage	# of Trenches Per Acre	Area Tested (m^2 and acreage)	Inventory Survey Testing Sample Size
O'Hare et al. 2005	Kaio'o Drive Condominium	Block bounded by Kaio'o Drive on the north, east, and west sides and Hobron Lane on the west side.	1.67	11.9	100.40 m^2 0.025 acres	1.50 percent
Freeman et al. 2005	Ala Wai Gateway Project	Bounded by Ala Wai and Ala Moana boulevards, Hobron Lane, and Līpe'epe'e Street	4	5.5	156.45 m^2 0.039 acres	0.97 percent
Borthwick et al. 2002	A property of Kuhio Ave. *makai* of the "Twin Towers"	Bounded by Olohana Street, Kuhio Avenue, Kalaimoku Street, and Ala Wai Boulevard.	1.63	6.1	42 m^2 0.010 acres	0.61 percent
Corbin 2001	Hilton Waikikian	Expansion of Hilton Hawaiian Village west to Ala Moana Boulevard	1.90	11.05	30.72 m^2 0.008 acres	0.42 percent
LeSuer 2000	King Kalākaua Plaza Phase II	Bounded by Kalaimoku, Kalākaua, Kuhio and Lewers	2.52	5.2	66.61 m^2 0.016 acres	0.63 percent
Cleghorn 1996	King Kalākaua Plaza	Bounded by Kalaimoku, Kalākaua, Kuhio and Lewers	1.05	6.67	29.2 m^2 0.007 acres	0.67 percent
Hammatt and Shideler 1995	Hawai'i Convention Center	Southwest of the intersection of Kapi'olani and Kalākaua	9.67	1.03	54.48 m^2 0.013 acres	0.13 percent
Current Investigation	**Allure Waikīkī Development**	**Southeast quarter of the block bounded by Kalākaua Ave., 'Ena Road, Hobron Lane, and Līpe'epe'e Street**	**2.3**	**15.2**	**182 m^2 0.045 acres**	**1.95 percent**

7.4 Summary of Stratigraphy and Test Excavation Findings

Test excavations in the project area were randomly spaced and designed to give testing coverage to the entire project area. A number of trenches were placed in specific locations to test areas more likely to contain burials or agricultural features as indicated by previous archaeological research or historic documentation. In total, the subsurface testing comprised 35 trenches. Consistent with background research, these trenches documented remarkably intact natural sediments of jaucas sand throughout most of the project area. It also documented a nearly ubiquitous A horizon that formed on the jaucas sand. Some historic and modern disturbance of the stratigraphy was noted, but it was relatively limited considering the project area's location in a high-density urban area. Among the trenches, three historic properties (including two human burials), ten features and a remnant low-lying area likely to be the edge of a large waterway were documented. Nine sample areas were tested to characterize the cultural content of the old land surface/buried A-horizon. Figure 12 shows the location of trenches, burials, features and sample areas. The historic properties are discussed in the following section, Historic Property Descriptions. Detailed stratigraphic descriptions, plan views, profiles, and summaries of the 35 test trenches are presented in Appendix A.

Three distinct stratigraphic areas were found in the project area (also refer to Figure 12). In the majority of the project area, beginning from the southeast corner, terrigenous fill layers form the modern land surface and are approximately 65 centimeters thick on average. Beneath this fill is a natural jaucas sand deposit on which an A horizon had typically formed. In this portion of the project area the jaucas sand its often associated sand A horizon were typically 60 centimeters thick. The water table was found near or at the bottom of this jaucas sand layer. Beneath the sand was a gray sandy clay formed by low energy marine deposition in a near shore environment. This stratum was deposited in relatively shallow water before a prograding beach berm of jaucas sand built up and buried this sediment. Little excavation probed this gray lagoonal sediment below the water table.

The western corner of the project area was virtually identical to the deposit described above except only naturally deposited sediments were recorded; if fill was observed in this western portion of the project area, it was generally less than 30 centimeters thick. For the most part, the A horizon on jaucas sand found subsurface elsewhere in the project area is the modern land surface in this area. The jaucas sand immediately below this A horizon was found at a typical depth of 15 centimeters below the present land surface. This jaucas sand extended only about 70 cm below the surface where it terminated near the water table. This portion of the project area also has lagoonal sediment underlying the jaucas sand deposit.

Along the northern edge of the project area is a small area of formerly low-lying land that has notably different sediments. In Trenches 9, 10, a small corner of 23, and 24 a thin layer of terrigenous fill formed the modern land surface. Immediately below this was a layer or multiple layers of coarse sandy clay fills. These fill layers were gley in color, a gray tone caused by an anaerobic environment, indicating their origins were from underwater. They are primarily hydraulic fills from dredging operations in Ala Moana and/or most likely, the Ala Wai Canal. This type of sediment is very common throughout Waikīkī and Kaka'ako and the dredged

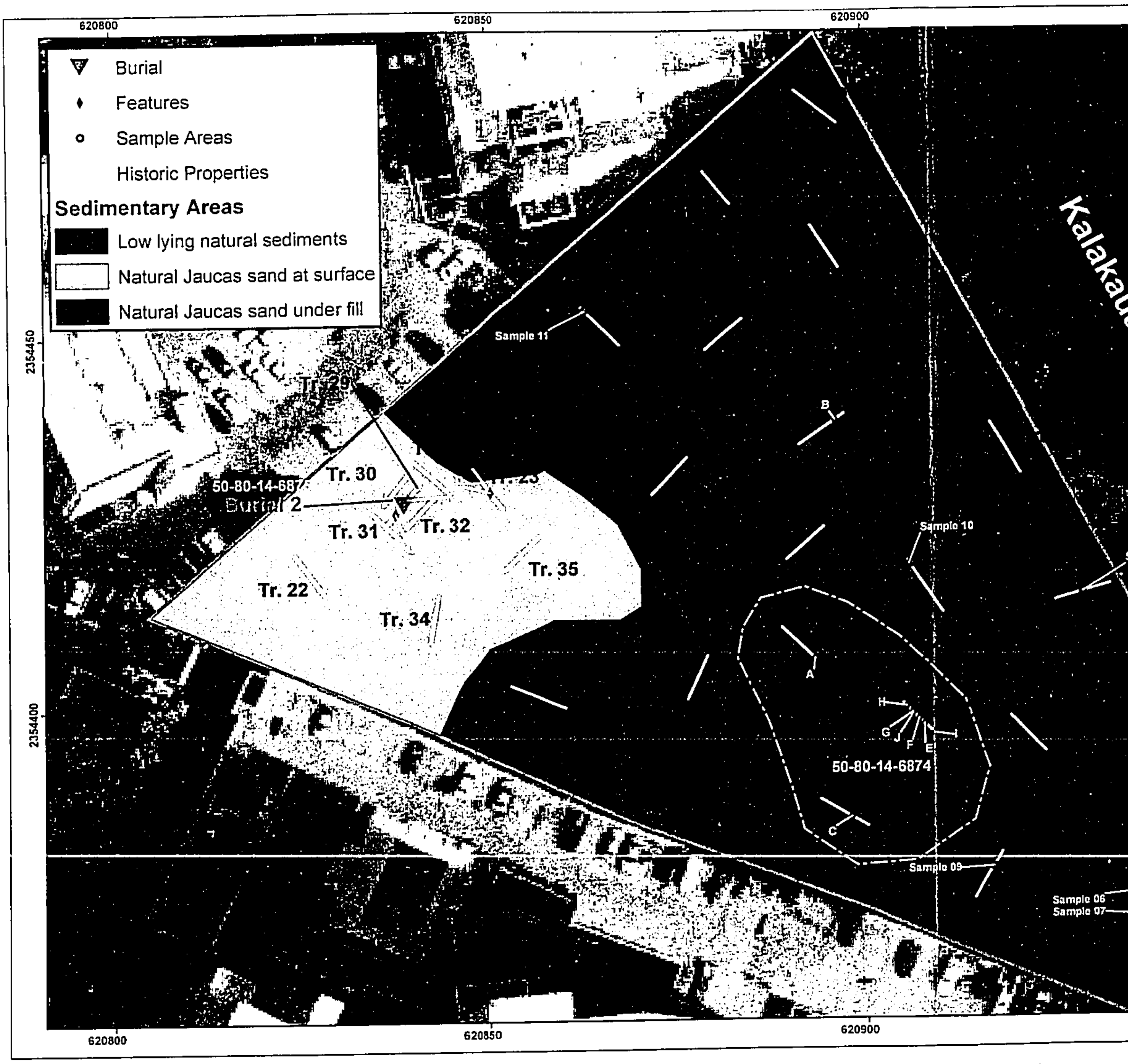
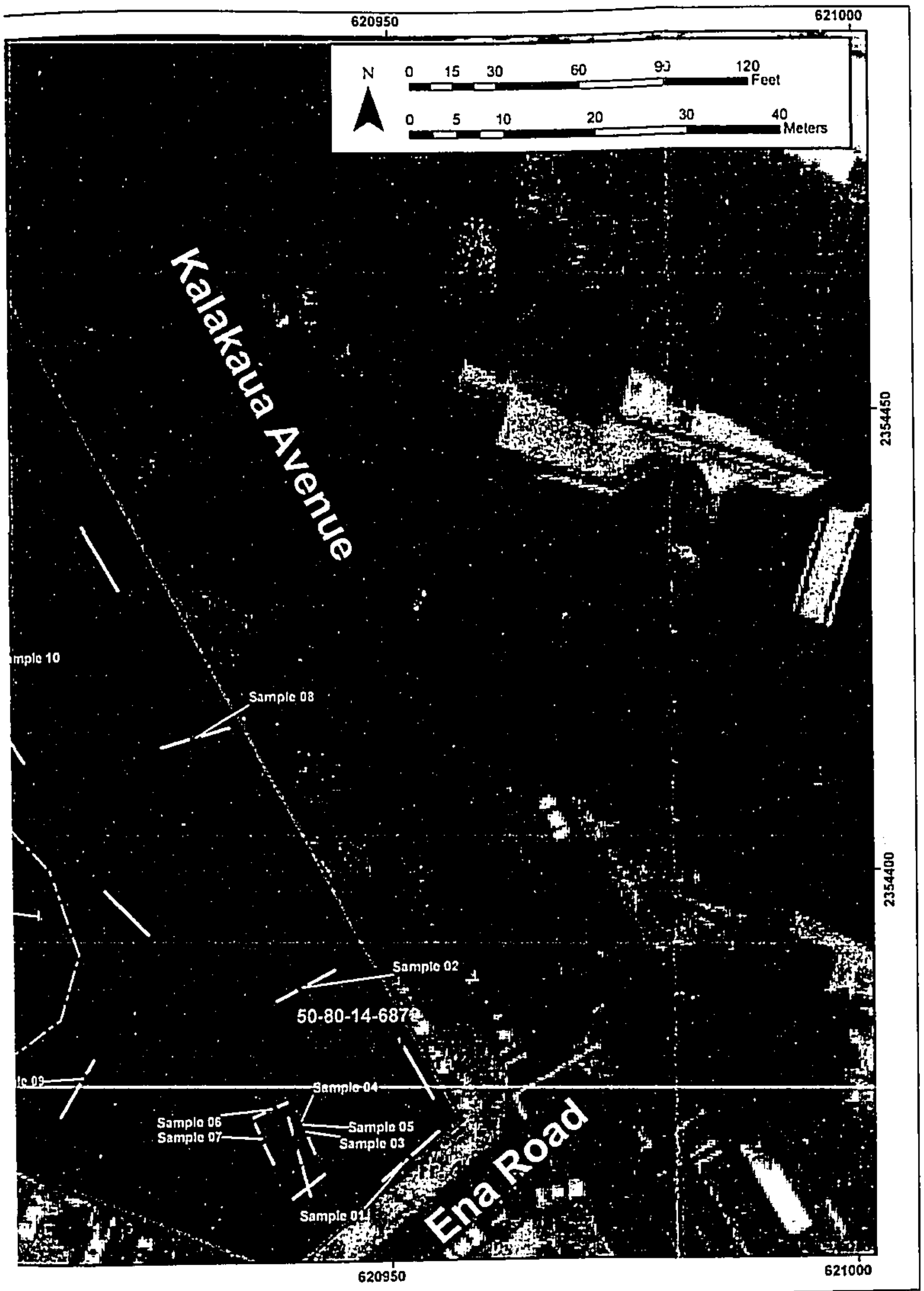


Figure 12. Locations of Trenches, interpolated sedimentary areas, historic properties, burials, features and sedimentary sample areas.



ːntary sample areas.

material was pumped into low lying areas such as *'auwai, loko, lo'i* and natural wetlands that were common across the coastline. These hydraulic fills are often very fine clays, but the coarsest sediments were deposited first and closest to dredging operations. The proximity of the project area to the coastline and the Ala Wai Canal suggest that these coarse sediments are the most likely hydraulic fills to be found in the project area.

This formerly low lying area along the northern project area boundary was raised historically with this hydraulic fill. This area likely corresponds to a portion of what was likely a wide and probably quite stagnant watercourse shown in an 1881 S.E. Bishop map of the area (refer to Figure 6). According to this map, trenches within the northern portion of the project area should document the southern edge of the watercourse. Because the sediments from each trench vary more than would be expected in such a large body of water, this portion of the project area may be an intermittently flooded uneven bank where various land levels and plant populations created many local differences in the strata. Trenches 9, 23 and 24 show a transition of jaucas sand deposits to hydraulic fill in profile, indicating that these trenches were excavated along the edge of the waterway.

Both Trenches 9 and 10 contain a natural sandy sediment that is very rich in organic matter and have many vertical root molds just less than one centimeter in diameter. The old land surface documented in these trenches appears to have had more vegetation than that further west. In Trench 24, directly underlying the hydraulic fill was an intact grassy organic horizon that in some small areas had a consistency similar to peat. In this horizon and on the surface of the underlying alluvial gray clay stratum, a number of saw-cut cow and pig bones were found—clearly historic refuse. This undecomposed organic horizon is also suggestive of a shallow water area near the bank of a large waterway. Immediately underlying this organic horizon is an alluvial deposit extending below the water table. The hydraulic fill neatly capped the historic trash and marsh grasses when it was deposited during dredging sometime in the 1920's, around the time of the construction of the Ala Wai Canal.

In the Historical Background Section, this watercourse is described as an "*'auwai*" along the northern margin of the project area. It is discussed as it is shown on the 1881 S.E. Bishop map of the area (refer to Figure 6). Based on trench documentation, no structural remains or evidence of modifications were observed along the margins of this former watercourse. From the available evidence, it appears that this former watercourse, at least through the current project area, was broad, unmodified, and likely a natural drainage feature. Accordingly, the remnants of this watercourse were not designated a historic property.

7.5 Subsurface Sample Area Findings

Subsurface samples were taken of the project-wide surface and subsurface A horizon that is the pre-fill land surface. The locations of Sample Areas are shown on Figure 12, above. As discussed in the methods section, the purpose of these samples is to test for the accumulation of sediment as part of a culturally enriched stratigraphic layer that is more general than in a clearly defined feature such as a pit. The sample areas also indicated if the land surface was enriched at all, giving some indication as to the type and frequency of use of this land surface. In some parts of the Honolulu shoreline, widespread and long-term use of the natural land surface can lead to diffuse but significant deposits that are often associated with more distinctive cultural remains.

The subsurface sediment sample areas in the project area found that the old land surface was used historically across the project area and some areas showed very slight cultural enrichment with shell and charcoal, more traditional Native Hawaiian in nature. A complete listing of findings in each of the eleven sample areas can be found in Appendix B. They are not listed or discussed exhaustively here because in general they showed relatively common and sparse historic deposition. The exceptions to this were Trench 5 and Trench 24.

Sample 05 in Trench 5 was not a typical sample of the A horizon. It was the only sample from a jaucas sand stratum and was taken during investigation of the area surrounding Burial 1. A number of *Nerita picea* (*pipipi*) shells were observed in this stratum and it was tested to identify any definitive artifactual material that could possibly be associated with the burial in the adjacent Trench 3. No definitive artifacts were found and it appears that these shells, often found as a part of traditional Hawaiian food remains, occur naturally in Trench 5. Two samples of the overlying A horizon found more *pipipi* shell than elsewhere in the project area's natural land surface. However this is most likely explained by the very high concentration of these shells in the jaucas sand of this trench, the parent material of this A horizon.

In Trench 24 a three-gallon sample of Stratum IIa, Sample 11, showed the historic use of an artificial land surface of hydraulic fill. This surface contained an usual number of metal fragments. This is less suggestive of a residential deposit common to the project area and more suggestive of some light construction activity, perhaps of residences themselves. Above the sampled area was subsequent fill event raising the land surface to the modern level.

7.6 Historic Property Descriptions

This section details the three historic properties discovered within the project area. The locations and boundaries of these historic properties are shown on Figure 13—also refer to Figure 12. State Inventory of Historic Properties (SIHP) 50-80-14-6873 and 50-80-14-6875 consist solely of one human burial each. SIHP 50-80-14-6874 is an historic subsurface activity area consisting of a culturally enriched A horizon and a number of pit features. The following section describes each historic property in detail. Detailed trench documentation is presented in Appendix A. UTM coordinates for the historic property boundaries are included in Appendix D. Also included in Appendix D are UTM coordinates (submeter horizontal accuracy) for the 2 human burials that were documented as part of SIHP 50-80-14-6873 and 50-80-14-6875. This detailed burial location information is included in an appendix so it can easily be removed from this report, per the requirements of HAR Chapter 13-300-31, should the location information be deemed sensitive.

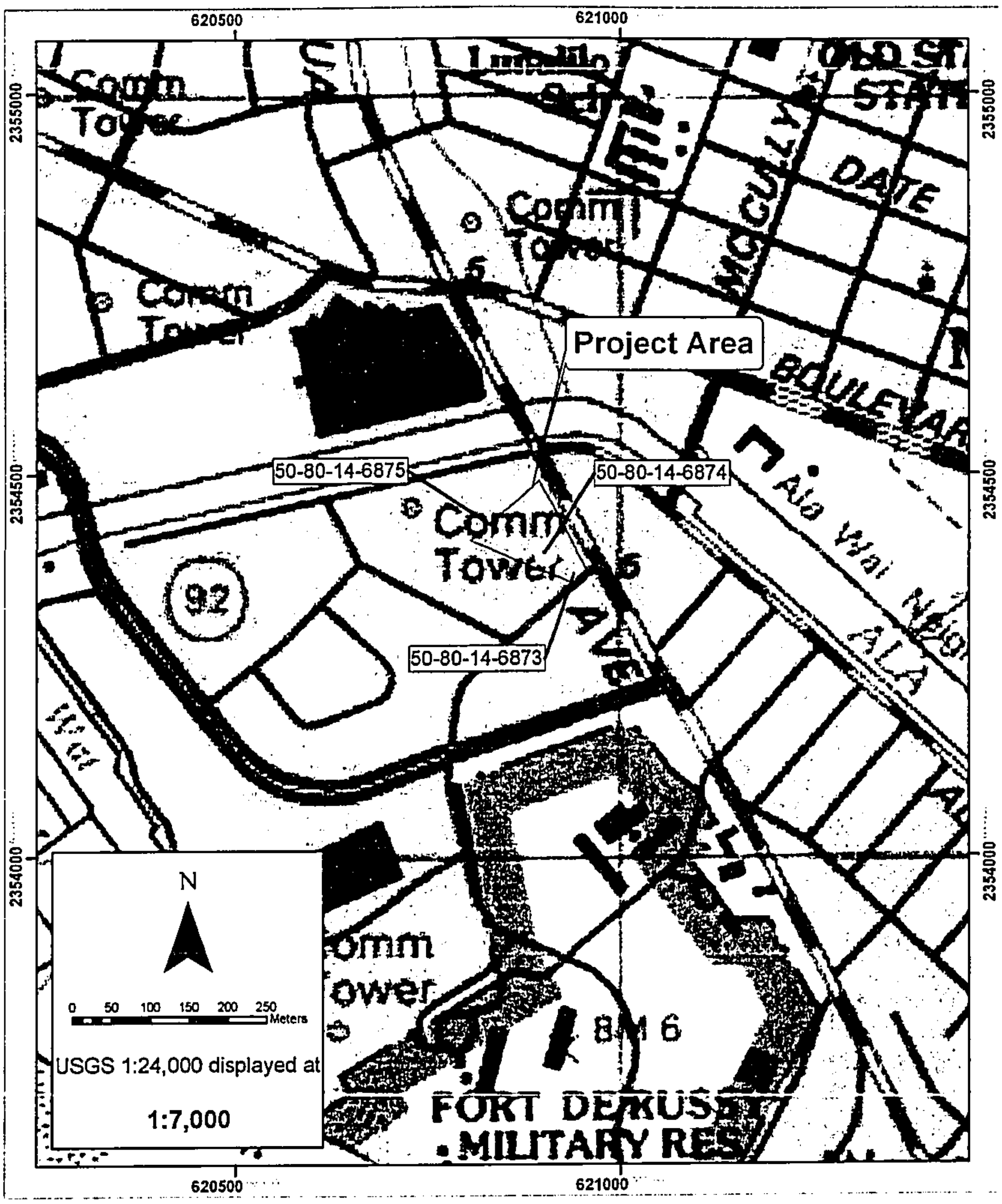


Figure 13. USGS topographic map 1998 Honolulu Quadrangle showing Historic Properties in the Allure Waikīkī project area.

SIHP 50-80-14-6873

FORMAL TYPE:	Human burial
FUNCTION:	Human interment
# OF FEATURES DOCUMENTED:	0
# OF BURIALS DOCUMENTED	1 (Burial 1)
AGE:	Traditional Native Hawaiian
DIMENSIONS/AREA:	2 m E/W by 2 m N/S / 4 m^2
LOCATION:	Southeast portion of the project area, near 'Ena Road (Trench 3)
TAX MAP KEY:	[1] 2-6-13: 001
LAND JURISDICTION:	Private; Fifield Companies

SIHP 50-80-14-6873 was discovered during hand excavation near the southeast edge of the project area, nearest to 'Ena Road. It contains only an isolated human burial. It was discovered in Trench 3, though four trenches (Trenches 5-8) were excavated in close proximity (refer to Figure 12) to determine the boundaries of the historic property. No additional burial or other cultural deposits were identified in Trenches 5-8 excavated immediately around the Trench 3/Burial 1/SIHP 50-80-14-6873 location.

7.6.1.1 50-80-14-6873 Human Burial

The site consists of a single human burial, Burial 1, discovered on September 14, 2006. The top of the burial was discovered during hand excavation in natural sediments approximately 105 centimeters below the surface. The lower extents of the burial are unknown, but it is possible that it extends into the water table. As little of the burial as possible was exposed, but based on what was observed it appears to be a complete and primary inhumation. It was placed directly in a natural jaucas sand deposit with no indication of a coffin or other Western burial practices. The direct placement of human remains in the ground (without a coffin or other means of containing the remains) is highly suggestive of traditional Native Hawaiian burial practice (Cleghorn 1987). There is no discernable pit surrounding the burial, indicating the burial predates the formation of the overlying sand A horizon. Based on available evidence the burial does not have associated burial goods. The small portion of the burial exposed consisted of the cranium and approximately four long bone fragments, most likely arm bones. This suggests the burial is at least partially upright, suggesting it may be flexed in a traditional Hawaiian manner. This flexed burial position is indicative of common Native Hawaiian body preparation and burial practices (Bowen 1974) that were replaced by other practices as post-Contact ideas spread (Cleghorn 1987). Based on these observations it is believed that this is a traditional Hawaiian burial, likely pre-Contact or early post-Contact in age. SHPD has made a formal ethnicity determination of most likely Native Hawaiian for this burial.

Figure 14 is a profile of Trench 3 showing the burial's stratigraphic relationship to the current land surface and overlying fill. Strata Ia-Ic are fill layers, Stratum II is a sand A-horizon and Strata IIIa and IIIb are natural jaucas sand. The jaucas sand layer in which the burial was placed is partially intact immediately beneath layers of historic/modern fill. A remnant natural, A horizon (Stratum II) that formed on this jaucas sand is visible in the southern portion of the trench. This is the same jaucas sand A-horizon found across the project area. Throughout much of the trench, the upper portion of the jaucas sand has been truncated though this is limited primarily to the overlying sand A horizon. The burial was not disturbed prior to the current investigation, but narrowly missed disturbance during historic and modern construction events. A modern trench extends across Trench 3, filled with boulders and trash, within two meters of Burial 1 (refer to Figure 14). The A horizon immediately overlying Burial 1 has also been cut away and filling activities affected overlying sediment as close as 15 centimeters from the top of the burial. More detailed stratigraphic information is available in Appendix A (page A-6).

SIHP 50-80-14-6873, a human burial determined to be of traditional Native Hawaiian origin by SHPD, has integrity of location and materials and is recommended eligible to the Hawai'i Register under for the information it has yielded under criteria D and for cultural significance to an ethnic group under criteria E. Mitigation for this burial will be discussed in a project specific burial treatment plan.

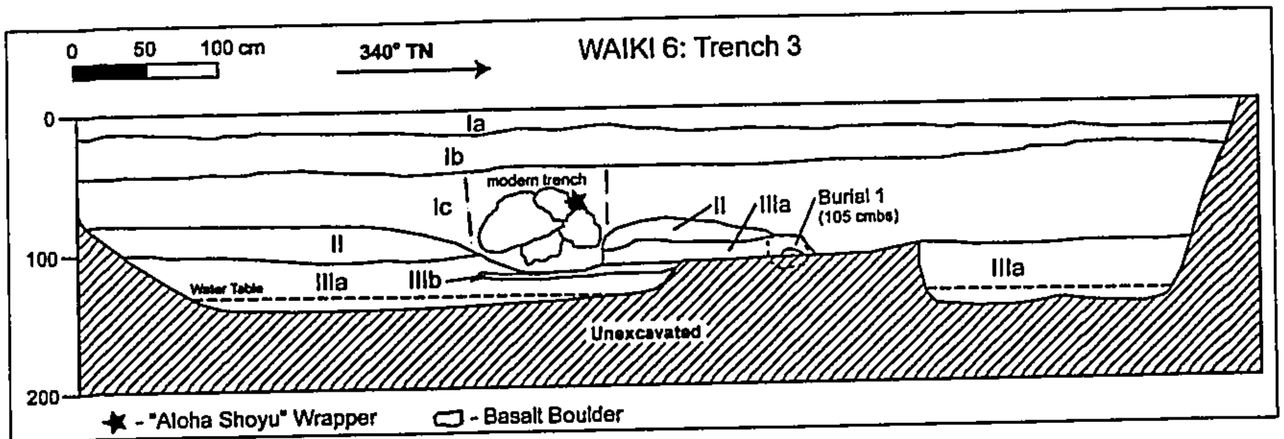


Figure 14. Trench 3 west profile. Exposed area of Burial 1, SIHP 50-80-14-6873, is shown in profile. A modern trench containing modern trash cut Trench 3 nearby.

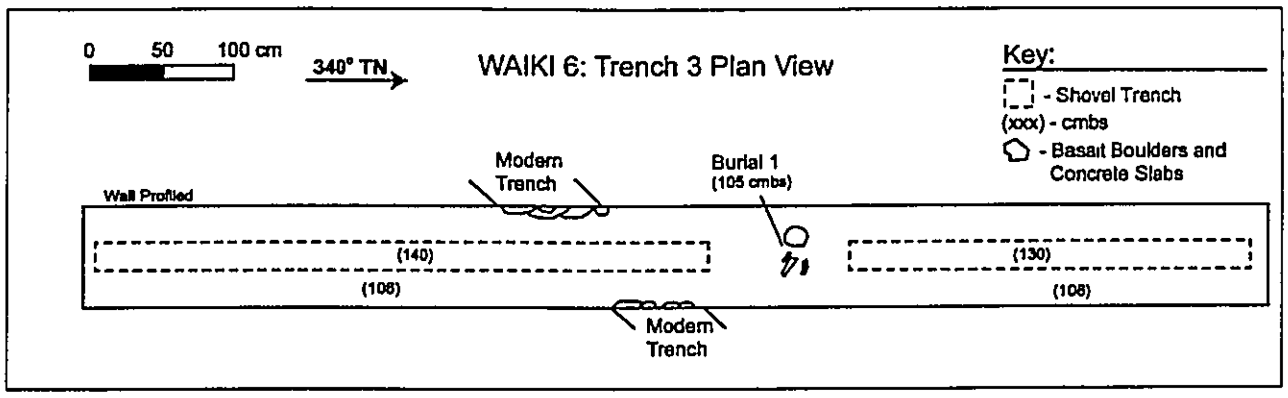


Figure 15. Trench 3 plan view indicating location of exposure of Burial 1.

SIHP 50-80-14-6874

FORMAL TYPE:	Subsurface cultural layer
FUNCTION:	Activity area
# OF FEATURES DOCUMENTED:	8
# OF BURIALS DOCUMENTED	0
AGE:	Mostly historic, but with a pre-Contact component
DIMENSIONS/AREA:	32 m E/W by 37 m N/S / 1184 m^2
LOCATION:	Central portion of the project area (Trenches 16, 19, and 28)
TAX MAP KEY:	[1] 2-6-13: 007, 008, 012
LAND JURISDICTION:	Private; Fifield Companies

SIHP 50-80-14-6874 was discovered in Trenches 16, 19 and 28 near the center of the project area. It consists of eight subsurface pit features documented in trench sidewalls and the top of the jaucas sand layer after removal of fill overburden with a backhoe. The locations of these features are shown on Figure 12, above. These pit features ranged from 10 cm to 240 cm in width and 40 cm to 110 cm in depth. In nearly all cases they were excavated into the ubiquitous jaucas sand deposit from the overlying A horizon. A typical profile of this type of feature is shown below in Figure 16. When distinct aspects of certain features are discussed in the following text, a profile is provided for reference. In these typical profiles, Stratum I is fill, Stratum II is the sand A-horizon, and Stratum III is the underlying jaucas sand. Profiles documenting every feature and more detailed stratigraphic information can be found in their respective trench's comprehensive documentation in Appendix A.

Most of the pit features contained historic artifacts. A smaller number contained no artifacts and only Feature E contained an assemblage of artifacts that may be of pre-Contact traditional Native Hawaiian origin. Radiocarbon results concluded that Feature E was most likely deposited before A.D. 1820, indicating it could easily date to pre-Contact or the early post-Contact periods. The rest of the historic property's features were clearly deposited historically. A detailed discussion of the radiocarbon dating results follows after the Feature Descriptions. The eight component features represent the ephemeral remnants of human land use within the project area, most likely from the pre-contact period, through the 19^{th} century, up to the importation of large fill deposits in the early 20^{th} century.

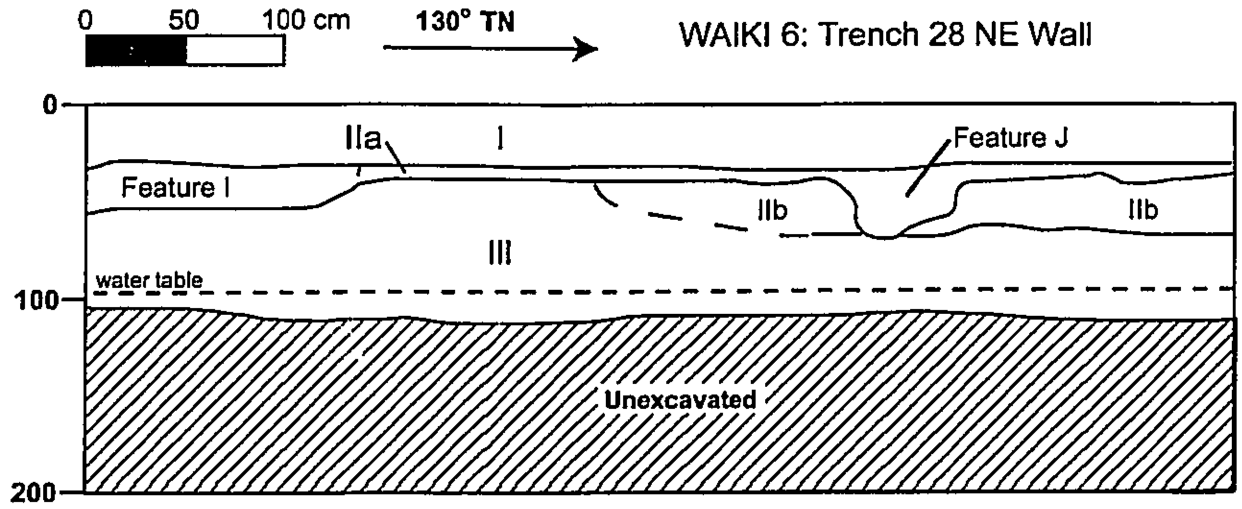


Figure 16. Trench 28 northeast wall profile, a typical profile for SIHP -6874. Stratum I is fill, Stratum II a is a the former land surface and an A horizon, IIb is a lighter colored continuation of the A horizon and Stratum III is jaucas sand.

7.6.1.2 Feature Descriptions

Features described below can be seen in trench profiles in the Comprehensive Trench Document appendix, Appendix A . Their locations in the project area are plotted on a project area map in Figure 12 above. Detailed records of the content of these features is not included here to keep this section easy to read and because many of these features are very similar. Appendix B contains metric details about cultural material collected from these features.

Feature A

Feature A was a large early to mid-20th century trash pit in the south end of Trench 16. It yielded many bottles as well as a few pieces of saw-cut bone and bricks. The feature measured horizontally 140 centimeters wide and vertically it extended from 40 to 130 centimeters below surface (cmbs). For stratigraphic details, see Appendix A (page A-33). All of the bottles were relatively recent compared to other parts of SIHP -6874 and were easily dated in the field and so were not collected.

Feature A extended down into lagoonal sediment underlying jaucas sand. It began in an early fill layer just above where the A horizon should have been if it were not cut away from this side of the trench. This feature is not closely associated with the natural land surface as all the other features in this historic property were. It was determined to be over 50 years old and was in close proximity to many other features. Further it was unusual to the project area in its size and density of historic artifacts. For these reasons it was included in this historic property.

All of the bottles found in this trash pit were machine made. A total of 14 bottles were recovered, the majority of which were marked Clorox bottles. Detergent bottles and screw top machine made bottles were also among those observed in the pit. All of the bottles date to between the 1920s and the 1940s. Figure 17 shows a representative photograph of some of the more common bottles found in the pit. Figure 18 details some of the more unusual bottles recovered.

From left to right in the photograph: Purex quart size detergent bottle; Clorox quart size chlorine bleach bottle; A quart sized milk bottle labeled:

ONE QUART
PROPERTY OF
HONOLULU DAIRYMEN'S ASSN
HONOLULU, TH

Figure 17. Common bottles recovered from Feature A in Trench 16.

The first bottle on the left is a pint sized milk bottle stamped:

ONE PINT
PROPERTY OF
DIAMOND HEAD DAIRY
HONOLULU
TH
S. SHIMIZU

The second bottle from the left is a long necked bottles with the base stamped:

D.B & C$^{\underline{O}}$L$^{\underline{D}}$
S97

The third bottle from the left is unmarked and appears to be a small wine bottle. The fourth from the left is a screw top bottle with the lid still in place, but largely rusted away. It is decorated with embossed stars but is otherwise unmarked. The fifth bottle from the left is a soda bottle with a Maltese cross repeated four times around the shoulder and stamped at the base with:

PROPERTY OF HONOLULU SODA WATER Co

The bottle on the right end of the photograph is a very small clear glass bottle stamped along the long axis of the bottle:

HEALY & BIGELOW'S
KICKAPOO
INDIAN OIL

Figure 18. Less common bottles recovered from Feature A in Trench 16

Feature C

Feature C was the next feature found in SIHP -6874 (Feature B is described below in the section Features Not in a Historic Property and is not part of this cultural layer) in Trench 19. For details about Trench 19, see Appendix A (page A-40).

Feature C was a fire pit in the natural A horizon in this trench. It measured 60 centimeters wide and extended vertically between 45 and 60 cmbs. The fire-pit was clearly historic in nature and a one-gallon sample contained glazed ceramics (28.9 g), clear bottle glass (8.9 g), rusted nail fragments (3.5 g) and a large amount of charcoal (73.5 g). More details about these artifacts are included in Appendix B .

Feature E

Feature E, the largest feature in Trench 28, was in the northwest wall in the A horizon (Figure 19). It was one meter wide and extended vertically from 40 to 70 cmbs. For detailed stratigraphic information and see Appendix A (page A-58).

A 2.5-gallon sample contained marine shell (17.7 g, largely *Nerita picea),* charcoal (26.5 g), and some other fragmentary marine shells (0.7 g). There were not historic artifacts found in this feature and the findings are typical of traditional Native Hawaiian food remains. For these reasons, this feature was selected for AMS radiocarbon dating and 16.6 grams of charcoal from this feature were sent to Beta Analytic. Results indicate it that it most likely originated between AD 1630 and 1820, the late pre-Contact or early historic, or post-Contact, periods. Further discussion about this radiocarbon dating follows these feature descriptions in section 7.6.1.4. More details about collected artifacts are included in Appendix B .

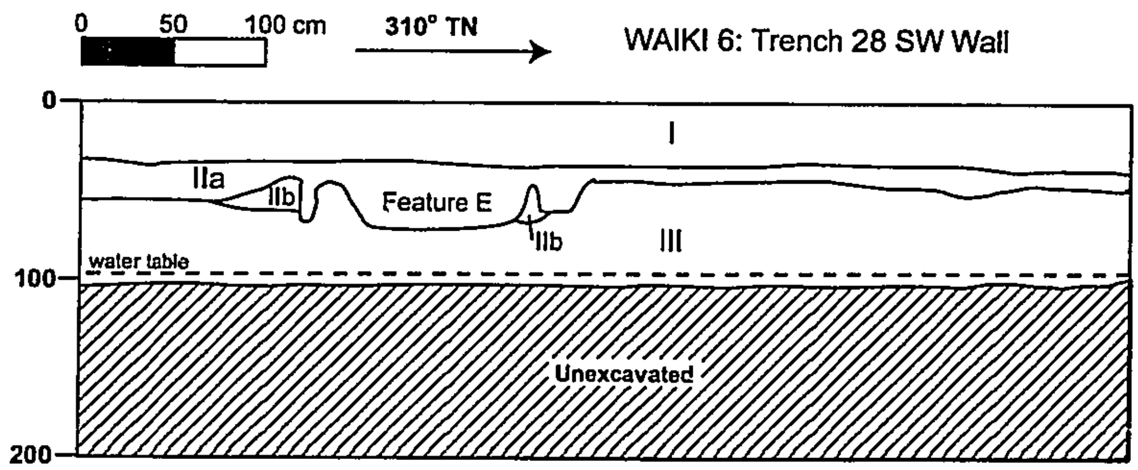


Figure 19. Trench 28 southwest profile. Feature E is very similar in appearance to other features in SIHP #6874, but its contents were distinct.

Feature F

Feature F was a small pit discovered in plan view in Trench 28. Feature F was round, approximately 15 centimeters in diameter and extended vertically from the A horizon at 65 cmbs to 105 cmbs into jaucas sand. It is possible that because of the crude alignment of Feature G with Feature H and F, that it may have been a post hole for natural wood posts (see Figure 20). It may also be a root mold.

No artifacts of any kind were found in this feature. For detailed stratigraphic information, see Appendix A (page A-58).

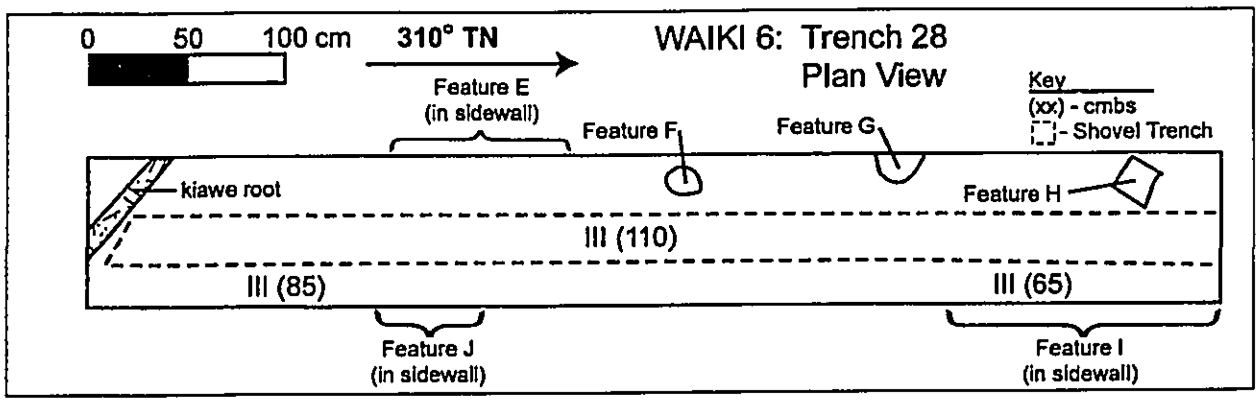


Figure 20. Plan view of Trench 28 showing shapes and alignment of Features F, G, and H.

Feature G

Feature G was a small pit discovered in plan view in Trench 28 (see Appendix A for stratigraphic details). Feature G was round, approximately 20 centimeters in diameter and extended vertically from the A horizon at 65 cmbs to 105 cmbs into jaucas sand. Feature G touched the sidewall, but was not visible in profile. It is possible that because of the crude alignment of Features G and F with Feature H, that they may have been post holes for natural wood posts (refer to Figure 20 above). It may also be a root mold.

No artifacts of any kind were found in this feature. For detailed stratigraphic information, see Appendix A (page A-58).

Feature H

Feature H was a square pit discovered in plan view in Trench 28 (see Appendix A for stratigraphic details). Feature H was unnaturally shaped and measured approximately 20 centimeters square, large enough to hold a 6 inch square post (refer to Figure 20 above). It extended vertically from the A horizon at 65 cmbs to approximately 105 cmbs into jaucas sand. It is very likely that this was a structural fence post for one of the wooden historic buildings that stood on the property. It is also possible that because of the crude alignment of Feature H with Feature F and G, that they formed a wooden post foundation for a historic building.

A small piece of rusted metal was found in the bottom of this feature. For detailed stratigraphic information, see Appendix A (page A-58).

Feature I

Feature I was a large feature in the A horizon in the northeast wall of Trench 28 (refer to Figure 16 above). It was 1.4 meters wide and extended from approximately 30 to 55 cmbs. A 1.5 gallon sample contained predominantly glass (371.2 g), a few marine shells (3.1 g) and some ceramic fragments (3.8 g). More details about these artifacts are included in Appendix B . For detailed stratigraphic information, see Appendix A (page A-58).

Feature J

Feature J was a large feature in the A horizon in the northeast wall of Trench 28 (refer to Figure 16 above). It was 0.5 meters wide and extended from approximately 30 to 60 cmbs. A 1.5 gallon sample contained a very low concentration of glass (8.0 g), marine shells (5.1 g) and charcoal (5.0 g). More details about these artifacts are included in Appendix B . For detailed stratigraphic information, see Appendix A (page A-58).

7.6.1.3 Characterization of 50-80-14-6874's Faunal and Artifact Assemblages

Glass was very common in pit features in SIHP -6874. For the most part this was bottle glass, in a few cases in the form of intact bottles. Ceramics and rusted metal fragments were also common. This applied to both clearly defined trash pits and as debris in fire-pits.

Shell found in these pits was heavily dominated by *Nerita picea* (*pipipi*), a littoral species that is the most common of its family, Neritidae, in Hawai'i. Occasionally small pieces of the interior shell of mostly unidentified shellfish, were found among this shell. Those that could be identified from this fragmentary midden were in the Family Mytilacea and Cypraea.

7.6.1.4 Radiocarbon Dating Results and Discussion of the 50-80-14-6874 Deposit's Age

The cultural material in the features of SIHP -6874 are suggestive of at least a small amount of traditional Native Hawaiian subsistence (indicated exclusively by marine shell midden) overlapping with pronounced evidence of historic bottle and ceramic use. This is suggestive of a transitional period, where traditional Hawaiian subsistence occurred with the use of historic Western goods—although many traditional Native Hawaiian subsistence practices, although much less common (such as the consumption of *pipipi)*, are still on-going in modern times. Based on this limited evidence, provided by cultural material alone, SIHP -6874 appears to have accumulated mostly in the historic period.

Most of the features in SIHP -6874 are clearly historic, but one feature contains cultural material that resembles traditional native Hawaiian midden and no historic artifacts. Many of the other features have some features of both traditional Hawaiian midden and historic trash. In order to test if the oldest part of this deposition reaches back into pre-Contact times, CSH completed radiocarbon dating on material recovered from Feature E in Trench 28.

A bulk charcoal sample weighing 16.6 grams of wood charcoal from this pit feature was sent to Beta Analytic Inc., for analysis (Table 3, also refer to Appendix C). The Accelerator Mass Spectrometer (AMS) analytic technique was used because of the samples' small size. The reported conventional radiocarbon ages include corrections based on the calculated 13C/12C ratios. These conventional radiocarbon ages were then calibrated into calendar date ranges (AD) using the OxCal Calibration Program, version 3.9, available over the Internet. This program provides probability estimates for the most likely date range(s) from radiocarbon dates that intercept the calibration curve at multiple points.

Table 3. Radiocarbon Dating Results from Feature E, SIHP 50-80-14-6874 Cultural Layer

Beta Analytic ID#	Sample Material/Analytic Technique	Provenience	Conventional Radiocarbon Age	C13/C12 Ratio	OxCal Calibrated Calendar Age (2 sigma)
Beta-222944	**Wood Charcoal/ AMS**	**SIHP 50-80-14-6874 Trench 28 Feature E Str. II 35-65 cmbs**	**210 +/- 40 BP**	**-25.2 o/oo**	**1630 - 1700 (29.5%) 1720 - 1820 (49.7 %) 1830 - 1880 (2.9%) 1910 – 1960 (13.3%)**

The reported calibrated calendar ages span the last four centuries, with stronger probabilities for 17th and 18th century calendar ages. Unfortunately, these inconclusive results are common for radiocarbon analysis on samples dating to the last three centuries, making chronological distinctions between archaeological features and deposits dating from this period difficult. This is due to the configuration of the radiocarbon calibration curve, which is derived from the radiocarbon dating of tree-ring samples of known ages and reflects the changes in the actual amount of ^{14}C circulating in the global environment over time. The radiocarbon calibration curve for the period between AD 1650 and 1950 has little slope (refer to graphical representations of the radiocarbon dating results in Appendix C). This results in multiple calibration curve intercepts and accompanying calibrated calendar ages that largely span the last four centuries. The highest probabilities have a large margin that is suggestive that Feature E accumulated in the pre-Contact or early post-Contact period (e.g. pre-1820).

Based on all available evidence of radiocarbon dating and material culture, it is most likely that SIHP –6874 accumulated predominantly in the post-Contact period. Some of the component features that make up the historic property may contain cultural material that dates to earlier pre-contact activity.

SIHP –6874 consists of a subsurface, largely ephemeral activity area remnant. These types of remnant activity areas that potentially span the pre-Contact and post-Contact eras are not uncommon in Waikīkī. These activity areas, often buried by Ala Wai Canal fill materials, are remnants of Waikīkī's former land surface that predate Waikīkī's modern development. Based on inventory survey observations, its information potential has largely been recorded. SIHP – 6874 is recommended eligible to the Hawai'i Register of Historic Places under Criteria D, for the information it has provided and may potentially provide regarding Waikīkī's past land use.

7.6.2 SIHP 50-80-14-6875

FORMAL TYPE:	Human burial
FUNCTION:	Human interment
# OF FEATURES DOCUMENTED:	0
# OF BURIALS DOCUMENTED	1 (Burial 2)
AGE:	Traditional Native Hawaiian
DIMENSIONS/AREA:	2 m E/W by 2 m N/S / 4 m^2
LOCATION:	Northwest portion of the project area (Trench 29)
TAX MAP KEY:	[1] 2-6-13: 003
LAND JURISDICTION:	Private; Fifield Companies

SIHP 50-80-14-6875 was discovered during hand excavation near the northwest edge of the project area, nearest to the adjacent high-rises. It contains only an isolated human burial. It was discovered in Trench 29, though four trenches (Trenches 30-34) were excavated in close proximity (refer to Figure 12) to determine the boundaries of the historic property No additional burial or other cultural deposits were identified in Trenches 30-34 excavated immediately around the Trench 29/Burial 2/SIHP 50-80-14-6875 location.

7.6.2.1 50-80-14-6875 Human Burial

The site consists of a single human burial, Burial 2, discovered October 5, 2006. The top of the burial was uncovered during hand excavation in natural jaucas sand sediments approximately 50 centimeters below the surface. The lower extents of the burial are unknown, but it is located very near the water table and almost certainly extends into it. As a result of this proximity to the water table, the portions of Burial 2 that were observed are in a more deteriorated state of preservation in comparison to the portions of Burial 1 that were observed. As little of the burial as possible was exposed, but based on what was observed it appears to be a complete and primary inhumation. It was placed directly in a natural jaucas sand deposit (Figure 21). The direct placement of human remains in the ground (without a coffin or other means of containing the remains) is highly suggestive of traditional Native Hawaiian burial practice (Cleghorn 1987). There is no discernable pit surrounding the burial, indicating the burial predates the formation of the A horizon, which is still the modern land surface in this corner of the project area. Based on available evidence the burial does not have associated burial goods. The small portion of the burial exposed consisted of arm long bones and a small corner of the innominate. No conclusive evidence is available regarding the burial's position. Based on these observations it is believed that this is a traditional Hawaiian burial, likely pre-Contact in age. SHPD has made a formal ethnicity determination of most likely Native Hawaiian for this burial.

Figure 21 is a profile of Trench 29 showing the burial's stratigraphic relationship to the overlying A horizon (Stratum I) that is the modern land surface and its placement in jaucas sand (Stratum II). The jaucas sand layer in which the burial was placed is completely in tact with the exception of two pits (Features K and L—described below) and one very small pit as seen on the right side of the profile. On top of this jaucas sand a natural sand A horizon has formed and is still undergoing soil formation as the modern land surface. Two small pits, Features K and L, were found in the trench measuring between 20 and 30 centimeters wide and 40 centimeters deep. These pits were excavated down from the A horizon and each was found only to contain one extremely rusty metal fragment during sampling. These pits are historic and/or modern, clearly post-date Burial 2, and are not considered part of the SIHP -6875. The burial was not disturbed by these pits, nor by any other event prior to the current investigation. More information on the pit features can be found in the following section, 7.7.1, and more detailed stratigraphic information is available in Appendix A (page A-62).

SIHP 50-80-14-6875, a human burial determined to be of traditional Native Hawaiian origin by SHPD, has integrity of location and materials and is recommended eligible to the Hawai'i Register under for the information it has yielded under criteria D and for cultural significance to an ethnic group under criteria E. Mitigation for this burial will be discussed in a project specific burial treatment plan.

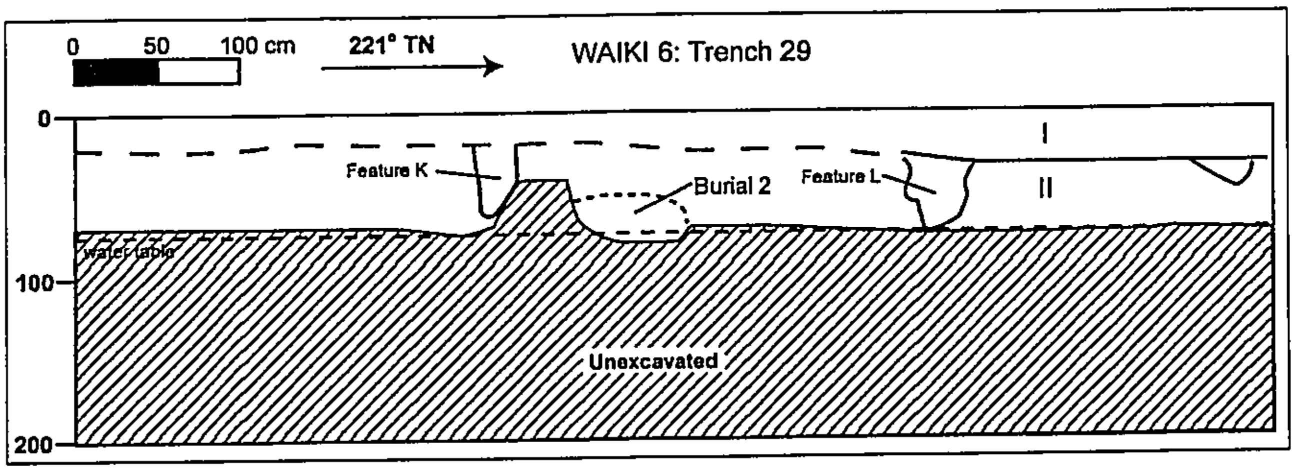


Figure 21. Trench 29 southeast profile, indicating locations of Burial 2, Features K and L

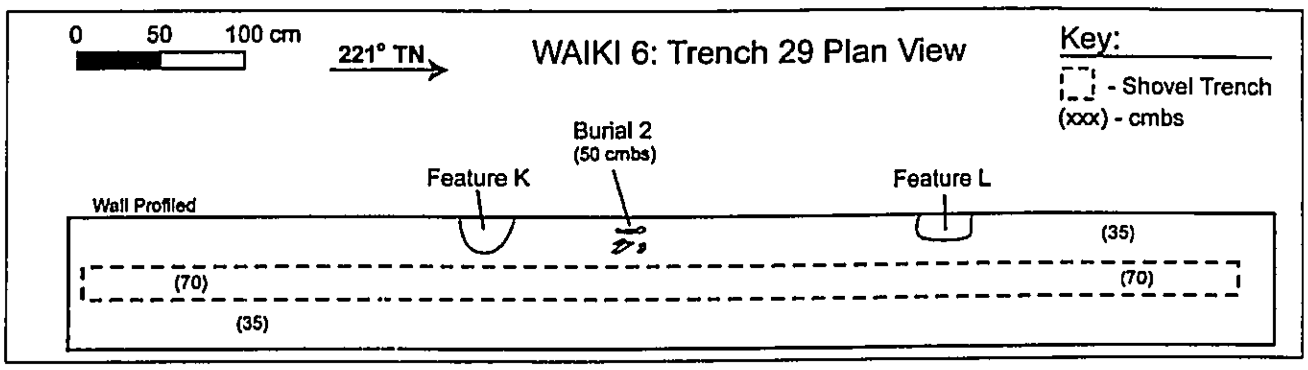


Figure 22. Trench 29 plan view showing location and exposure of Burial 2.

7.7 Features Not in a Historic Property

As discussed in the Methods section, isolated pit features were not necessarily grouped with a historic property. Isolated pits that did not yield significant information were designated as features within the project area and are discussed below, but were not included in a specific historic property because their relationship to the higher density activity areas or burial features was not demonstrated. The locations of these "non-site" features are shown on Figure 12, above.

7.7.1 Feature Descriptions

Feature B

Feature B was a historic trash pit discovered in plan view in Trench 28. See Appendix A (page A-58) for detailed stratigraphic information. It was excavated fully to ensure that it was not a burial pit. Feature B was probably contemporaneous with the some of the last use of the land surface indicated by the A horizon in the majority of the project area. In this trench a major disturbance scooped away most of this natural land surface. It was about 1 meter squared in profile and extended from 45 to 95 cmbs. It contained a number of bottle fragments (50 count), small ceramic chips (5 ct), metal fragments (10 ct) and cut animal bone (15 ct). One whole machine made Worcestershire sauce bottle was recovered (Figure 23). It dates to the pre-fill historic era around 1920. Because the bottle was not likely to provide information further than dating the feature, it was not collected.

This feature appears to be a small residential trash pit from around the turn of the 19th century. It is probably related to historic wooden buildings documented by historic maps (refer to Figure 7—the U.S. Army Engineers map, based on military surveys from 1909 to 1913).

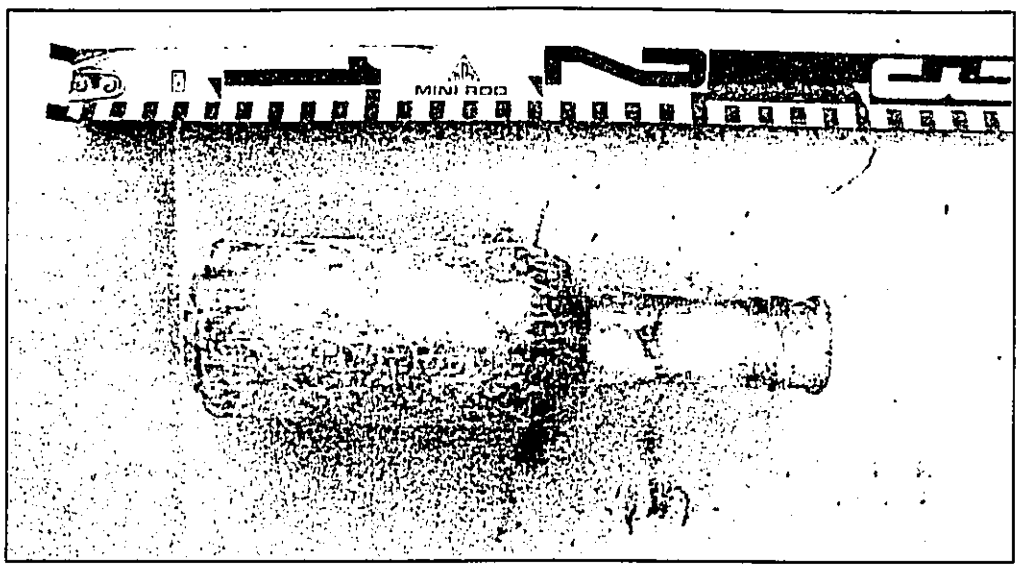


Figure 23. A complete machine made Worcestershire bottle recovered from Feature B.

Feature B is an extremely common type of feature for the coast line of Honolulu. It did not yield significant information about the project area or the area and did not indicate an area of concentrated activity in the area. For these reasons it was not included in as a part of a historic property.

Feature D

Feature D was a sandy loam pit in Trench 23 containing some trash that extended down from the present day land surface (and A horizon) which is contemporaneous with the A horizon found capped by fill in other parts of the project area. It extended from 10 to 70 cmbs and was 60 centimeters wide. It was not a high density trash pit and was dominated by large, immovable coral boulders 30 - 50 centimeters in diameter. It also contained clear glass fragments (2.7 g), metal fragments (1.8 g), saw-cut animal bone (3.0 g), charcoal (12.6 g), a rusted bottle cap, a brick and a very small amount of marine shell.

Stratigraphic details about Trench 23 can be found Appendix A (page A-47), and a catalogue of artifacts from this feature in Appendix B .

Feature K

Feature K was a sandy loam pit found in Trench 29 Stratum II near to but unrelated to Burial 2. It extended down from the A horizon, also the present land surface, from 20 to 60 cmbs. Because Burial 2 was found in this trench, this feature was excavated completely to ensure that it was not another burial. Only one very small rusty metal fragment that was beginning to cement the surrounding sand and was completely unidentifiable was found in this feature. It does not represent the same kind of land use as SIHP -6874, a subsurface cultural layer, nor is it in any way associated with Burial 2.

Stratigraphic details about Trench 29 can be found Appendix A (page A-62), and a catalogue of artifacts from this feature in Appendix B

Feature L

Feature L was a sandy loam pit very similar to Feature K also found in Trench 29 Stratum II. It was also near to but unrelated to Burial 2. It extended down from the A horizon, also the present land surface, from 25 to 70 cmbs. Because Burial 2 was found in this trench, this feature was also excavated completely to ensure that it was not another burial. Only one very small rusty metal fragment that was had essentially disintegrated into iron oxide and had cemented the surrounding sand was found in this feature. It does not represent the same kind of land use as SIHP -6874, a subsurface cultural layer, nor is it in any way associated with Burial 2.

Stratigraphic details about Trench 29 can be found Appendix A (page A-62), and a catalogue of artifacts from this feature in Appendix B

Section 8 Summary and Interpretation

Cultural Surveys Hawai'i, Inc., undertook this archaeological inventory survey at the request of Fifield Companies. The survey covered the whole of the approximately 2.3-acre project area, located in the southeast quarter of the block bounded by Ala Wai Boulevard, Kalākaua Avenue, 'Ena Road, Hobron Lane, and Līpe'epe'e Street. The project is located in Waikīkī Ahupua'a, Kona District, O'ahu Island, within TMK [1] 2-6-13: 1, 3, 4, 7, 8, 9, 11 and 12.

As there were no surface historic properties in the project area, the inventory survey focused on a subsurface testing program. Thirty-five trenches were documented within the project area. This equals a 1.95 percent subsurface testing sample of the project area's surface; or 15.2 trenches per acre. Based on a comparison with prior inventory survey investigations in the vicinity, the current project area has had one of, if not the most thorough archaeological inventory survey subsurface testing programs yet completed in Waikīkī.

As indicated by USDA Soils Survey information (Foote et al. 1972), the project area's natural sediments are often capped by irregular historic and modern fill layers. These recent stratigraphic layers do not provide a significant amount of archaeological information. In the west corner of the project area, however, natural jaucas sand sediments were found at the modern land surface. Based on testing results, the project area can be divided into three general stratigraphic sequences: low-lying waterway sediments capped with fill; jaucas sand with an A horizon capped with fill; and jaucas sand with a still active A horizon as the modern land surface.

In terms of the cultural stratigraphy, it is most useful to discuss the types of natural land surfaces that would have existed before any historic or modern fill events took place. In this case, virtually the entire project area was formerly a relatively (for Waikīkī) high jaucas sand exposure on which soil formation and human activity was taking place.

The northern edge of the project area was probably a natural low-lying land surface composed of alluvial deposits mixed with local marine sediments such as jaucas sand. This low-lying area may have been modified by traditional Hawaiians for use as an *'auwai* (irrigation channel or watercourse), however, there was no indication of this documented in CSH's test trenches. At least in the current project area, the former watercourse appears to be natural. Considering its proximity to the shore, the watercourse may have been brackish and/or tidal. Neither of these conditions would have been ideal for agriculture.

The natural "pre-fill" sediments in the project area reflect the Holocene evolution of the Waikīkī landform. The jaucas sand deposits are the remnants of a prograding beach berm that likely developed following the mid-Holocene c. 1.5 m high-stand of the sea. Underlying the jaucas sand and the low-lying areas are the remains of lagoonal deposits that would have built up immediately offshore.

Within the natural jaucas sand beach deposits, three historic properties were found, SIHP 50-80-14-6873, SIHP 50-80-14-6874 and SIHP 50-80-14-6875. Table 4 is a summary of the three historic properties documented in the project area.

Table 4. Historic Property Summary Table for the Allure Waikīkī Development

CSH #	SIHP #	Formal type	Function	Number of Features Documented	Number of Burials Documented	Apparent Age	Integr	
							Location	Design
1	50-80-14-6873	Traditional Native Hawaiian Burial	Human Interment	0	1	Pre-Contact or Early Post-Contact Traditional Native Hawaiian	Y	N
2	50-80-14-6874	Subsurface Cultural Layer	Activity Area	8	0	Largely Historic	Y	N
3	50-80-14-6875	Traditional Native Hawaiian Burial	Human Interment	1	1	Pre-Contact or Early Post-Contact Traditional Native Hawaiian	Y	N

[1]Assessed based on the guidance and definitions from National Register Bulletin #15, "How to Apply the National Register Crite

nt Age	Integrity[1]							Recommended Significance Under the Criteria of the Hawai'i Register of Historic Places	Recommended Mitigation
	Location	Design	Setting	Materials	Workmanshi	Feeling	Association		
ıtact or ɔst- nal Native ın	Y	N	N	Y	N	N	N	D and E	Archaeological Monitoring, Burial Treatment
Historic	Y	N	N	Y	N	N	N	D	Archaeological Monitoring
tact or ɔst- nal Native n	Y	N	N	Y	N	N	N	D and E	Archaeological Monitoring, Burial Treatment

onal Register Criteria for Evaluation." "Y" is yes, "N" is No, "?" is possible

SIHP 50-80-14-6873 and SIHP 50-80-14-6875 each consist of one isolated traditional Hawaiian human burial. SIHP -6873 was located near the southeast corner of the project area, less than forty meters from a burial found in 1999 during archaeological monitoring in the intersection of Kalākaua Avenue and 'Ena Road (Perzinski et al. 1999). SIHP -6875 was found approximately 120 meters to the northwest of SIHP -6873, in the west corner of the project area. The locations of these properties are displayed on Figure 12 above.

Located during archaeological inventory survey investigations, both of the burials documented within the project area are previously recorded. The burials were found in jaucas sand deposits, lacked associated grave goods (including historic artifacts), and, where information is available, appear to be in flexed, or at least semi-flexed burial position. These characteristics are more indicative of traditional Native Hawaiian burial practices. Following the procedures of Hawai'i Revised Statutes (HRS) Chapter 6E-43, and Hawai'i Administrative Rules (HAR) Chapter 13-300, all remains were determined to be over 50 years old and most likely Native Hawaiian. No clearly historic burials were encountered. As previously identified Native Hawaiian burials on O'ahu, their treatment falls under the jurisdiction of the O'ahu Island Burial Council (OIBC).

The project area's burials are not clearly associated with any one Land Commission Award (LCA). However, LCA 1999 to Nalimu and LCA 2081 to Jane Laeau are immediately adjacent to the project area (refer to Figure 6). There are no *kuleana* claims within the project area.

SIHP 50-80-14-6874 consists of a subsurface cultural layer that accumulated as the result of what appears to be mostly historic activity. This historic property was located in the central portion of the project area and is depicted on Figure 12 above. This cultural layer is comprised entirely of small pits excavated from the sand A horizon into the jaucas sand deposit. These pits often contain trash. Based on the relatively low density of the historic pit features and their size, they appear to be residential in nature. This is consistent with historic maps that indicate the project area contained wooden houses. No trash pits were recorded in the project area that were suggestive of commercial or industrial activity. A series of smaller pits were also suggestive of postholes, probably from a historic wooden residence that stood in the project area. A bulk radiocarbon sample taken from Feature E, a pit feature in which no historic artifacts were found, in this historic property dated to A.D. 1630 to 1820. This suggests that this area was intermittently used from pre-Contact to historic times.

The results of the inventory survey's subsurface testing program were largely as anticipated based on background research. The presence of traditional Hawaiian burials but the lack of substantial traditional Hawaiian habitation deposits suggests that this area may have rarely been utilized for habitation in pre-Contact Hawai'i. Historic deposits were regularly marked by glass, metal and ceramics, and did contain a small amount of material that is more traditional Native Hawaiian - primarily *pipipi* shell (*Nerita picea*) but also other marine shell midden. This indicates a heavy influence of historic subsistence patterns but a persistent use of some more traditional food items. Based on the relatively low density of historic pit features and their size, they appear to be residential in origin (as opposed to larger, more frequent light industrial/commercial pit features). This is consistent with historic maps that indicate the project area contained wooden houses up to the 1950s.

Section 9 Significance Assessments

This section discusses the significance of the historic properties discovered within the project area.

9.1 Significance Assessments

The inventory survey investigation and documentation of the project area's three historic properties has provided sufficient information for significance evaluations. Significance is determined after evaluation of each historic property in light of the five broad criteria used by the Hawai'i State Registers of Historic Places (HAR 13-284-6). The criteria are the following:

- A Historic property reflects major trends or events in the history of the state or nation.
- B Historic property is associated with the lives of persons significant in our past.
- C Historic property is an excellent example of a site type.
- D Historic property has yielded or may be likely to yield information important in prehistory or history.
- E Historic property has cultural significance to an ethnic group, including, but not limited to, religious structures and burials.

SIHP 50-80-146874, an activity area remnant, has integrity of location and materials and is recommended eligible to the Hawai'i Register under criteria D. SIHP 50-80-14-6873 and 50-80-14-6875, human burials determined to be of traditional Native Hawaiian origin by SHPD, have integrity of location and materials and are recommended eligible to the Hawai'i Register under criteria D and E.

Section 10 Project Effect and Mitigation Recommendations

10.1 Project Effect

The proposed project will affect historic properties recommended eligible to the Hawai'i Register. CSH's project specific effect recommendation is "effect, with agreed upon mitigation measures." The mitigation measures described below will help alleviate the project's impact on significant historic properties.

10.2 Mitigation Recommendations

The inventory survey's recommended mitigation measures are twofold: burial treatment and archaeological monitoring.

10.2.1 Burial Treatment

It is a requirement of Hawai'i state burial law that the treatment of the two previously identified Native Hawaiian burials within the project area be addressed in a project specific burial treatment plan prepared for the consideration of the O'ahu Island Burial Council (OIBC) (HAR Chapter 13-300-33). The preparation of this burial treatment plan is currently underway and will incorporate the appropriate input from the OIBC, SHPD, and recognized lineal/cultural descendents.

10.2.2 Archaeological Monitoring

This archaeological inventory survey represents a good faith effort to identify and document the historic properties within the project area. Based on a fairly robust subsurface testing sampling strategy, CSH is confident that all historic properties within the project area have been identified and documented. Due to the inherent limitations of any sampling strategy, however, it is possible that additional features of these historic properties, potentially including human burials, may be uncovered during the project's construction.

In order to mitigate the potential damage to these as yet unidentified components of the three historic properties within the project area, it is recommended that project construction proceed under an archaeological monitoring program. This monitoring program will facilitate the identification and proper treatment of any additional burials that might be discovered during project construction, and will gather additional information regarding the project's non-burial archaeological deposits, should any be discovered.

10.3 Disposition of Materials

The complete collection of artifacts and faunal remains associated with this archaeological inventory survey were collected from private lands; accordingly, this material belongs to the landowner, Fifield Companies. This collection is small, comprised of the materials collected from the three historic properties documented within the project area (refer to Appendix B). The archaeological inventory survey collection will be temporarily housed at the CSH storage facility. CSH will make arrangements with the landowner regarding the disposition of the project's collection. Should the landowner request archiving of material, then the archive location will be determined in consultation with SHPD.

All human remains documented within the project area were, to the extent possible, left in place where they were found. No human remains were removed from the project area. The disposition of these human remains will be determined through the procedures outlined in Hawai'i state burial law (HRS Chapter 6E-43 and HAR Chapter 13-300).

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Appendix A Comprehensive Trench Documentation

Trench 1

Trench 1 was 7.5 meters long, 0.8 meters wide and 1.5 meters deep. It was excavated parallel to 'Ena Road at the edge of the project area to check sediments closest to a burial uncovered in the intersection of 'Ena Road and Kalākaua Avenue (Perzinski et al. 1999).

Trench 1 contained fill over natural jaucas sand with an A horizon. Part of these natural sediments were disturbed and the sidewall of the trench adjacent to the road (not profiled) contained considerably thinner jaucas sand than the sidewall shown here. Figure 25 following the sediment descriptions is a photograph of the sidewall.

A 2.5 gallon sample was screened from the A horizon, Stratum II. This sample, Sample Area 01, contained glass fragments and very small amounts of marine shell including *pipipi (Nerita picea)*. See Appendix B for more details about this sample.

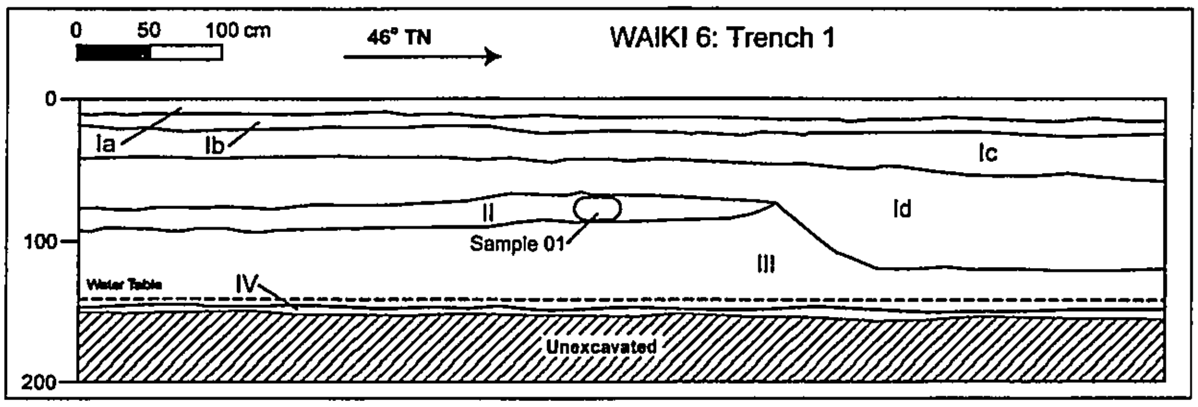


Figure 24. Trench 1 northwest profile. A horizon was sampled as Sample Area 01.

Stratum Ia: 0 - 10 cmbs

A Horizon; 7.5 YR 3/4, dark brown; sandy loam; moderate, medium, crumb structure; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary.

Modern A horizon, top soil for landscaped grass. Many rootlets.

Stratum Ib: 10 - 20 cmbs	Fill Horizon; 10 YR 6/1, gray; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. Gravel base course. Many rootlets from overylying soil with grass.
Stratum Ic: 20 - 50 cmbs	Fill Horizon; 2.5 YR 4/13, reddish brown; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;. Gravel base course.
Stratum Id: 50 - 115 cmbs	Fill Horizon; 10 YR 3/3, dark brown; loamy sand; structureless; hard dry consistency; non-plastic; no cementation; clear wavy lower boundary. Terrestial fill. Possibly deposited several decades ago.
Stratum II: 65 - 90 cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; loamy sand; weak, fine, single grain structure; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Buried natural A horizon on Stratum III parent material. Contains some charcoal and burnt roots. A 2.5 gallon sample was screened of this stratum that yielded charcoal and glass fragments.
Stratum III: 70 - 145 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Stratum IV: 145 - 510 cmbs	Lagoonal sediment; Gley 1 6/N, gray; sandy clay; structureless, non-sticky wet consistency; plastic; no cementation; Marine deposited sandy clay. The entire layer is below the water table

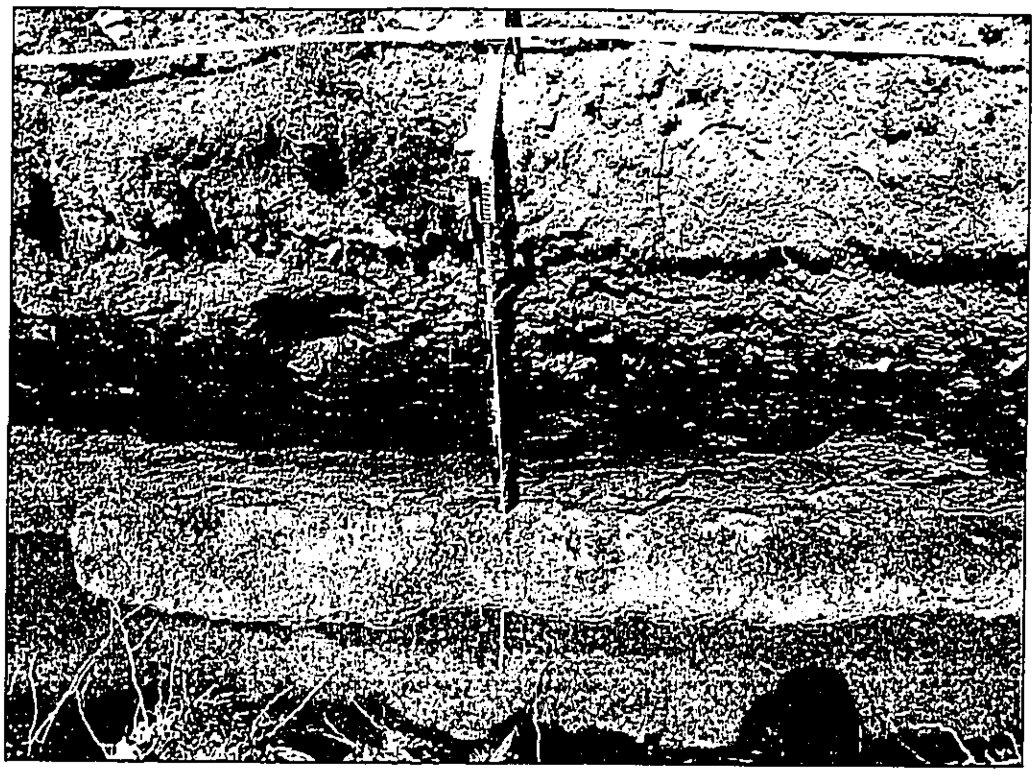


Figure 25. Trench I northwest wall photograph.

Trench 2

Trench 2 was 7 meters long, .7 meters wide and 1.45 meters deep. It was excavated along the edge of the project area bordering Kalākaua Avenue to test for burials in sediments nearest to a burial located in the nearby intersection (Perzinski et al. 1999).

Trench 2 contained fill over natural jaucas sand with an A horizon. A portion of these natural sediments was cut away in the south end of the trench.

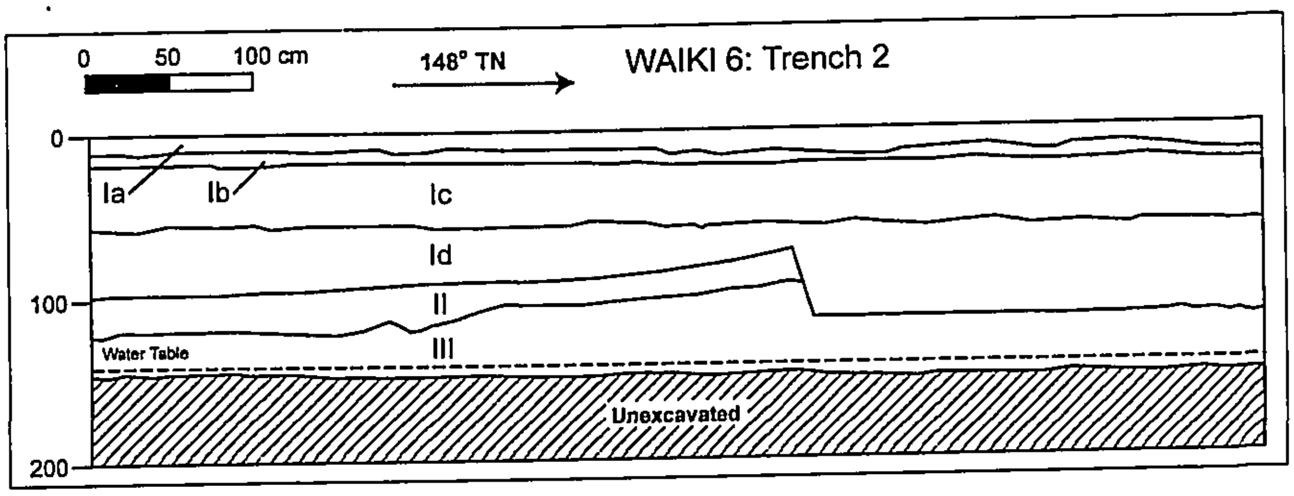


Figure 26. Trench 2 northeast profile.

Stratum Ia: 0 - 10 cmbs	A Horizon; 7.5 YR 3/4, dark brown; sandy loam; moderate, medium, crumb structure; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. Modern A horizon, top soil for landscaped grass. Many rootlets.
Stratum Ib: 10 - 18 cmbs	Fill Horizon; 10 YR 6/1, gray; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. Gravel base course. Many rootlets from overylying soil with grass.

Stratum Ic: 18 - 55 cmbs	Fill Horizon; 2.5 YR 4/13, reddish brown; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;. Gravel base course.
Stratum Id: 55 - 112 cmbs	Fill Horizon; 10 YR 3/3, dark brown; loamy sand; structureless; hard dry consistency; non-plastic; no cementation; clear wavy lower boundary. Terrestial fill. Possibly deposited several decades ago.
Stratum II: 70 - 120 cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; loamy sand; weak, fine, single grain structure; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Buried natural A horizon on Stratum III parent material.
Stratum III: 92 - 145 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless, loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Trench 3

Trench 3 was 8.1 meters long, 0.7 meters wide and 1.4 meters deep. It was excavated for general project area coverage. Trench 3 contained Burial 1 the first burial discovered in the project area. This burial was discovered during the first day of inventory survey excavations on September 14, 2006.

Trench 3 contained fill over natural jaucas sand with an A horizon. This trench contained a relatively high amount of fill and the natural sediments were more disturbed than in other trenches. A modern trench containing large basalt boulders and a small amount of trash including a modern plastic "Aloha Shoyu" packet cut across the trench as seen in profile (Figure 27) and plan view (Figure 28). Much of the natural A horizon in this trench was cut away by fill events. Stratum IIIb was an unusual lens of natural gray jaucas sand in this trench. Its position may be from some type of disturbance, but a partially intact natural A horizon overlies part of this gray lens. Figure 29 following the sediment descriptions is a photograph of the sidewall.

The burial, Burial 1, was not disturbed by these modern fill events. No pit was documented above the burial. It rests in an undisturbed jaucas sand layer, Stratum IIIa. Burial 1 was designated SIHP 50-80-14-6873. For more details about Burial 1 see section 7.6.1.1.

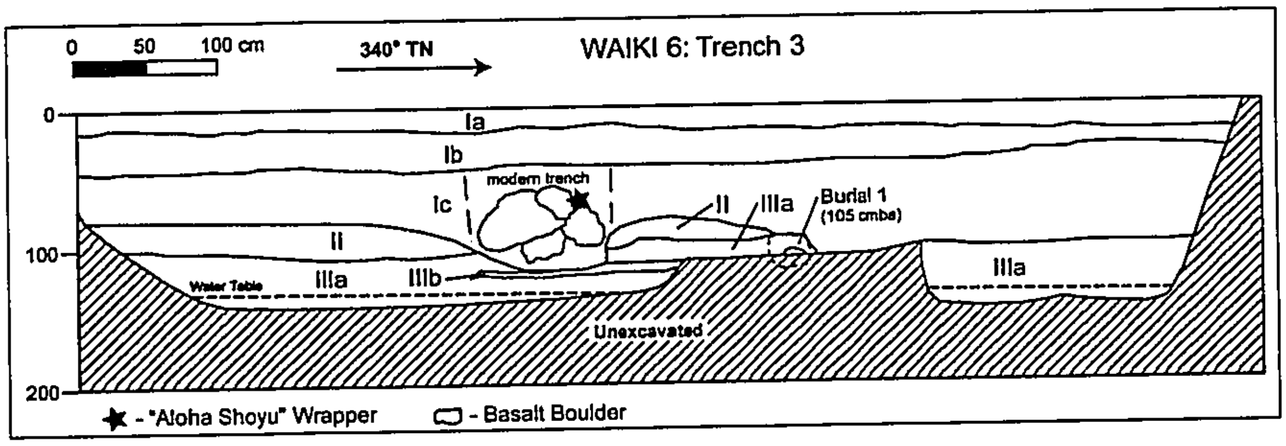


Figure 27. Trench 3 west profile. Exposed area of Burial 1, SIHP 50-80-14-6873, is shown in profile. A modern trench containing modern trash cut Trench 3 nearby.

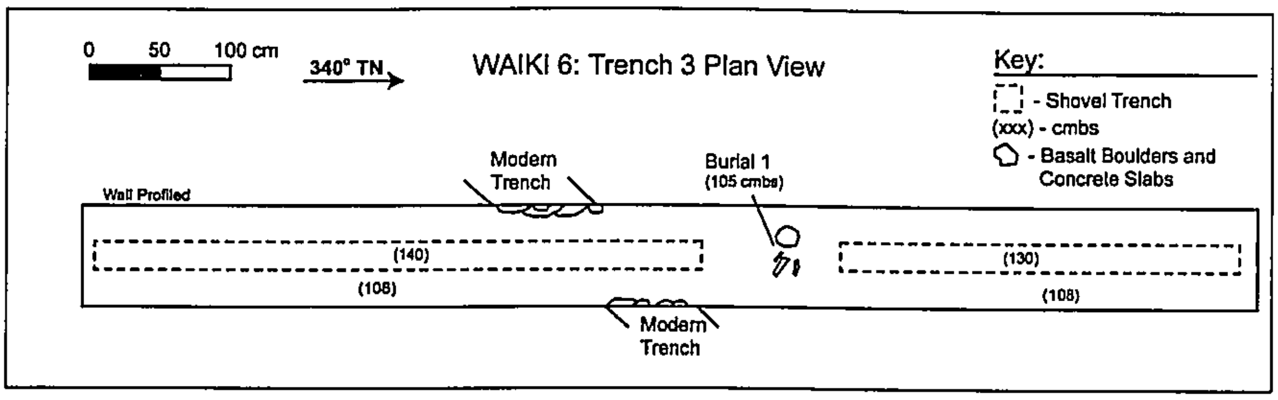


Figure 28. Trench 3 plan view showing Burial 1 location, modern trench and hand excavated shovel trenches.

Stratum Ia: 0 - 15 cmbs	Fill Horizon; 10 YR 6/1, gray; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. *Gravel base course.*
Stratum Ib: 15 - 45 cmbs	Fill Horizon; 2.5 YR 4/13, reddish brown; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;. Gravel base course.
Stratum Ic: 30 - 115 cmbs	Fill Horizon; 10 YR 3/3, dark brown; loamy sand; structureless; hard dry consistency; non-plastic; no cementation; clear wavy lower boundary. Terrestial fill. Possibly deposited several decades ago. Large boulders in profile appear to be in a trench cutting through the stratum. An "Aloha Shoyu" packet was found wedged in with rocks, indicating modern origins.
Stratum II: 80 - 105 cmbs	A Horizon; 10 YR 4/2, dark grayish brown; sandy loam; structureless; loose moist consistency; non-plastic; no cementation; clear broken lower boundary. Stratum is cut by layer Ic where boulder filled trench crosses Trench 3. This stratum was not cut by the burial found in this trench; no pit was visible. Stratum abruptly ends just north of Burial 1.

Stratum IIIa: 90 - 140 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.
Stratum IIIb: 115 - 120 cmbs	Jaucas sand; 10 YR 6/1, gray; coarse, sand; structureless; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Slightly mottled with IIIa near the interface of the two strata.

Figure 29. Photograph of Trench 3 profile looking south. Burial 1 was covered with clean sand and then plywood for protection, as seen here.

Trench 4

Trench 4 was 6.75 meters long, 0.7 meters wide and 1.7 meters deep. It was excavated for general project area coverage.

Trench 4 contained fill over natural jaucas sand with an A horizon. These sediments were not disturbed.

A 2 gallon sample was screened from the A horizon, Stratum II. This sample, Sample Area 02, contained a very small amount of charcoal that was not collected.

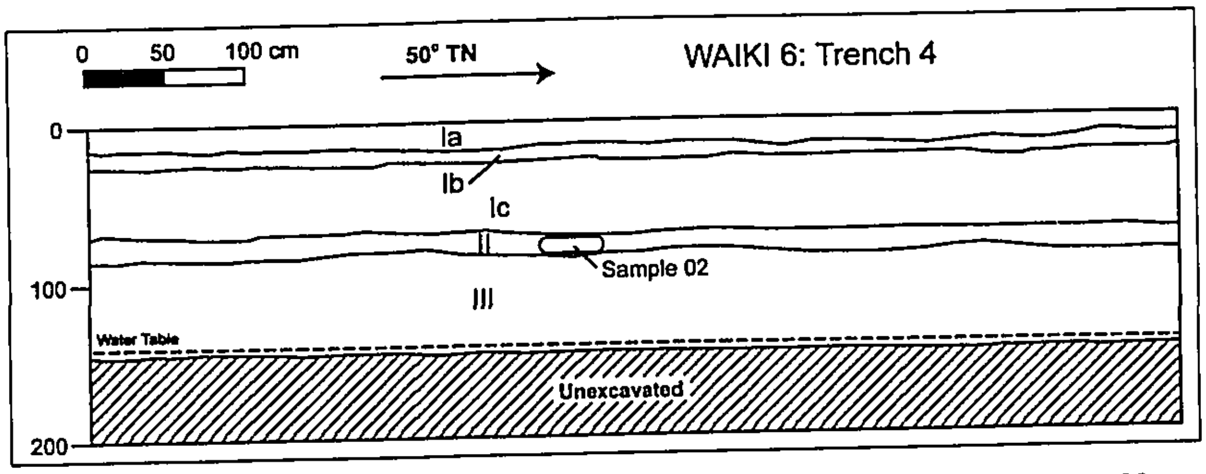


Figure 30. Trench 4 southeast wall profile. Stratum II was sampled as Sample Area 02.

Stratum Ia: 0 - 15 cmbs

Fill Horizon; 10 YR 6/1, gray; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary.

Gravel base course.

Stratum Ib: 15 - 25 cmbs

Fill Horizon; 2.5 YR 4/13, reddish brown; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;.

Gravel base course.

Stratum Ic: 25 - 70 cmbs

Fill Horizon; 10 YR 3/3, dark brown; loamy sand; structureless; hard dry consistency; non-plastic; no cementation; clear wavy lower boundary.

Terrestial fill. Possibly deposited several decades ago.

Stratum II: 70 - 85 cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; loamy sand; weak, fine, single grain structure; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Buried natural A horizon on Stratum III parent material. Similar to the A horizon, Stratum II seen in Trench 1, but more faint and containing less charcoal. Two gallons screend yielded only charcoal that was not collected.
Stratum III: 80 - 145 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Trench 5

Trench 5 was 4.9 meters long, 0.7 meters wide and 1.5 meters deep. It was excavated to bound Trench 3 and Burial 1, as were Trenches 6, 7, 8. Figure 32 is a photo mosaic showing these trenches in relation to each other.

Trench 4 contained fill over natural jaucas sand with an A horizon. The A horizon had a number of oily deposits in it which suggest historic use.

Three sample areas were screened from this trench. Each sample was 2 gallons in volume. Sample Area 03, from Stratum II, contained small amounts of marine shell midden and charcoal. Sample Area 04, Stratum II, contained a small amount of marine shell. Sample Area 05, from Stratum III – jaucas sand, contained a very high number of marine shells, specifically of *Nerita picea*. No disturbance to this stratum was observed and the sample reveal no definitive artifacts, so this concentration of shells is most likely natural.

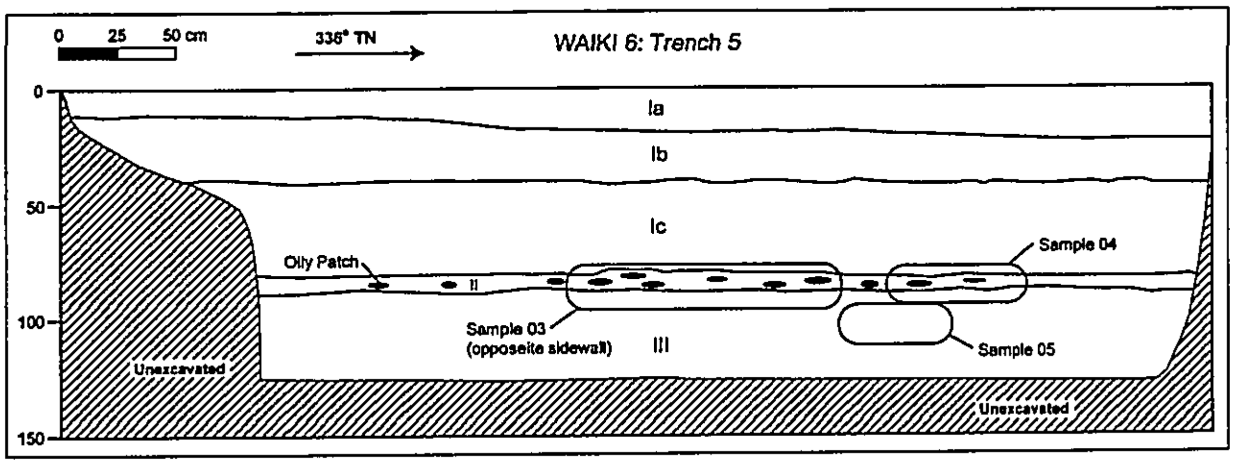


Figure 31. Trench 5 west profile. Sample Areas 03, 04, 05 were taken from this trench.

Stratum Ia: 0 - 20 cmbs

Fill Horizon; 10 YR 6/1, gray; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary.

Gravel base course.

Stratum Ib: 12 - 40 cmbs

Fill Horizon; 2.5 YR 4/13, reddish brown; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;.

Gravel base course.

Stratum Ic: 40 - 80 cmbs	Fill Horizon; 10 YR 3/3, dark brown; loamy sand; structureless; hard dry consistency; non-plastic; no cementation; clear wavy lower boundary. Terrestial fill. Possibly deposited several decades ago.
Stratum II: 80 - 88 cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; loamy sand; weak, fine, single grain structure; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Buried natural A horizon on Stratum III parent material. Very similar to Trench 1 Stratum II but darker in color. The darker color may be a mottling of black oil deposits. Two-gallon samples screened from Sample Area 03 and Sample Area 04 contained charcoal and *pipipi* (*Nerita picea*) shell.
Stratum III: 88 - 150 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth. Sample Area 05 contained *pipipi* (*Nerita picea*) shell.

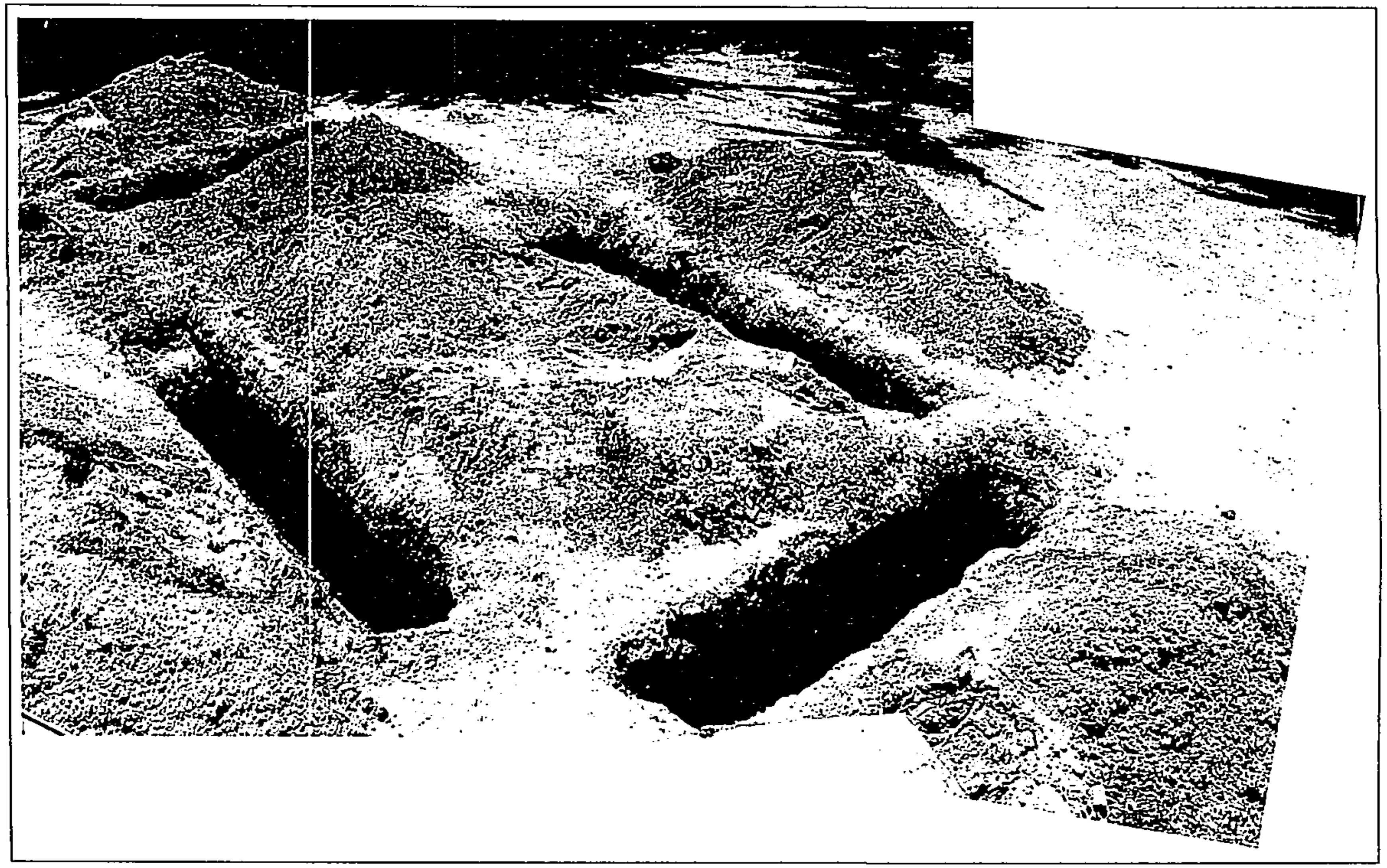


Figure 32. Photo mosaic of Trenches 5, 6, 7, and 8 excavated to Test Burial 1's isolation.

Trench 6

Trench 6 was 3.2 meters long, 0.7 meters wide and 1.5 meters deep. It was excavated to bound Trench 3 and Burial 1.

Trench 6 contained fill over natural jaucas sand with an A horizon. A 2 gallon sample was screened from Stratum II. Sample Area 06 contained only a very small amount of shell in a concentration that was consistent with the parent material itself.

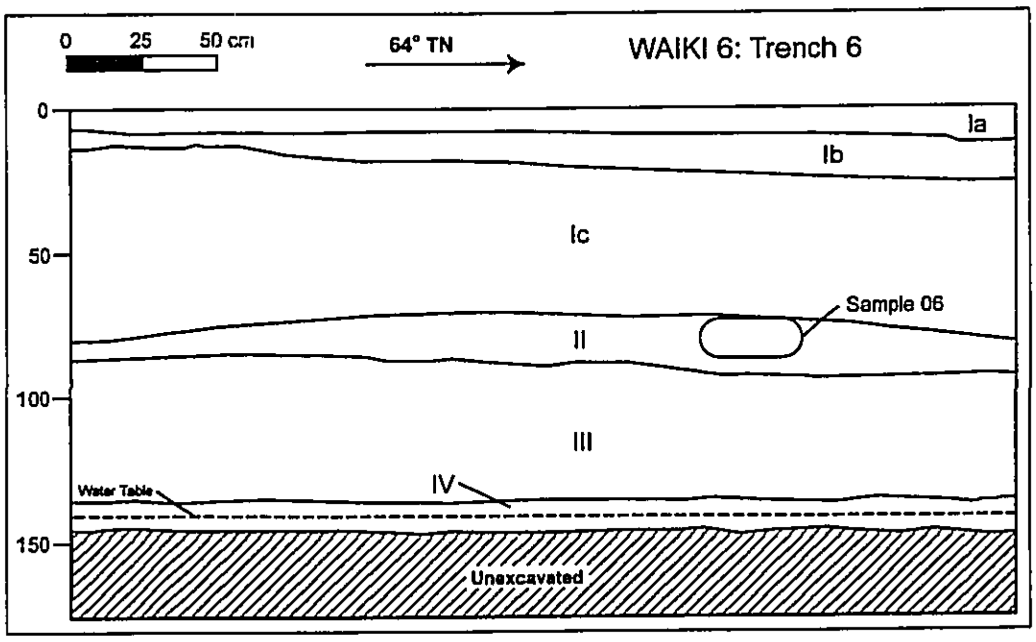


Figure 33. Trench 6 northwest profile. Sample Area 6 was taken from this trench.

Stratum Ia: cmbs	Fill Horizon; 10 YR 6/1, gray; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. Gravel base course.
Stratum Ib: cmbs	Fill Horizon; 2.5 YR 4/13, reddish brown; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;. Gravel base course.

Stratum Ic: 13 - 80 cmbs	Fill Horizon; 10 YR 3/3, dark brown; loamy sand; structureless; hard dry consistency; non-plastic; no cementation; clear wavy lower boundary. Terrestial fill. Possibly deposited several decades ago.
Stratum II: 70 - 92 cmbs	A Horizon; 10 YR 3/3, dark brown; loamy sand; weak, fine, single grain structure; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Buried natural A horizon on Stratum III parent material. Heavily mottled along nearly entire length of trench with Stratum III. Two-gallon sample screened from area not mottled showed no cultural enrichment.
Stratum III: 92 - 135 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.
Stratum IV: 135 - 145 cmbs	Lagoonal sediment; Gley 1 5/1, greenish gray; sandy clay; structureless; sticky wet consistency; slightly plastic; no cementation. Marine deposited gray clay.

Trench 7

Trench 7 was 4.5 meters long, 0.7 meters wide and 1.25 meters deep. It was excavated to bound Trench 3 and Burial 1.

Trench 7 contained fill over natural jaucas sand with an A horizon. These natural sediments were largely undisturbed.

A 2 gallon sample was screened from Stratum II. Sample Area 07 did not contain any archaeological material.

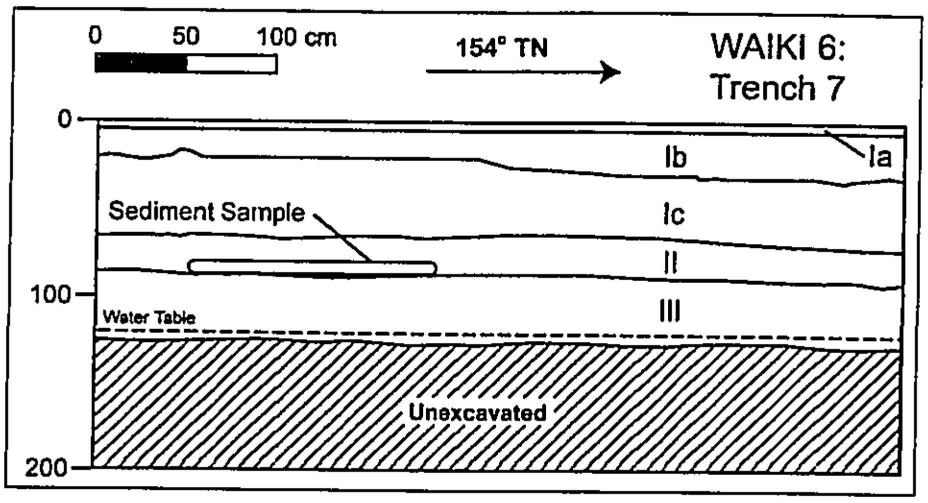


Figure 34. Trench 7 southwest wall profile. Sample Area 07 was taken from the area indicated.

Stratum Ia: 0-5 cmbs	Fill Horizon; 10 YR 6/1, gray; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. Gravel base course.
Stratum Ib: 5 - 20 cmbs	Fill Horizon; 2.5 YR 4/13, reddish brown; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;. Gravel base course.

Stratum Ic: 20 - 65 cmbs	Fill Horizon; 10 YR 3/3, dark brown; loamy sand; structureless; hard dry consistency; non-plastic; no cementation; clear wavy lower boundary. Terrestial fill. Possibly deposited several decades ago.
Stratum II: 65 - 83 cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; loamy sand; weak, fine, single grain structure; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Buried natural A horizon on Stratum III parent material. Two-gallon sample screened and found to contain no archaeological material.
Stratum III: 83 - 125 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Trench 8

Trench 8 was 3.5 meters long, 0.7 meters wide and 1.35 meters deep. It was excavated to bound Trench 3 and Burial 1.

Trench 8 contained fill over natural jaucas sand with an A horizon. A trench containing a modern pipe disturbed the natural stratigraphy in this trench. Also visible in the profile was the end of Trench 3.

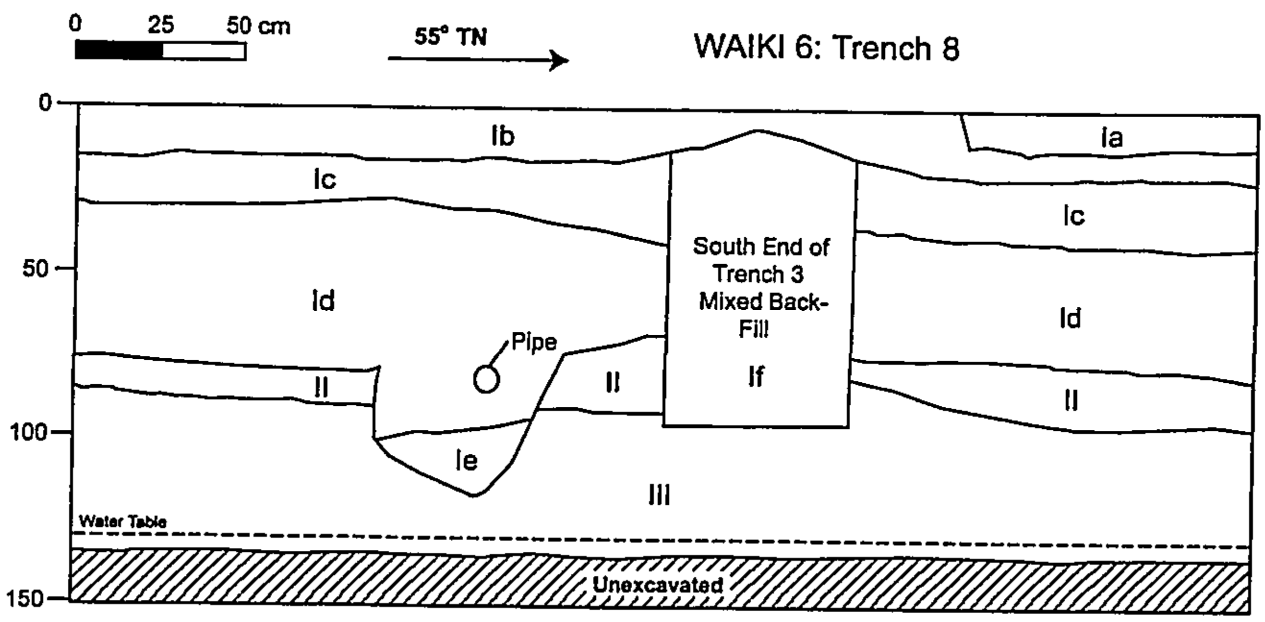


Figure 35. Trench 8 northwest profile.

Stratum Ia: 0 - 10 cmbs

A Horizon; 7.5 YR 3/4, dark brown; sandy loam; moderate, medium, crumb structure; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary.

Modern A horizon, top soil for landscaped grass. Many rootlets.

Stratum Ib: 0 - 20 cmbs

Fill Horizon; 10 YR 6/1, gray; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary.

Gravel base course. Many rootlets from overylying soil with grass.

Stratum Ic: 0 - 40 cmbs	Fill Horizon; 2.5 YR 4/3, reddish brown; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;. Gravel base course.
Stratum Id: 25 - 76/100 cmbs	Fill Horizon; 10 YR 3/3, dark brown; loamy sand; structureless; hard dry consistency; non-plastic; no cementation; clear wavy lower boundary. Terrestial fill. Possibly deposited several decades ago. Contains lots of construction debris. This strata and Strata Ie fill in an old trench containing a collapsed, rusted pipe.
Stratum Ie: 95 - 117 cmbs	Fill Horizon; 10 YR 3/4, dark yellowish brown; coarse, sand; structureless; loose moist consistency; non-plastic; no cementation; very abrupt irregular lower boundary. Sand fill for old trench containing a collapsed, rusted pipe.
Stratum If: 5 - 95 cmbs	Fill Horizon; 10 YR 3/2 very dark grayish brown; gravelly, sandy loam; loose moist consistency; non-plastic; no cementation; very abrupt irregular lower boundary. Backfill in the south end of Trench 3, mixed fill of all overlying fill layers.
Stratum II: 67 - 95 cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; loamy sand; weak, fine, single grain structure; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Buried natural A horizon on Stratum III parent material.

Stratum III: 75 - 130 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Trench 9

Trench 9 was 7.5 meters long, 0.7 meters wide and 1.1 meters deep. It was excavated for general project area coverage and to test for wetland sediments in the northern corner of the project area.

Trench 9 contained fill over low-lying sediments of a waterway. The modern land surface was composed of terrigenous fill over a coarse hydraulic fill from dredging operations, likely from the Ala Wai Canal. The natural land surface is believed to be Stratum II, an organic rich sandy loam with many root molds. A small portion of jaucas sand is present in the trench in a context that appears to be contemporaneous with Stratum II. Unlike other most other trenches in the project area the jaucas sand was very thin, but at the base of the trench was a very thick high energy calcareous deposit. A photograph of the sidewall of this trench follows the sediment descriptions in Figure 37.

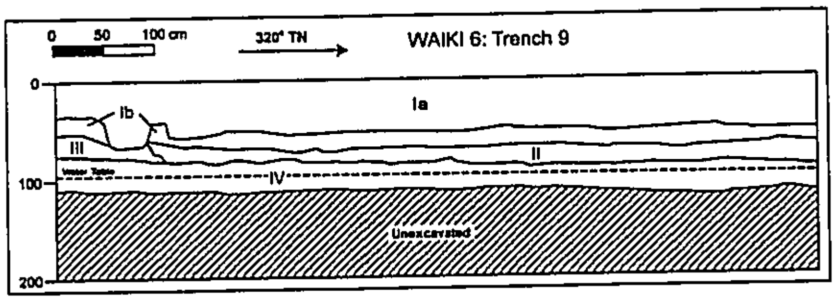


Figure 36. Trench 9 southwest profile.

Stratum Ia: 0 - 50/75 cmbs	Fill Horizon; 10 YR 3/3, dark brown; sandy loam; structureless; loose moist consistency; slightly plastic; no cementation; abrupt irregular lower boundary; Modern/historic fill. Similar to Trench 1 Stratum I. Contains historic and modern debris, a bottle and many roots.

Stratum Ib: 50 - 65 cmbs

Fill Horizon; 10 YR 6/2, light grayish brown; sandy clay; structureless; firm moist consistency; slightly plastic; no cementation; abrupt broken lower boundary;

Modern or historic fill layer, possibly dredged from the Ala Wai Canal. Very coarse and gray in color suggesting it is a gleyed sediment.

Stratum II: 65 - 85 cmbs

A Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; structureless; friable moist consistency; plastic; no cementation; clear smooth lower boundary;

An old land surface in a low lying area. This was probably a wet lowlying area very near the *'auwai* that ran nearby. It is possible this is a shallow bank of the *'auwai* itself. This layer has high organic content, mostly in the form of vertical root molds, some containing undecomposed roots.

Stratum III: 55 - 75 cmbs

Jaucas sand; 10 YR 8/3, very pale brown; coarse, sand; structureless; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary;

Marine deposited calcareous sand present over much of the project area. In this trench it is forming a small berm at the SE end of the trench.

Stratum IV: 70 - 110 cmbs

Calcareous gravel; 10 YR 6/2, light grayish brown; gravel; structureless, loose moist consistency; non-plastic; no cementation; lower boundary distinctness and topography not visible; strata makes up bottom of trench.

High energy marine deposition of marine shell, coral and coarse calcareous sand.

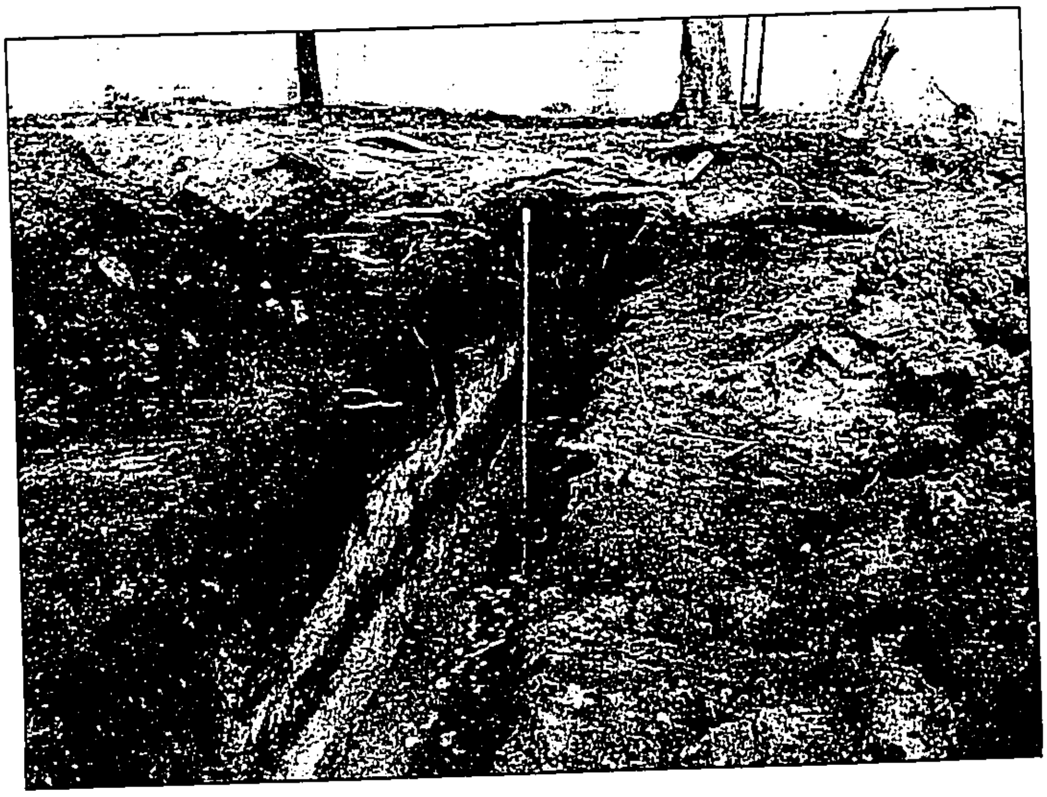


Figure 37. Trench 9 southwest wall photograph

Trench 10

Trench 10 was 5.7 meters long, 0.7 meters wide and 1.1 meters deep. It was excavated for general project area coverage and to test for wetland remnants along the northern edge of the project area.

Trench 10 was very similar to Trench 9. It contained fill over a natural low-lying wetland sediment. Instead of a coarse calcareous gravel at the base of the trench this trench had a lagoonal sediment more consistent with the rest of the project area. More discussion about this trench follows in the strata descriptions below.

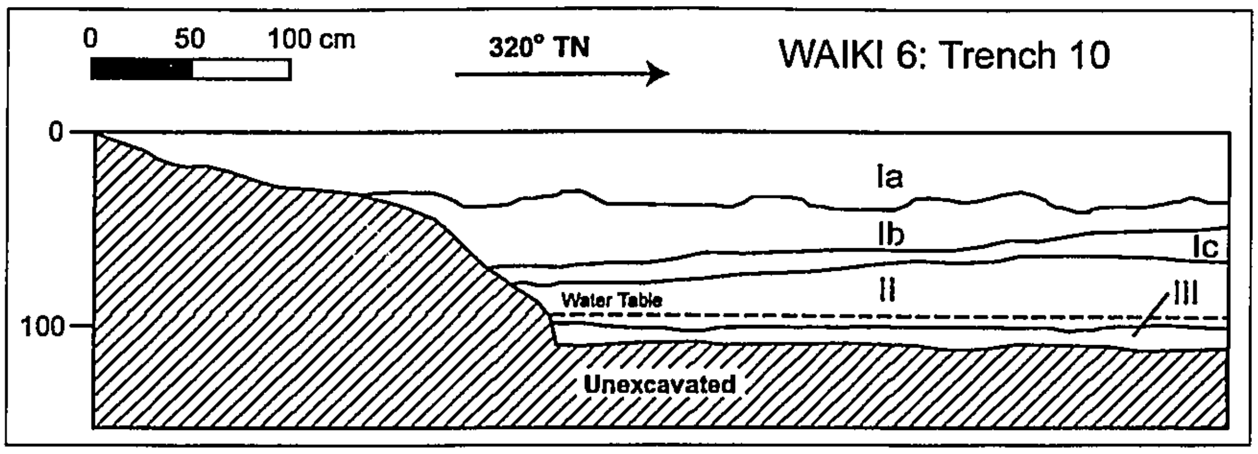


Figure 38. Trench 10 southwest profile

Stratum Ia: 0 - 40 cmbs	Fill Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; structureless; loose moist consistency; slightly plastic; no cementation; abrupt wavy lower boundary. Terriginous fill layer containing construction debris.
Stratum Ib: 30 - 70 cmbs	Fill Horizon; 10 YR 5/2, grayish brown; sandy clay; structureless; friable moist consistency; plastic; no cementation; abrupt smooth lower boundary. This stratum is probably a hydraulic fill very similar to the nearby Trench 9 Stratum Ib.
Stratum Ic: 50 - 80 cmbs	Fill Horizon; 10 YR 5/1, gray; sandy clay; very friable moist consistency; very plastic; no cementation; abrupt smooth lower boundary. This stratum is hydraulic fill.

Stratum II: 65 - 100 cmbs	A Horizon; 10 YR 6/2, light grayish brown; sandy loam; structureless, non-sticky wet consistency; non-plastic; no cementation; clear smooth lower boundary; This was a low lying area near or connected to the waterway or *'auwai.* Like Trench 9 Stratum II, this stratum may also be a shallow bank area of the waterway. Very sandy, approximately 90% sand. Little brown vertically-oriented rootlet-like molds. Plants were growing and were suddenly encased in the overylying sediment preserving their roots.
Stratum III: 100 - 110 cmbs	Lagoonal sediment; Gley 1 6/N, gray; sandy clay; structureless; slightly sticky wet consistency; plastic; no cementation; lower boundary not visible as strata makes up bottom of trench. This is a marine deposised lagoonal sediment predating the deposition of Jaucas sand in the project area. Vertically-oriented plant roots continue into this layer from above; layer terminates on coral shelf.

Trench 11

Trench 11 was 7.5 meters long, 0.7 meters wide and 1.15 meters deep. It was excavated for general coverage of the project area.

Trench 11 contained fill over natural jaucas sand with an A horizon. These natural sediments appeared undisturbed, though the overlying fill layers showed evidence of construction activity.

A sample was screened from Stratum II. Sample Area 08 did not contain any archaeological material.

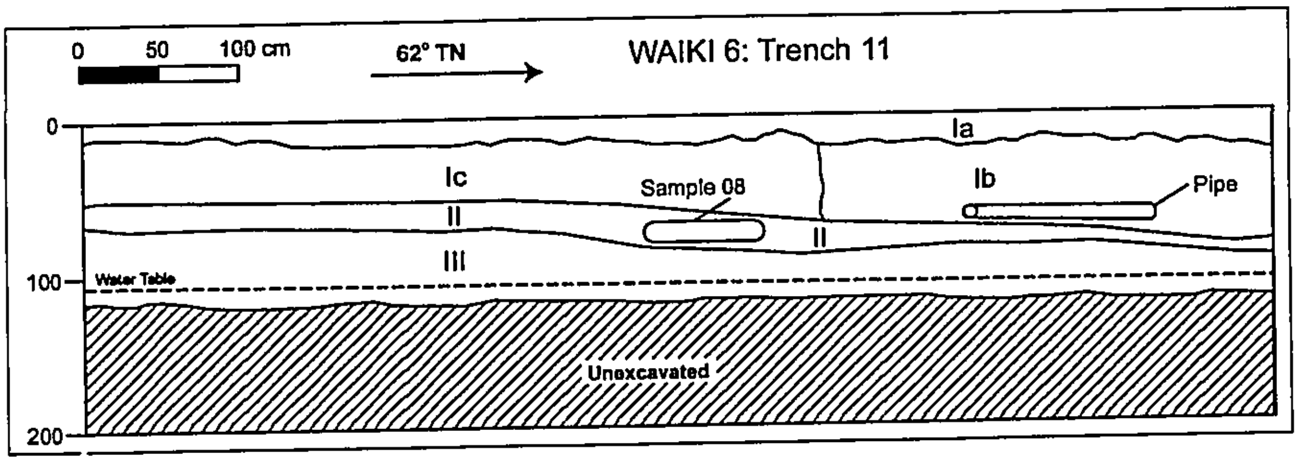


Figure 39. Trench 11 north profile. Sample Area 08 was taken from Stratum II as indicated.

Stratum Ia: 0 - 20 cmbs	Fill Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; structureless; loose dry consistency; slightly plastic; no cementation; clear smooth lower boundary.
Stratum Ib: 15 - 80 cmbs	Fill Horizon; 10 YR 3/2, very dark grayish brown; silty clay loam; structureless; loose dry consistency; slightly plastic; no cementation; abrupt smooth lower boundary.
Stratum Ic: 10 - 65 cmbs	Fill Horizon; 10 YR 4/3, brown; silt loam; structureless, loose dry consistency; slightly plastic; no cementation; abrupt smooth lower boundary.

Stratum II: 50 - 90 cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; loamy sand; weak, fine, single grain structure; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Buried natural A horizon on Stratum III parent material. 2 gallons collected and screened - nothing found.
Stratum III: 65 - 115 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Trench 12

Trench 12 was 7 meters long, 0.7 meters wide and 1.05 meters deep. It was excavated for general coverage of the project area.

Trench 12 contained fill over natural jaucas sand with an A horizon. The fill appears to have cut away most of the A horizon and probably removed some the jaucas sand as well. A photograph of the northeast sidewall is included in Figure 41.

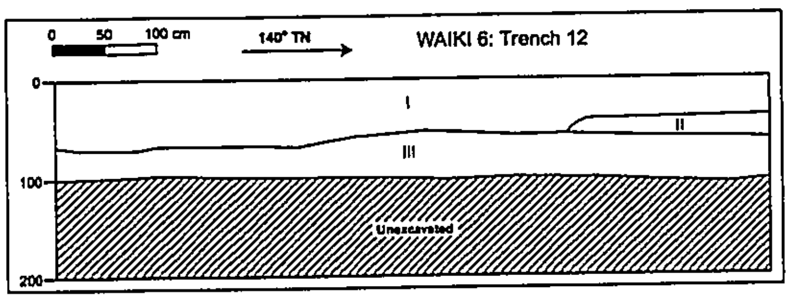


Figure 40. Trench 12 northeast profile

Stratum I: 0 - 70 cmbs	Fill Horizon; 10 YR 6/2, light grayish brown; coarse sand, structureless, loose dry consistency; non-plastic; no cementation; clear smooth lower boundary; Mottled sandy fill.
Stratum II: 40 - 60 cmbs	A Horizon; 10 YR 2/1, black; sandy loam; structureless, loose dry consistency; non-plastic; no cementation; diffuse irregular lower boundary. Appears to be very small remnant of the A horizon found in other trenches. Mottled with parts of Stratum III.
Stratum III: 60 - 100 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer is a relatively low energy deposit and it texture remains consistent (does not grade to coarser material as much of the Jaucas sand deposits do).

Figure 41. Trench 12 northeast wall photograph

Trench 13

Trench 13 was 6.8 meters long, 0.7 meters wide and 1.45 meters deep. It was excavated for general project area coverage.

Trench 13 contained fill over natural jaucas sand with an A horizon. The natural sediments appear to have been slightly disturbed and possibly compacted from a number of layered fill events.

A 2 gallon sample was screened from Stratum II. Sample Area 06 contained only a very small amount of shell in a concentration that was consistent with the parent material itself.

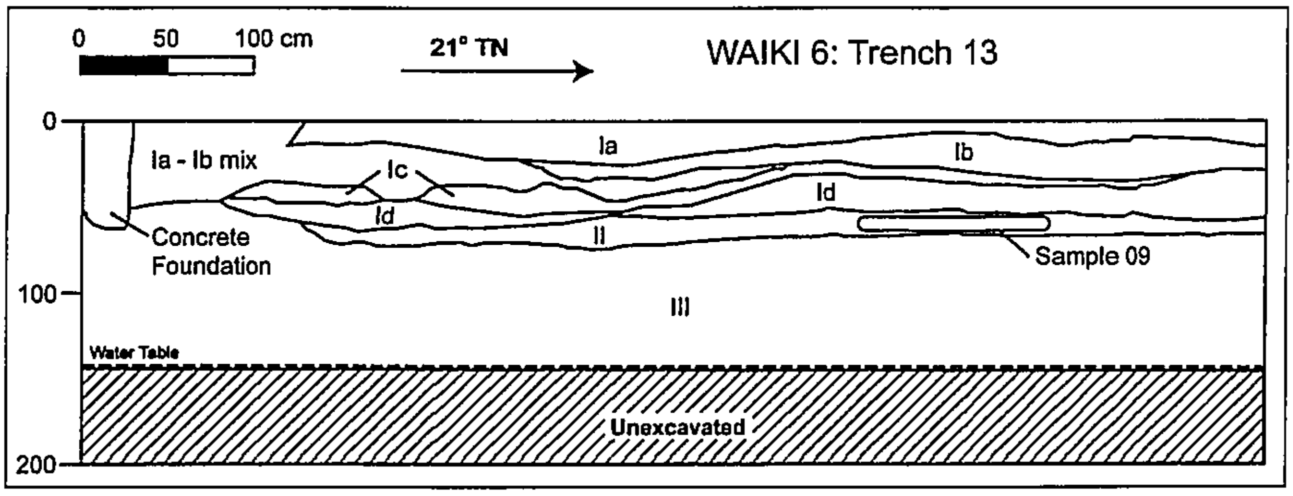


Figure 42. Trench 13 northwest profile. Sample Area 09 was taken from Stratum II as indicated.

Stratum Ia: 0 - 22 cmbs	Fill Horizon; 10 YR 6/1, gray; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. Gravel base course.
Stratum Ib: 22 - 32 cmbs	Fill Horizon; 2.5 YR 4/13, reddish brown; gravel; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;. Gravel base course.
Stratum Ic: 32 - 50 cmbs	Fill Horizon; 7.5 YR 4/4, reddish brown; clay; structureless; extremely hard dry consistency; non-plastic; weak cementation; diffuse broken lower boundary.

Stratum Id: 32 - 52 cmbs	10 YR 3/3, dark brown; sandy clay; structureless; loose dry consistency; non-plastic; weak cementation; abrupt wavy lower boundary.
Stratum II: 50 - 62 cmbs	A Horizon; 2.5 YR 3/2, dusky red; loamy sand; weak, fine, single grain structure; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Buried natural A horizon on Stratum III parent material. Two-gallon sample screened, nothing found.
Stratum III: 40 - 145 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Trench 14

Trench 14 was 6.6 meters long, 0.7 meters wide and 0.85 meters deep. It was excavated for general project area coverage.

Trench 14 contained fill over natural jaucas sand with an A horizon. No A horizon was found in this trench and the fill was both a terrigenous fill at the surface and a thin layer of hydraulic fill. This area was lower lying than other jaucas sand deposits in the area.

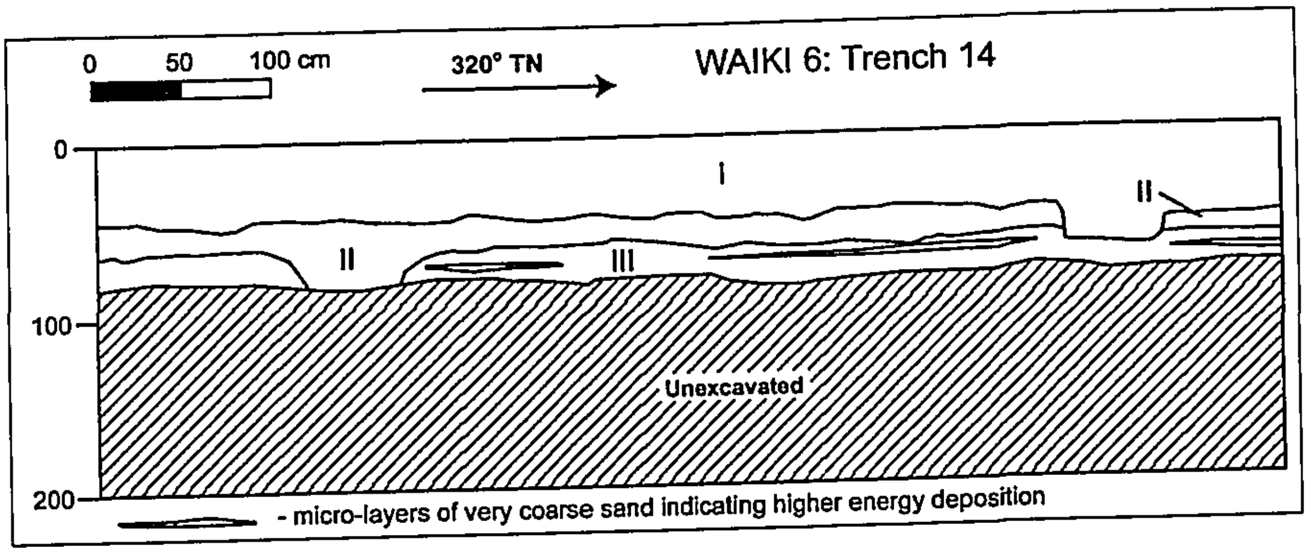


Figure 43. Trench 14 southwest profile

Stratum I: 0 - 62 cmbs	Fill Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; structureless; loose moist consistency; slightly plastic; no cementation; abrupt wavy lower boundary. Terriginous fill layer containing construction debris.
Stratum II: 62 - 80 cmbs	Fill Horizon; Gley 1 4/2, dark gray; very coarse, sandy clay; structureless; firm moist consistency; slightly plastic; no cementation. Coarse hydraulic fill, same sediment as Stratum Ib in Trench 10. Also similar to Stratum Ib in Trench 9.

Stratum III: 60 - 80 cmbs

Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary.

Marine deposited beach sand. Strata contains a number of microlayers of high energy calcareous gravel deposits as well as low energy fine to medium sand as described above.

Trench 15

Trench 15 was 8.4 meters long, 0.7 meters wide and 1.2 meters deep. It was excavated for general project area coverage.

Trench 15 contained fill over natural jaucas sand with an A horizon. The natural sediments in this trench were very disturbed over most of the trench.

A sample was screened from Stratum II where it was intact. Sample Area 10 contained no archaeological material.

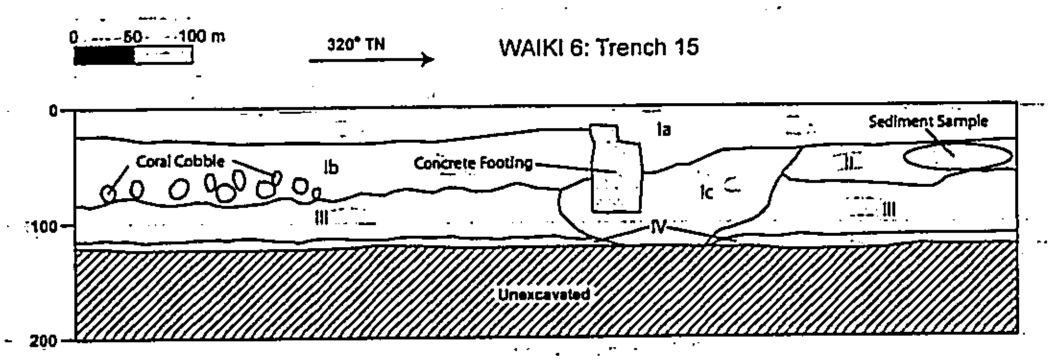


Figure 44. Trench 15 southwest profile. Sample Area 10 was taken from Stratum II as indicated.

Stratum Ia: 0 - 60 cmbs

Fill Horizon; 10 YR 5/3, brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; abrupt wavy lower boundary.

Very sandy, very little loam. Many coral coble inclusions around a concrete footing.

Stratum Ib: 25 - 85 cmbs

Fill Horizon; 7.5 YR 3/3, dark brown; sandy loam; structureless; weakly coherant dry consistency; non-plastic; no cementation; abrupt wavy lower boundary;

Lower boundry near cement footing may be mixed with a small remnants of Stratum II. The span of two meters from the south end of the trench in this stratum contains many coral cobbles that are more concentrated along the lower boundary. This stratum also contains many cobble sized asphalt pieces in the wall not profiled.

Stratum Ic: 30 - 120 cmbs

Fill Horizon; 10 YR 4/3, brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; clear irregular lower boundary.

Mixed fill of strata II and III as backfill around the concrete footing. No coral cobbles as in *Stratum* Ia. Some clay inclusions.

Stratum II: 30 - 70 cmbs

A Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; structureless, loose dry consistency; non-plastic; no cementation; clear wavy lower boundary;

A horizon is cut by Stratum Ic and also appears to be cut away on the south half of the trench as it does not appear. This A horizon is thick and close to surface compared to that in other trenches. A two gallons sample of this A horizon contained less than a dozen pea sized charcoal pieces.

Stratum III: 70/85 - 115 cmbs

Jaucas Sand; 10 YR 7/4, very pale brown; coarse, sand; structureless; loose dry consistency; non-plastic; no cementation; clear smooth lower boundary;

Marine deposited beach sand. Cut by Stratum Ic, fill for a trench around a concrete footing. Also the top portion of the stratum may have been removed in the south end of the trench along with Stratum II.

Stratum IV: 110 - 120 cmbs	Lagoonal sediment; Gley 1 5/1, greenish gray; sandy clay; structureless; firm moist consistency; plastic; no cementation; lower boundary not visible as stratum makes up bottom of trench. Contains rootlets and some other largely decomposed organic material.

Trench 16

Trench 16 was 6 meters long, 0.7 meters wide and 1.25 meters deep. It was excavated for general project area coverage. A photograph of the southwest sidewall is shown in Figure 46 following the sediment descriptions below.

Trench 16 contained fill over natural jaucas sand with an A horizon. The natural sediments were disturbed by a large trash pit. This pit was labeled Feature A. It contained saw-cut animal bone, bricks, 14 whole glass bottles that were machine made. The majority of these bottles were Clorox brand bleach bottles.

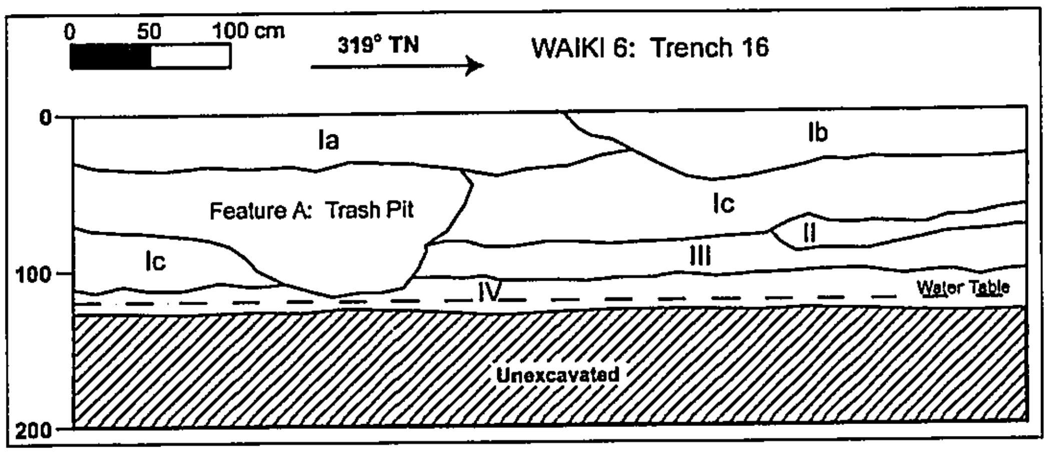


Figure 45. Trench 16 southwest profile. Feature A, a historic trash pit, was prominent in the sidewall.

Stratum Ia: 0 - 35 cmbs	Fill Horizon; 10 YR 7/1, light gray; loamy sand; structureless; loose dry consistency; non-plastic; no cementation; abrupt broken lower boundary. Crushed coral fill.

Stratum Ib: 0 - 41 cmbs	Fill Horizon; 7.5 YR 5/3, brown; loamy sand; weak, medium, crumb structure; weakly coherant dry consistency; non-plastic; no cementation; abrupt broken lower boundary. Terrigenous fill.
Stratum Ic: cmbs	Fill Horizon; 10 YR 3/2, very dark grayish brown; loamy sand; structureless; loose dry consistency; non-plastic; no cementation; abrupt irregular lower boundary; Terrigenous fill. Contains a historic trash pit extending into Strata III and IV. Trash pit designated Feature A.
Stratum II: 60 - 90 cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; loamy sand; structureless, loose dry consistency; non-plastic; no cementation; clear broken lower boundary; Buried natural A horizon.
Stratum III: 80 - 105 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.
Stratum IV: 105 - 130 cmbs	Lagoonal sediment; Gley 1 5/1, greenish gray; sandy clay; structureless, non-sticky wet consistency; plastic; no cementation; lower boundary not visible. Marine deposited sandy clay. The entire layer is below the water table

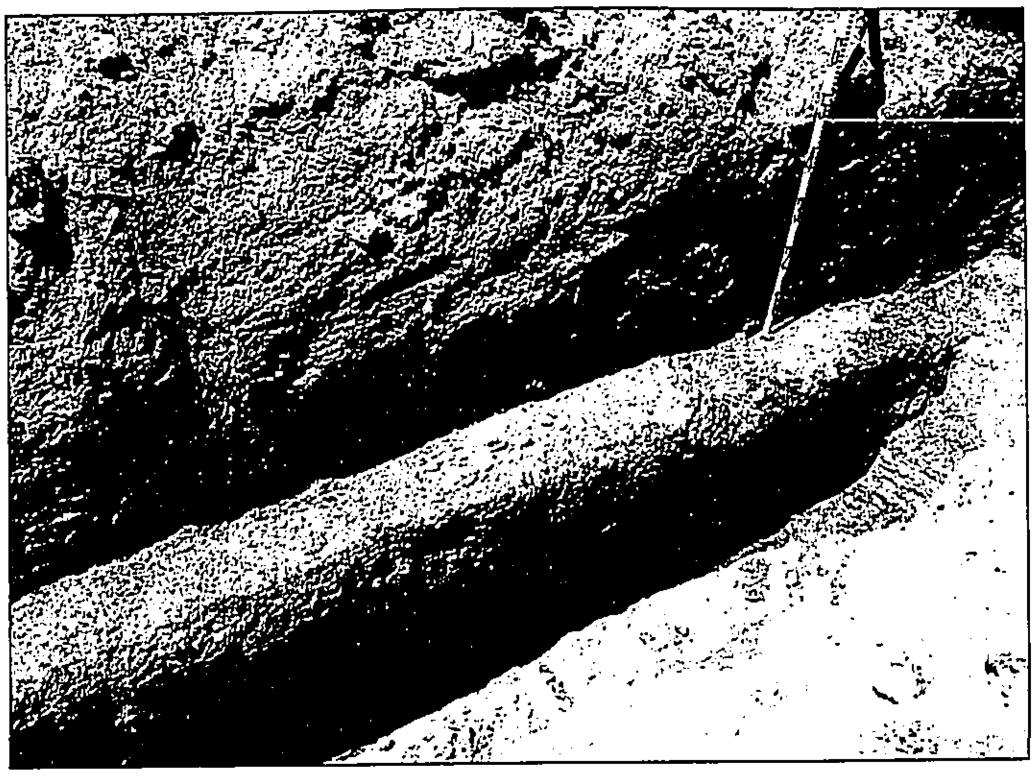


Figure 46. Trench 16 southwest wall photograph.

Trench 17

Trench 17 was 8 meters long, 0.7 meters wide and 1.1 meters deep. It was excavated for general project area coverage.

Trench 17 contained fill over natural jaucas sand with an A horizon. These natural sediments were intact except where they were cut by shallow concrete footings.

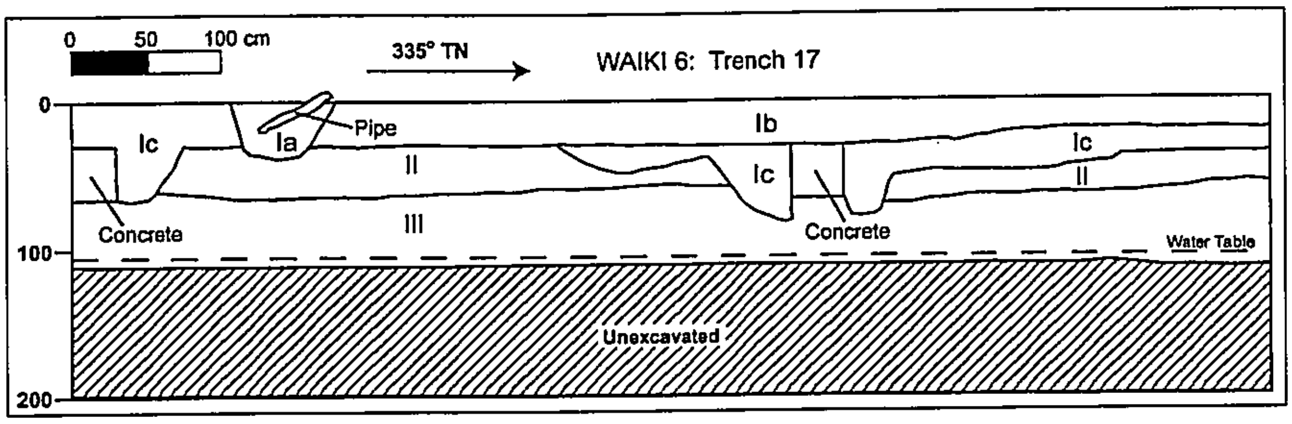


Figure 47. Trench 17 southwest wall profile

Stratum Ia: 0 - 37 cmbs	Fill Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; structureless; loose dry consistency; slightly plastic; no cementation; abrupt irregular lower boundary. Fill surrounding electrical conduit.
Stratum Ib: 0 - 30 cmbs	Fill Horizon; 10 YR 6/3, pale brown; coarse, sand; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. Present land surface.
Stratum Ic: 30 - 80 cmbs	Fill Horizon; 10 YR 5/3, brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; abrupt wavy lower boundary. Very sandy, very little loam. Many coral coble inclusions around a concrete footing. A disturbance has slightly intermixed this stratum with Stratum II.

Stratum II: 30 - 70 cmbs	10 YR 3/2, very dark grayish brown; silty clay loam; weak, fine, granular structure; loose dry consistency; slightly plastic; no cementation; clear smooth lower boundary. Buried natural A horizon intermixed with overlying fill, Stratum Ic. Stratum becomes increasingly sandy with depth as it is less disturbed.
Stratum III: 57 - 110 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Trench 18

Trench 18 was 7.5 meters long, 0.7 meters wide and 1.1 meters deep. It was excavated for general project area coverage. Figure 49 following the sediment descriptions below is a photograph of the northeast wall.

Trench 18 contained fill over natural jaucas sand. The jaucas sand appears to have been cut by the overlying fill in the south end of the trench. Feature B, a pit feature that was probably contemporaneous with an A horizon that was cut away during fill events was found extending down into the jaucas sand. Feature B is a historic trash pit. It was about 1 meter squared in profile. It contained a number of bottle fragments, small ceramic chips, metal fragments and cut animal bone.

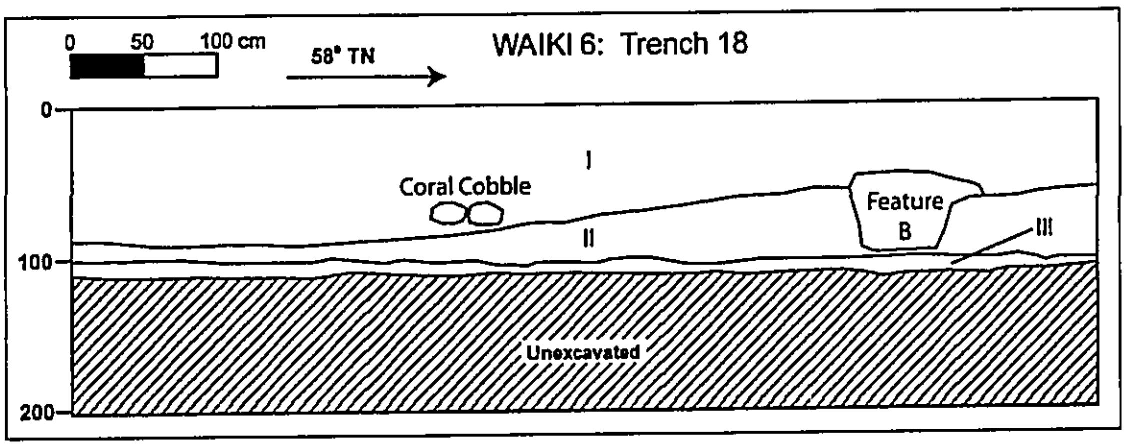


Figure 48. Trench 18 northwest profile. Feature B was located in this trench where indicated.

Stratum I: 0 - 90 cmbs	Fill Horizon; 10 YR 5/3, brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; clear irregular lower boundary. Mixed fill with basalt and coral cobble inclusions, as well as asphalt pieces and a length of pipe.
Stratum II: 50 - 90 cmbs	Jaucas sand; 10 YR 7/4, very pale brown; coarse, sand; structureless; loose dry consistency; non-plastic; no cementation; clear smooth lower boundary; Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth. It is possible that immediately above this layer there is a very thin A horizon remnant mixed with the overlying fill.

Stratum III: cmbs

Lagoonal sediment: Gley 1 5/1, greenish gray; sandy clay; structureless; firm moist consistency; plastic; no cementation; lower boundary not visible as stratum makes up bottom of trench.

Contains rootlets and some other largely decomposed organic material.

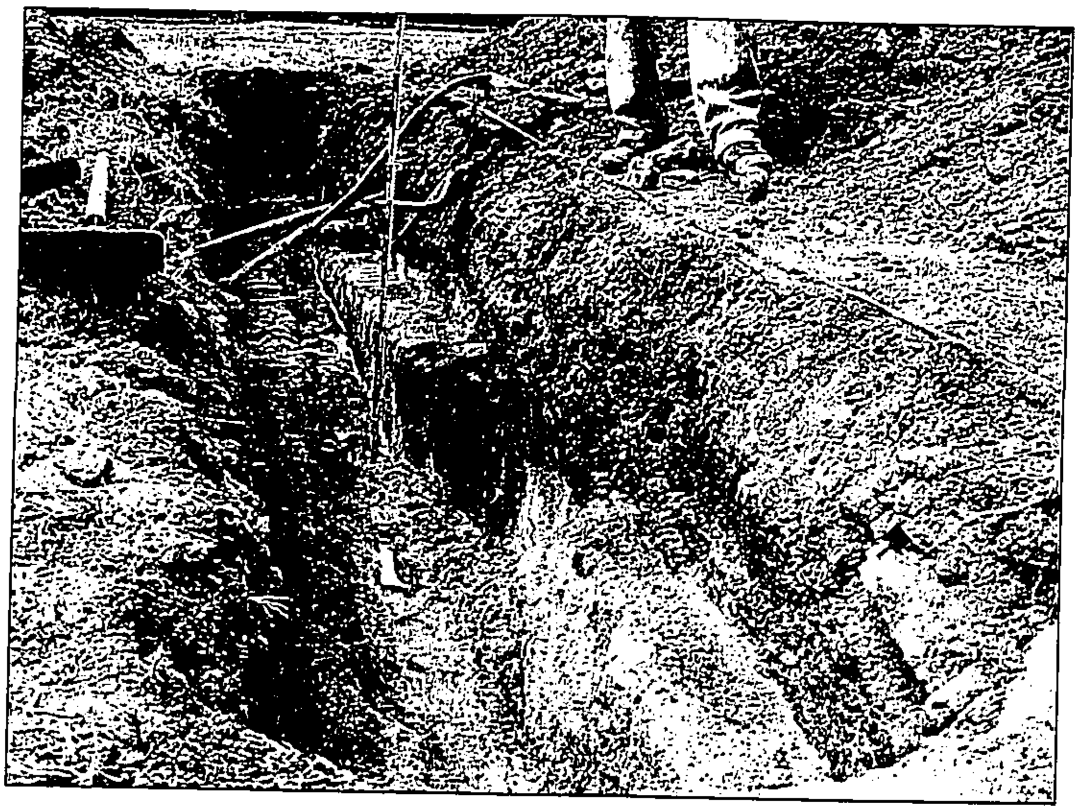


Figure 49. Trench 18 photograph looking southwest. Feature B is visible immediately in front of the photo scale as a dark brown stain in the sidewall.

Trench 19

Trench 19 was 7.2 meters long, 0.7 meters wide and 1.1 meters deep. It was excavated for general project area coverage. Figure 51 following the sediment descriptions below is a photograph of the southwest wall.

Trench 19 contained fill over natural jaucas sand with an A horizon. The A horizon, Stratum II, in this trench had a very wavy lower boundary that was almost scalloped, as if repeated excavated. Feature C was found at the base of this A horizon as a dark lens. Its color was 10 YR 2/2 very dark brown. It contained ceramic fragments, bone and charcoal and is believed to be a historic fire pit. Figure 52 following the sediment descriptions is a close-up photograph of Feature C.

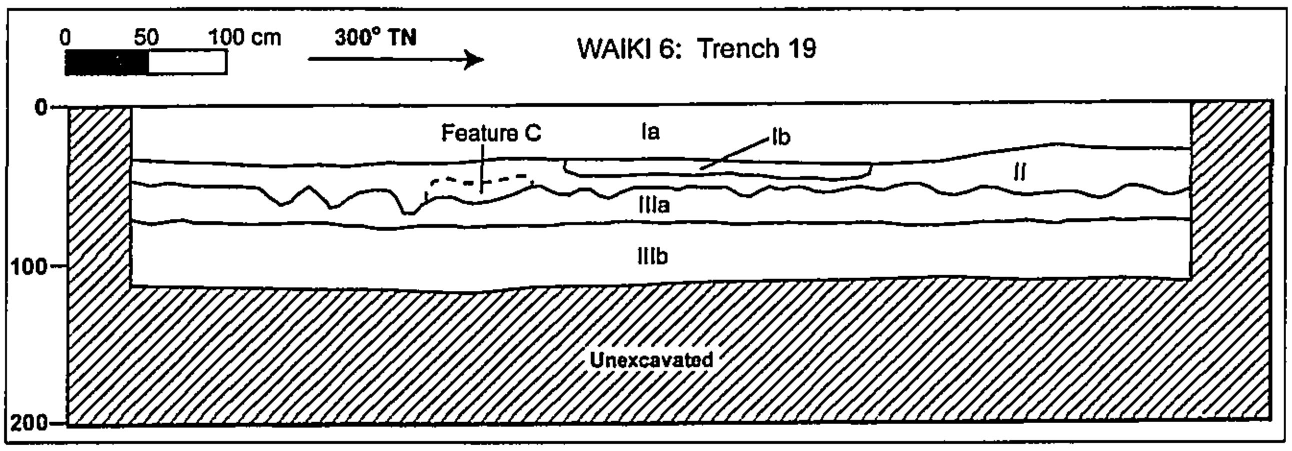


Figure 50. Trench 19 southwest wall profile. Feature C was a dark lens in Stratum II.

Stratum Ia: 0 - 40 cmbs

Fill Horizon; 10 YR 6/1, gray; gravel; structureless, loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary.

Gravel base course, project area gravel.

Stratum Ib: 45 - 55 cmbs

Fill Horizon; 10 YR 3/3, dark brown; sandy loam; structureless; weakly coherant dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;

A thin stratum of highly compacted fill.

Stratum II: 35 - 50 cmbs	A Horizon; 10 YR 5/3, brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; clear wavy lower boundary; Buried natural A horizon. A very wavy lower boundary suggests use of the land surface, as does the presence of Feature C, a pit containing historic trash.
Stratum IIIa: 55 - 80 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand.
Stratum IIIb: 70 - 110 cmbs	Jaucas sand; 10 YR 7/2, light gray; medium, sand; structureless, loose moist consistency; non-plastic; no cementation; lower boundary not visible as stratum makes up bottom of trench. Marine deposited calcareous sand, very similar to Stratum IIIa, but gray in color.

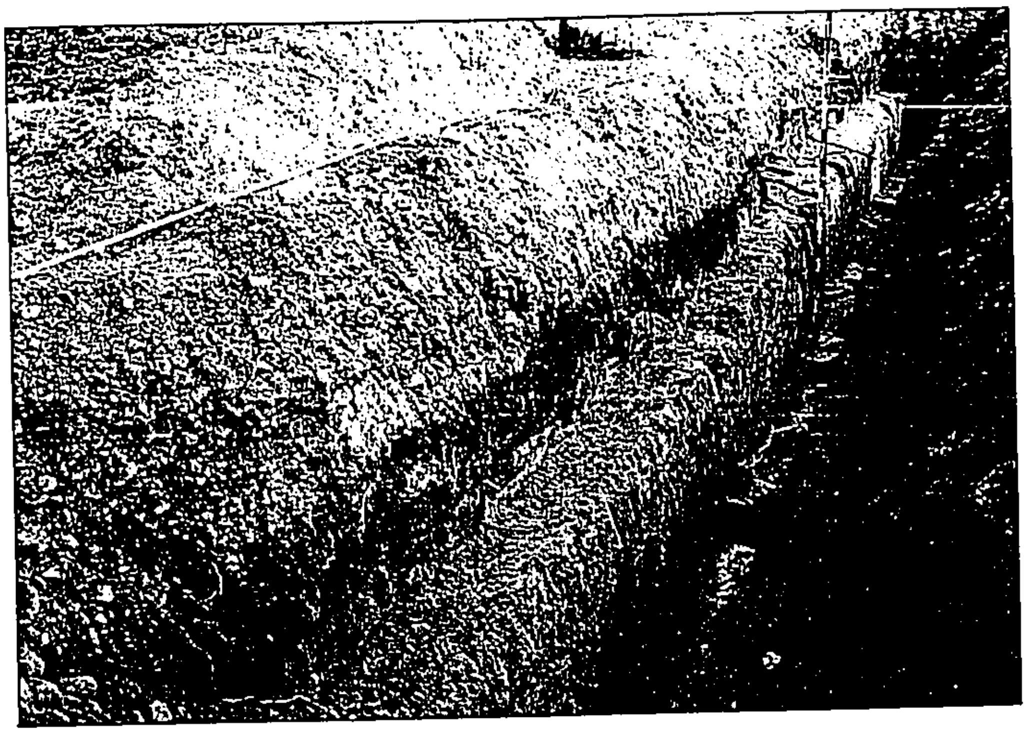


Figure 51. Trench 19 southwest wall photograph. A detailed photograph of Feature C can be seen in Figure 52.

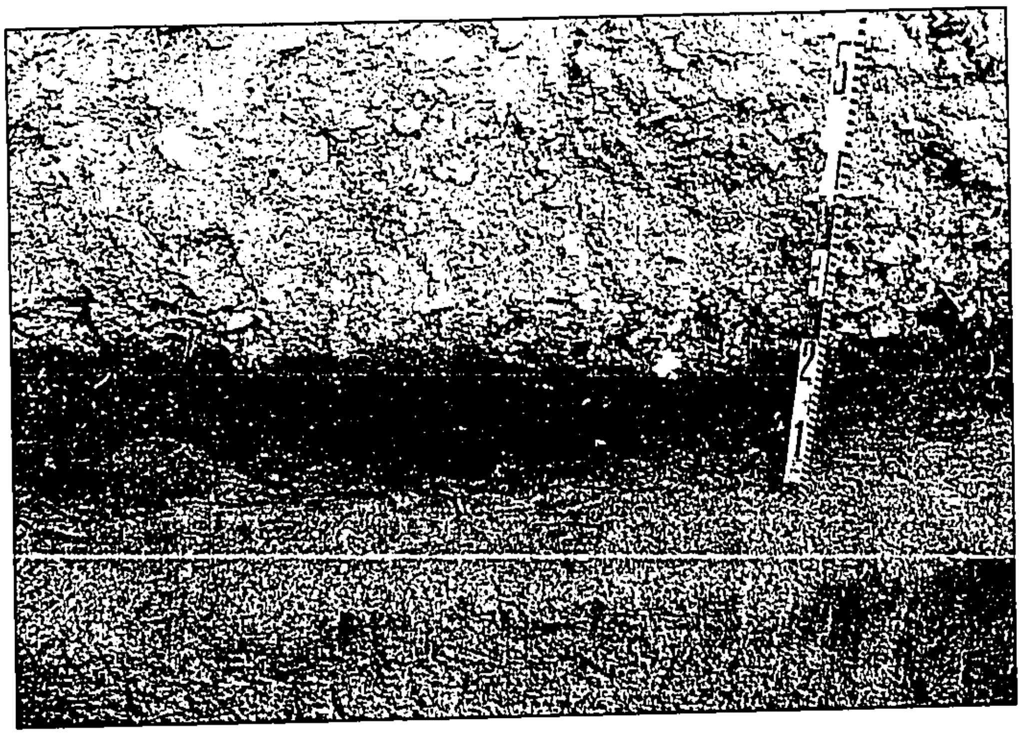


Figure 52. Feature C close-up photograph in Trench 19.

Trench 20

Trench 20 was 7 meters long, 0.7 meters wide and 0.9 meters deep. It was excavated for general project area coverage.

Trench 20 contained fill over natural jaucas sand. No A horizon was found on the sand and is believed to have been cut away during the filling of the land.

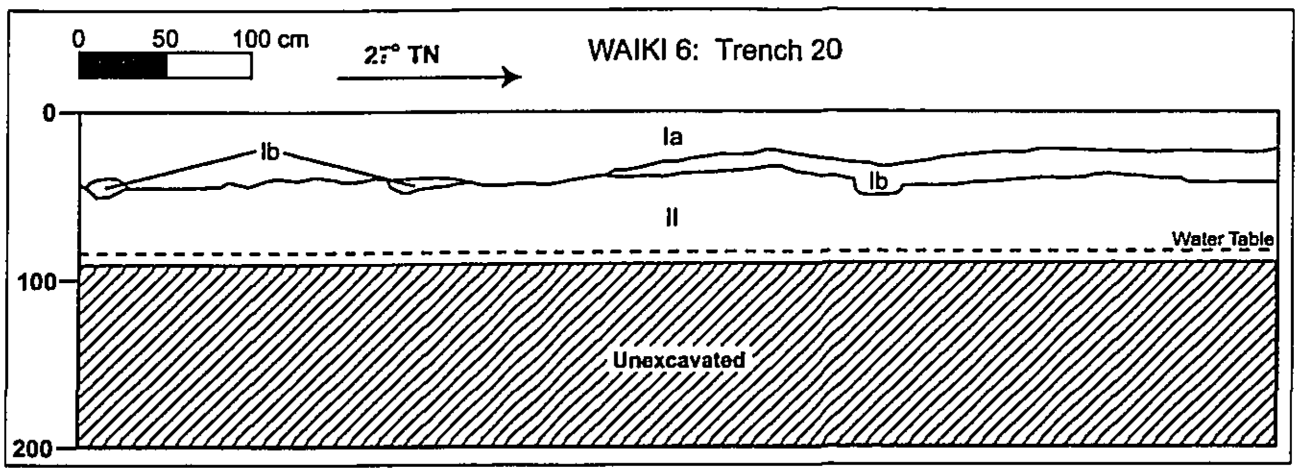


Figure 53. Trench 20 northwest profile.

Stratum Ia: 0 - 43 cmbs	Fill Horizon; 10 YR 6/4, light yellowish brown; silty sand; structureless; loose dry consistency; non-plastic; no cementation; abrupt wavy lower boundary. Mixed fill that includes asphalt, crushed coral, small pockets of clay.
Stratum Ib: 40 - 50 cmbs	Fill Horizon; 10 YR 3/3, dark brown; sandy loam; structureless; hard dry consistency; non-plastic; no cementation; very abrupt wavy lower boundary. Terrigenous fill containing roots and modern trash (asphalt, brick, Astroturf) and charcoal flecking.

Stratum II: 35 - 90 cmbs

Jaucas Sand; 10 YR 7/4, very pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary.

Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth. Stratum is mottled with two colors of sand, the 10 YR 7/4 as above and a 10 YR 5/6 yellowish brown. Both colors are present in approximately equal proportion.

Trench 21

Trench 21 was 7.8 meters long, 0.7 meters wide and 0.85 meters deep. It was excavated for general project area coverage.

Trench 21 contained fill over natural jaucas sand with an A horizon. The natural sediments in this trench have been partially disturbed. Where the A horizon, Stratum II, remains it is relatively close to the surface. A lens of gray jaucas sand runs through the trench and but the reason for its position is unknown.

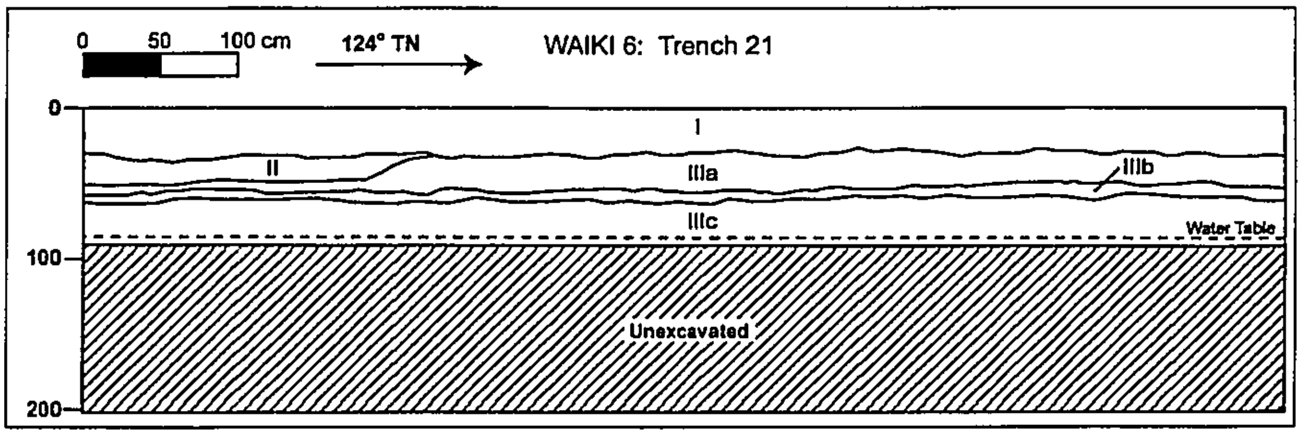


Figure 54. Trench 21 northeast profile

Stratum I: 0 - 30 cmbs

Fill Horizon; 10 YR 3/4, dark yellowish brown; loamy sand; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;

Imported fill layer that has undergone substantial organic enrichment.

Stratum II: 30 - 50 cmbs	A Horizon; 10 YR 3/1, very dark gray; loamy sand; structureless; loose dry consistency; non-plastic; no cementation; clear irregular lower boundary. Buried natural A horizon.
Stratum IIIa: 25/50 - 50/58 cmbs	Jaucas sand; 10 YR 6/4, light yellowish brown; medium, sand; structureless; loose dry consistency; non-plastic; no cementation; clear smooth lower boundary. Marine deposited beach sand.
Stratum IIIb: 50/55 - 60/64 cmbs	Jaucas sand; 10 YR 5/1, gray; medium, sand; structureless; loose moist consistency; non-plastic; no cementation; clear smooth lower boundary. Marine deposited beach sand that is gray in color.
Stratum IIIc: 60 - 90 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand – essentially the same sediement as Stratum IIIa.

Trench 22

Trench 22 was 6.5 meters long, 0.7 meters wide and 0.8 meters deep. It was excavated for general project area coverage.

Trench 22 contained natural jaucas sand with an A horizon that formed the modern land surface. These natural sediments were largely undisturbed. A pit like dip in the A horizon did not contain any archaeological material and considering the active vegetation on the surface in the area seemed to be better explained as a root mold.

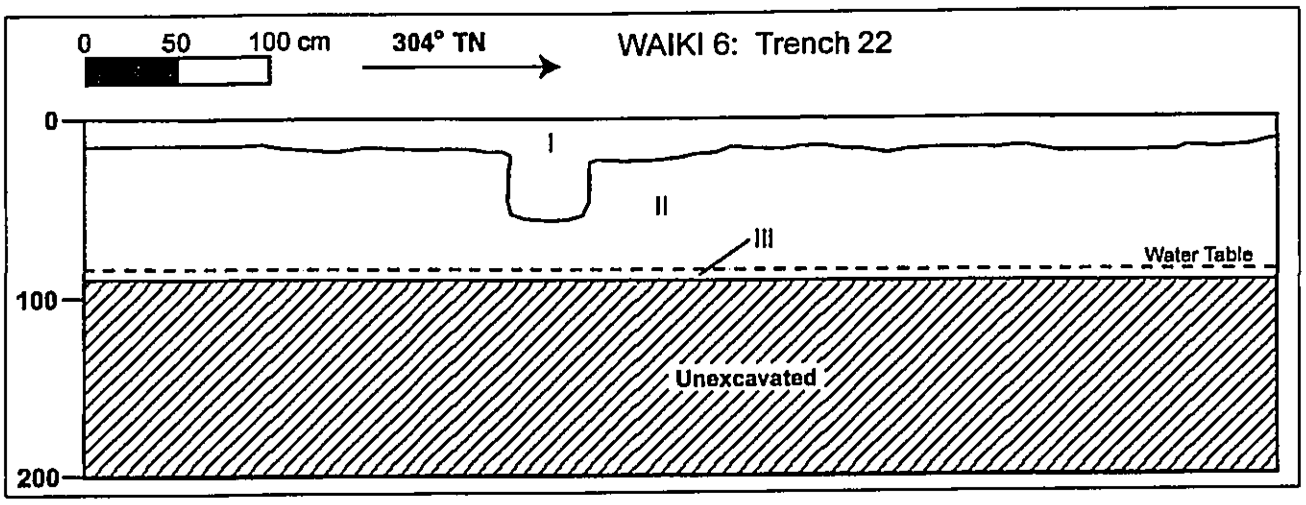


Figure 55. Trench 22 southwest profile

Stratum I: 0 - 25 cmbs	A Horizon; 10 YR 4/3, brown; loamy sand 90% sand; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary; Many roots throughout this stratum, especially at the east end of trench. This A horizon on Jaucas sand is also the present day land surface.
Stratum II: 10/25 - 90 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Stratum III: 90 - 95 cmbs	Lagoonal sediment; Gley 1 5/1, greenish gray, sandy clay; structureless, non-sticky wet consistency; plastic; no cementation; lower boundary not visible as stratum makes up bottom of trench. Marine deposited sandy clay. The entire layer is below the water table

Trench 23

Trench 23 was 6.8 meters long, 0.7 meters wide and .85 meters deep. It was excavated for general project area coverage. Figure 58 following the sediment descriptions is a photograph of the southwest wall.

Trench 23 contained natural jaucas sand with an A horizon virtually at the surface. It also contained a small amount of hydraulic fill that probably filled the very edge of a low lying area. The trench also contained Feature D, a likely historic pit that contained coral boulders and a number of historic trash such as broken glass, a saw-cut bone and a brick. Figure 59 following the sediment descriptions is a close-up photograph of Feature D before excavation.

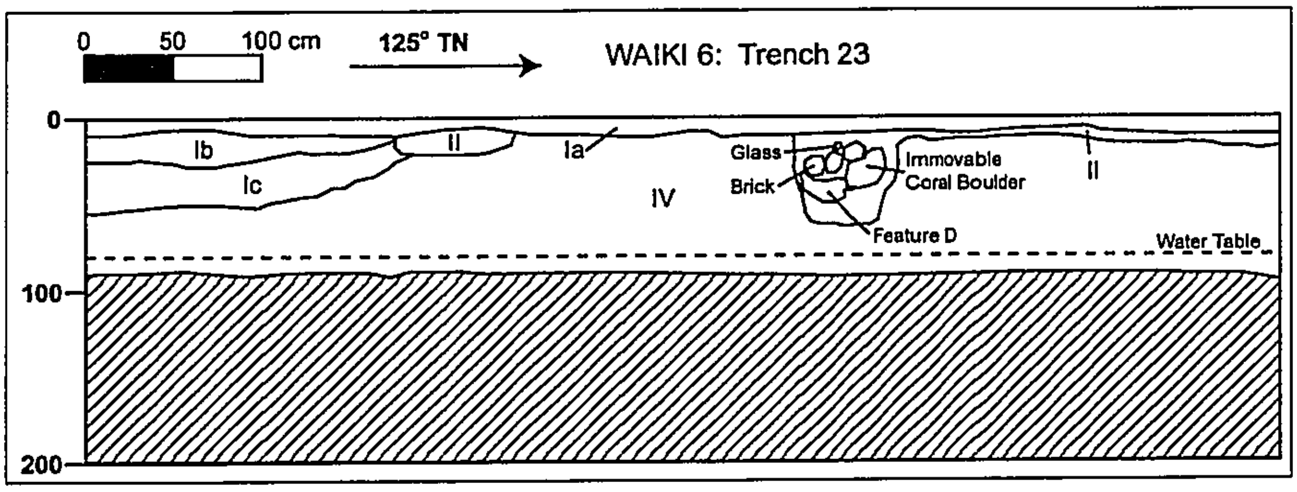


Figure 56. Trench 23 southwest profile. Feature D, a pit containing coral boulders and some historic trash and hydraulic fill sediments (Stratum III) were documented in this trench.

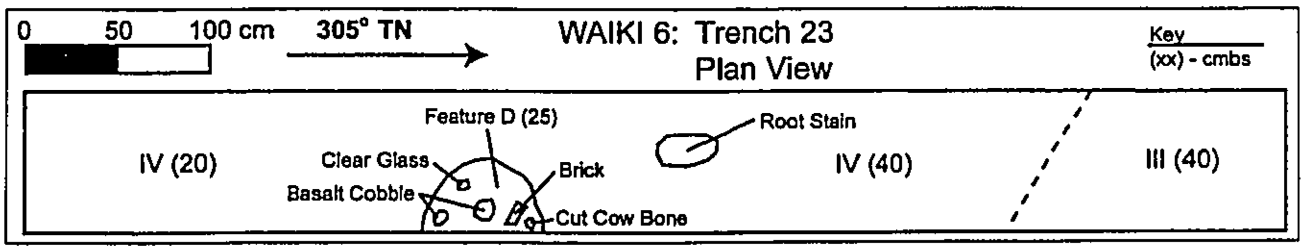


Figure 57. Trench 23 plan view.

Stratum Ia: 0 - 10 cmbs	Fill Horizon; 10 YR 6/1, gray; gravel; structureless, loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. Gravel base course, project area gravel.
Stratum Ib: 10 - 26 cmbs	Fill Horizon; 10 YR 4/3, brown; sandy loam; structureless; hard dry consistency; non-plastic; no cementation; clear smooth lower boundary.
Stratum Ic: 20 - 40 cmbs	Hydraulic Fill; 10 YR 3/1, very dark gray; sandy loam; structureless, loose dry consistency; non-plastic; no cementation; clear smooth lower boundary. This stratum is a very coarse hydraulic fill. Its small presence in this trench indicates that the edge of the low lying area to the north is documented in this trench. It does not appear to be a modified berm as seen here, but a gentle slope.
Stratum II: 10 - 20 cmbs	A Horizon; 10 YR 6/3, pale brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; clear irregular/broken lower boundary. A-horizon remnant missing in parts of the trench. The color of this stratum is relatively light compared to the sand A horizon elsewhere in the project area.
Stratum IV: 10 - 90 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Figure 58. Trench 23 southwest wall photograph.

Figure 59. Feature D close-up photograph before excavation of the feature to determine its nature.

Trench 24

Trench 24 was 6.5 meters long, 0.7 meters wide and 0.9 meters deep. It was excavated for general project area coverage.

Trench 24 contained fill over low-lying wetland sediments. Two layers, IIa and IIb, of hydraulic fill were documented in this trench. They abut a high ground bank or berm of jaucas sand. Under these hydraulic fills was a very organic reach, peaty O horizon. This organic material was not decomposed on account of the overlying hydraulic fill that suddenly capped this natural land surface. In this peaty horizon, Stratum IV, a number of historic artifacts were dispersed. It appears that the low-lying area, believed to most likely be the edge of the waterway from historic documentation, was used occasionally to dispose of trash before it was filled in the 1920s.

A three gallon sample was screened from Stratum IIa at the north end of the trench found this hydraulic fill to be a former land surface that contained roots, rootlets, charcoal, bone and metal fragments.

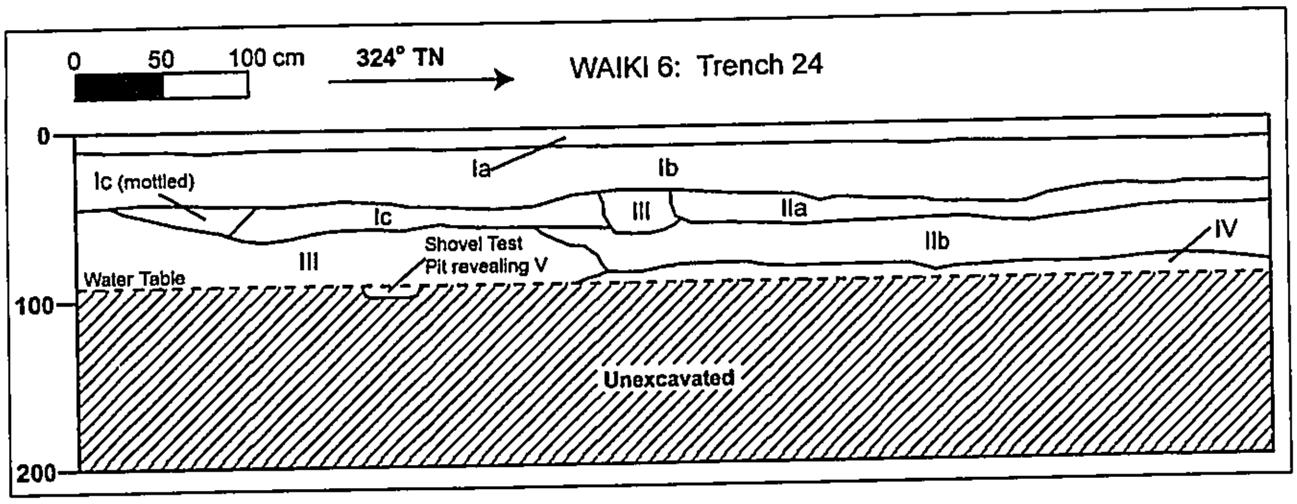


Figure 60. Trench 24 southwest profile

Stratum Ia: 0 - 10 cmbs

Fill Horizon; 10 YR 5/3, brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; clear irregular lower boundary.

Mixed fill with basalt and coral cobble inclusions.

Stratum Ib: 10 - 45 cmbs

Fill Horizon; 10 YR 3/3, dark brown; sandy loam; structureless; firm moist consistency; plastic; no cementation; abrupt smooth lower boundary.

Stratum Ic: 40 - 61 cmbs	Fill Horizon; 10 YR 5/1, gray; sandy clay; structureless; firm moist consistency; plastic; no cementation; abrupt smooth lower boundary; A hydraulic fill smilar to that found elsewhere in the project area, but not as coarse. This stratum has under gone some organic enrichment and contains charcoal flecks. It was an old land surface before the final layers of fill were deposited.
Stratum IIa: 40 - 53 cmbs	Hydaulic Fill; 10 YR 4/2, dark grayish brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; clear smooth lower boundary. This is a stratum very similar to the underlying stratum IIb, and indeed may have been depostied during the same fill event. However, this stratum once served as the land surface and is lightly strewn with trash. A 3 gallon sample screened (1/8") yielded a small amount of historic rubbish such as charcoal and animal bone.
Stratum IIb: 53 - 57 cmbs	Hydraulic Fill; 10 YR 5/2, grayish brown; sandy loam; structureless; non-sticky wet consistency; non-plastic; no cementation; clear smooth lower boundary. A relatively coarse hydraulic fill. Cut animal bone and metal fragments found near the interface of this stratum and Stratum IV.
Stratum III: 35 - 90 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand containing relatively dense decomposing coral small cobbles.

Stratum IV: 90 - 92 cmbs

O Horizon; 10 YR 3/1, very dark gray; sandy loam; structureless, firm moist consistency; slightly plastic; no cementation; lower boundary obscured under water table.

Thin, very organic rich layer containing peat-like undecomposed organic matter and roots appoximately 1 cm in diameter. Animal bone and saw cut animal bone was found near the top of this layer.

Stratum V: 92 - 97 cmbs

Lagoonal sediment; Gley 1 5/1, greenish gray; sandy clay; structureless, non-sticky wet consistency; plastic; no cementationl; lower boundary not visible.

Marine deposited sandy clay. The entire layer is below the water table. Exposed only in a shovel test pit below the water table.

Trench 25

Trench 25 was 6.5 meters long, 0.9 meters wide and 1.05 meters deep. It was excavated for general project area coverage. Figure 62 following the sediment descriptions below is a photograph of the northwest wall of Trench 25.

Trench 25 contained fill over natural jaucas sand with an A horizon. These natural sediments were moderately disturbed by modern trenches or pit features extending down from the top fill layer.

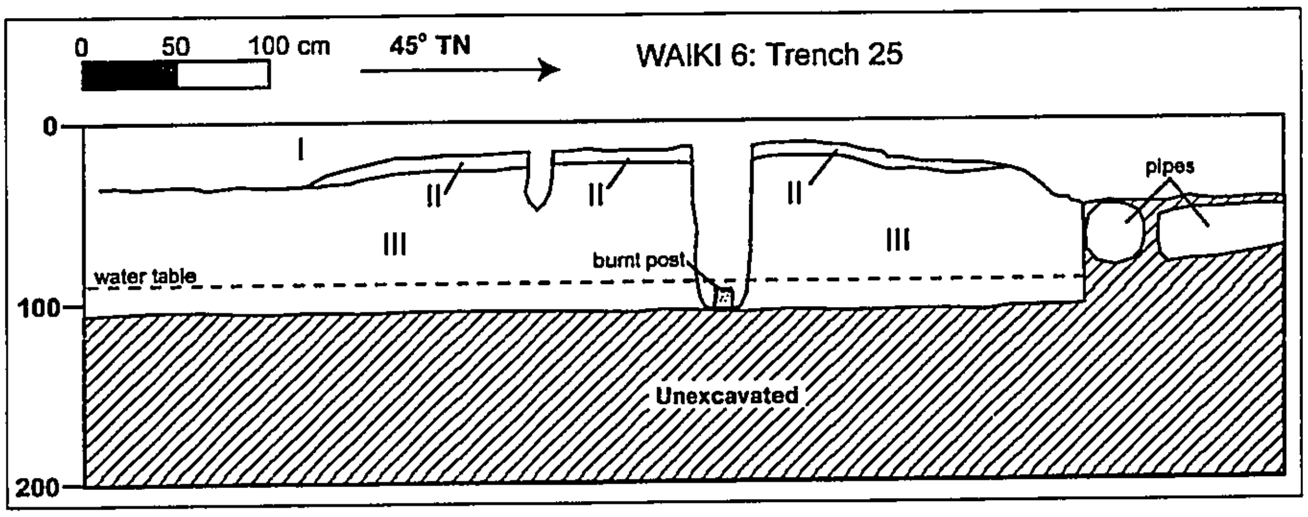


Figure 61. Trench 25 northwest profile showing modern pits and utilities.

Stratum I: 0 - 15/105 cmbs	Fill Horizon: 10 YR 4/3, brown; loamy sand; structureless, loose dry consistency; non-plastic; no cementation; clear irregular lower boundary. Terrigenous fill.
Stratum II: 15 - 30 cmbs	A Horizon; 10 YR 4/2, dark grayish brown; medium, sand; weak, fine, single grain structure; loose dry consistency; non-plastic; no cementation; abrupt wavy lower boundary; A horizon is a remnant only and is mechanically compacted. It has relatively very little soil formation.
Stratum III: 20 - 105 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Figure 62. Trench 25 northwest wall photograph

Trench 26

Trench 26 was 6.6 meters long, 0.7 meters wide and 1.02 meters deep. It was excavated for general project area coverage.

Trench 26 contained fill over natural jaucas sand with an A horizon. The jaucas sand appears to have been largely undisturbed, but most of the A horizon has been cut away.

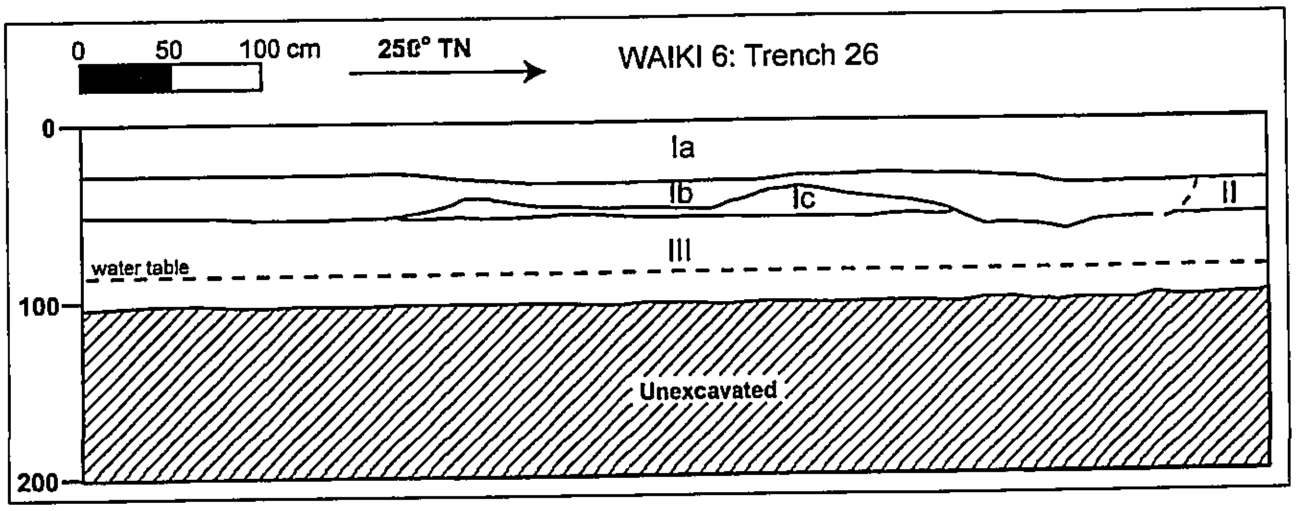


Figure 63. Trench 26 southeast profile

Stratum Ia: cmbs	Fill Horizon; 10 YR 5/3, brown; gravelly loam; structureless; loose dry consistency; non-plastic; no cementation; clear irregular lower boundary. Mixed fill that is primarily gravel, also has basalt and coral cobble inclusions.
Stratum Ib: 30/40 - 45/55 cmbs	Fill Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; structureless; friable moist consistency; slightly plastic; abrupt wavy lower boundary;. Compacted fill, some small fragments of metal and glass were found in this stratum.

Stratum Ic: 40/50 - 55 cmbs	Fill Horizon; 10 YR 6/1, gray; sandy clay; structureless; weakly coherant dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. Sediment appears very similar to a hydraulic fill, and may be an isolated pocket of a cut sediment.
Stratum II: 35 - 55 cmbs	A Horizon; 10 YR 4/2, dark grayish brown; sandy loam, gravelly; structureless; weakly coherant dry consistency; non-plastic; no cementation; clear smooth, broken lower boundary, Very natural A horizon remnant in a corner of the trench. What remains of this surface is highly affected by use – coral cobbles, concrete and pebbles are dense at the upper boundary where the stratum is highly compacted, indicating operation of heavy machinery on this surface.
Stratum III: 55 - 100 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; lower boundary is well below water table and not visible. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum excavated depth.

Trench 27

Trench 27 was 6.5 meters long, 0.7 meters wide and 1.10 meters deep. It was excavated for general project area coverage. Figure 65 following the sediment descriptions below sis a photograph of the southeast wall of Trench 27.

Trench 27 contained fill over natural jaucas sand. No A horizon was observed in this trench. Considering how common this land surface is in the rest of the project area, it is likely that it was cut away by fill events. Two pipes crossed the trench, one through the jaucas sand without a pit indicating it was placed before the fill events took place.

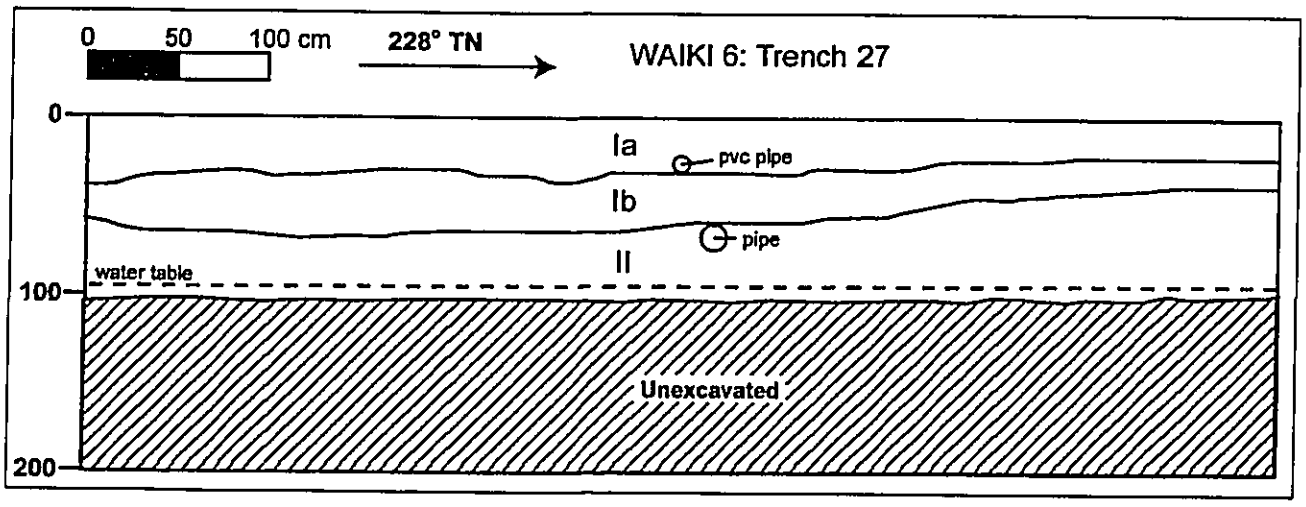


Figure 64. Trench 27 southeast profile

Stratum Ia: 0 - 30 cmbs	Fill Horizon; 10 YR 4/3, brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary.
Stratum Ib: 30 - 64 cmbs	Fill Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; structureless; slightly hard dry consistency; slightly plastic; no cementation; abrupt smooth lower boundary. Brick and concrete fragments found at the interface between Ib and II. Layer also contains some isolated charcoal flecking and a metal pipe.

Stratum II: 38 - 110 cmbs	Jaucas sand: 10 YR 6/3, pale brown: fine to medium, sand: structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary.
	Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth. In the southwest end of the trench the color fades to a 10 YR 5/4, yellowish brown.

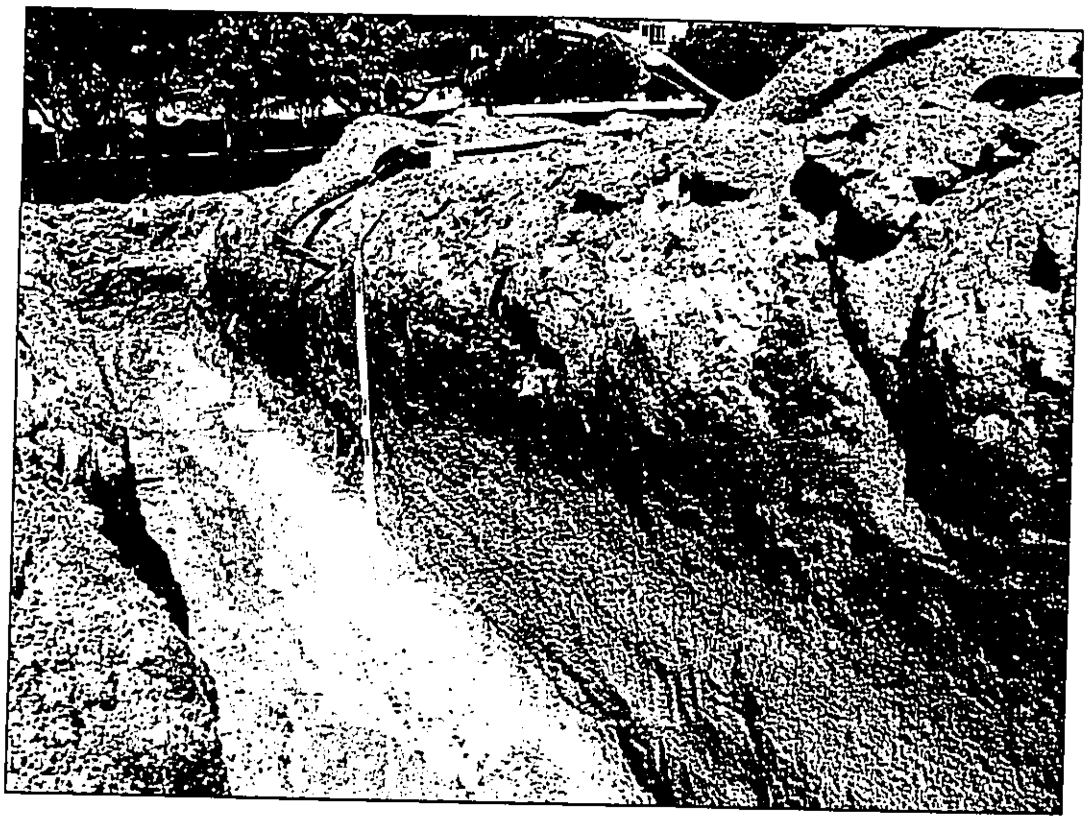


Figure 65. Trench 27 southeast wall photograph

Trench 28

Trench 28 was 5.8 meters long, 0.7 meters wide and 1.05 meters deep. It was excavated for general project area coverage. Figure 67 following the sediment descriptions below is a photograph of the southwest wall of the trench.

Trench 28 contained fill over natural jaucas sand with an A horizon. These natural sediments were undisturbed except for by a number of features.

Feature E, the largest feature in the trench was in the northeast wall. A 2.5 gallon sample contained marine shell (largely *pipipi, Nerita picea),* charcoal, and some other fragmentary marine shells. There were not historic artifacts found in this feature.

Features I and J were in the southwest wall. These pit features were clearly historic. A 1.5 gallon sample of each was taken. Feature I contained abundant glass, rusted metal, cowrie (*Cypraea* sp.) and small amount of ceramic fragments. Feature J. contained *pipipi (Nerita picea)*, glass and charcoal. A photograph of Feature J follows the sediment descriptions as Figure 70.

Features H, G and F were also found in this trench. They were located in the top of the jaucas sand floor of the trench at approximately 65 cmbs before hand excavation began. None of these features contained any artifacts. Feature H was of particular interest in that is was remarkably square. It is believed this may have been a post hole for one of the historic wooden buildings that stood on the property. Features G and F are round. All three features extended about 40 centimeters down into the jaucas sand. It is possible, but unlikely that because of the crude alignment of Features G and F with Feature H, that they may have been post holes for natural wood posts. Figure 71is a photograph of these figures as they appeared in the floor of the trench.

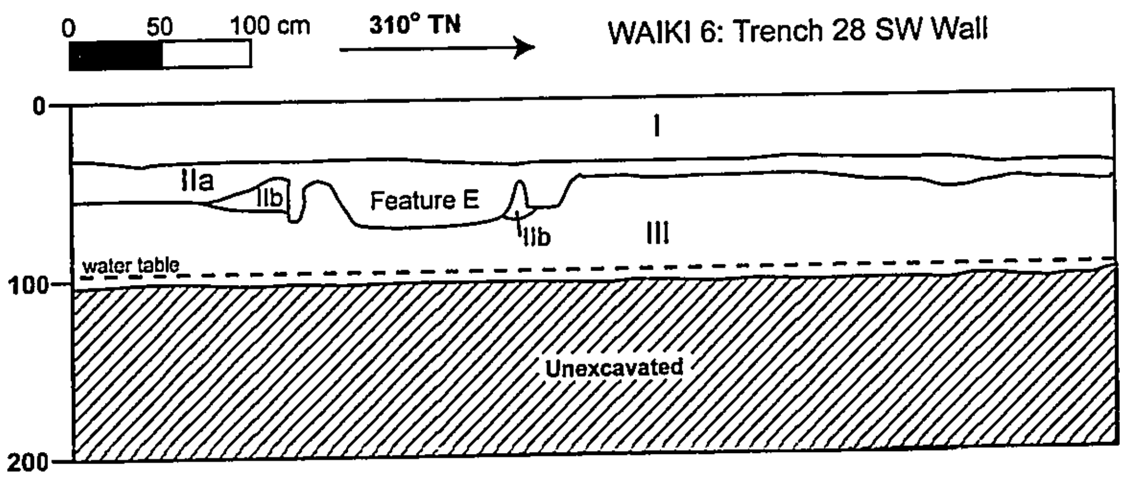


Figure 66. Trench 28 southwest profile. Feature E was identified in this sidewall.

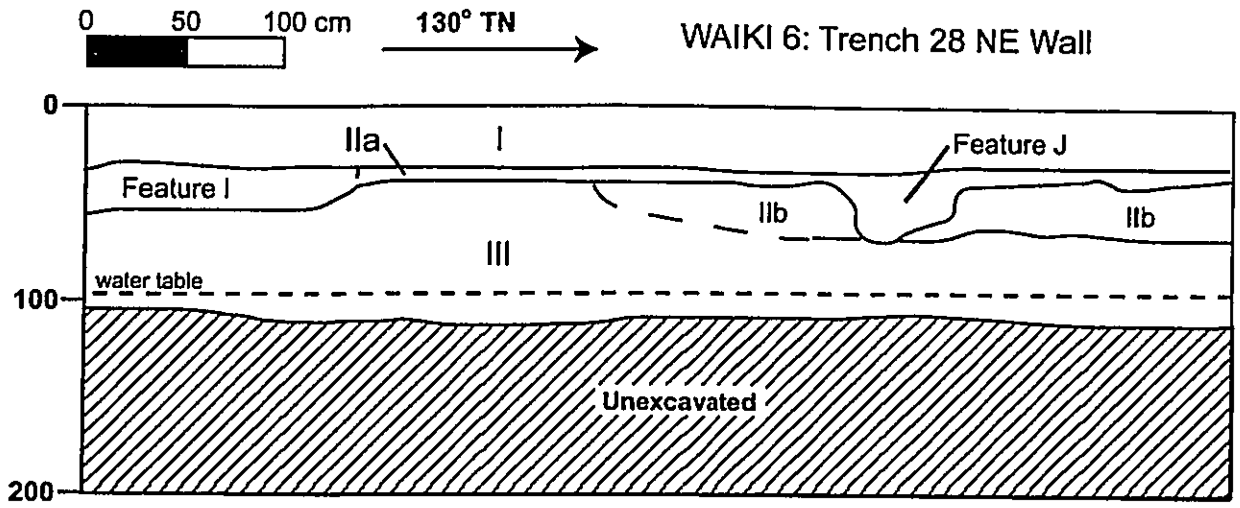


Figure 67. Trench 28 northeast wall profile. Features I and J were identified in this sidewall.

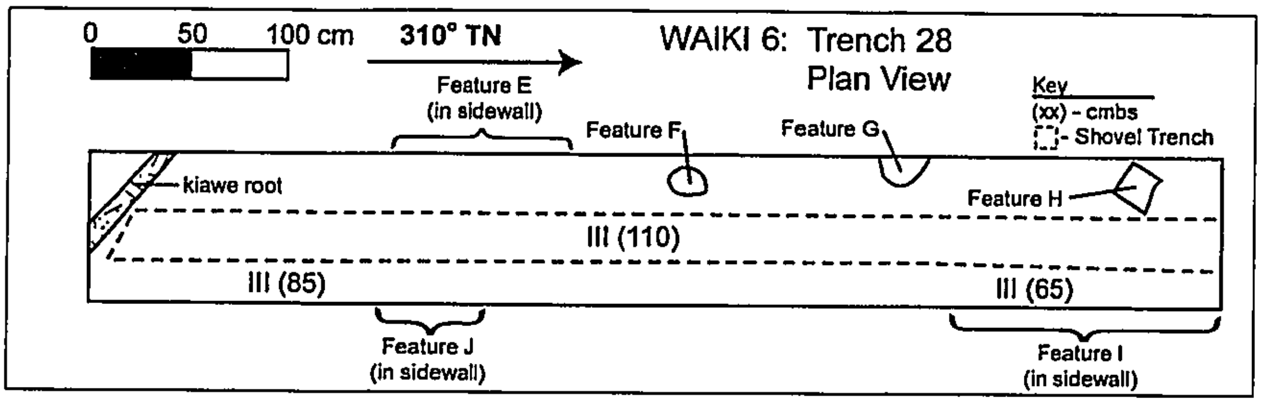


Figure 68. Trench 28 plan view showing Features E, J, I in sidewalls and F, G, H visible at the top of Stratum III at approximately 65 cmbs.

Stratum I: 0 - 34 cmbs	Fill Horizon; 10 YR 5/3, brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; clear irregular lower boundary.
	Mixed fill with basalt and coral cobble inclusions.

Stratum IIa: 34 - 61 cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; structureless; slightly hard dry consistency; non-plastic; no cementation; abrupt irregular lower boundary. Natural sand A horizon that was at one time under heavy use. A number of pit features were found extending down from this layer into the underlying Stratum III.
Stratum IIb: 4 - 62 cmbs	A Horizon; 10 YR 4/2, dark grayish brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; diffuse broken lower boundary. A considerably lighter, discontinuous A horizon underlying parts of Stratum IIa. Contains light charcoal flecking.
Stratum III: 45/70 - 95 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; lower boundary well beneath water table and not visible. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

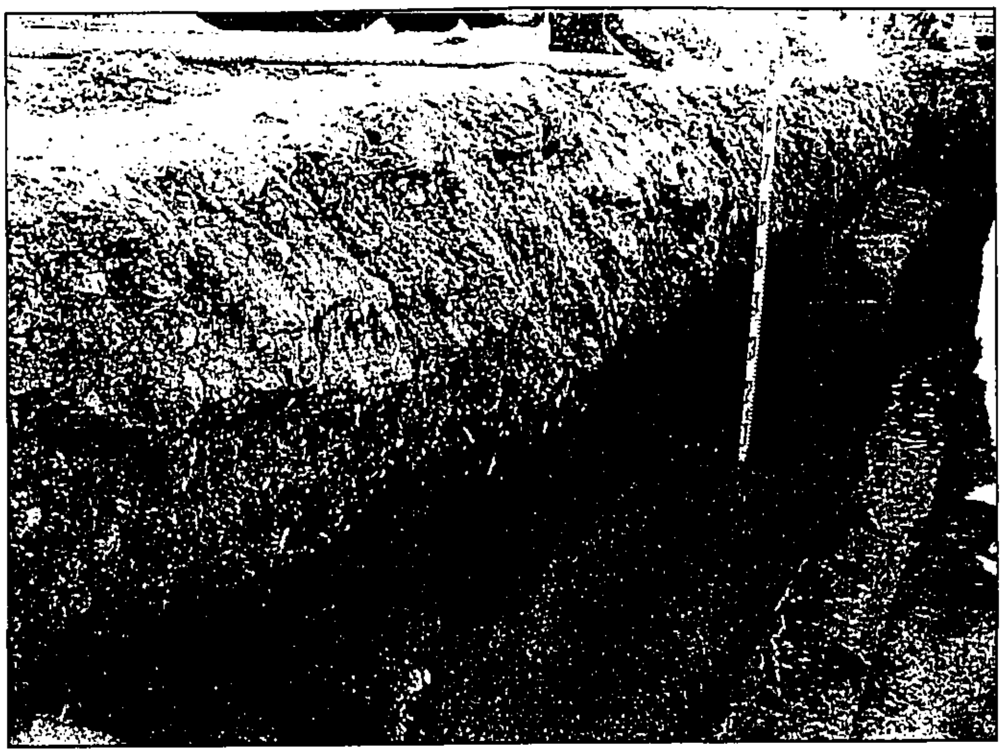


Figure 69. Trench 28 southwest wall profile. Feature F is just behind the photo scale. Looking northwest

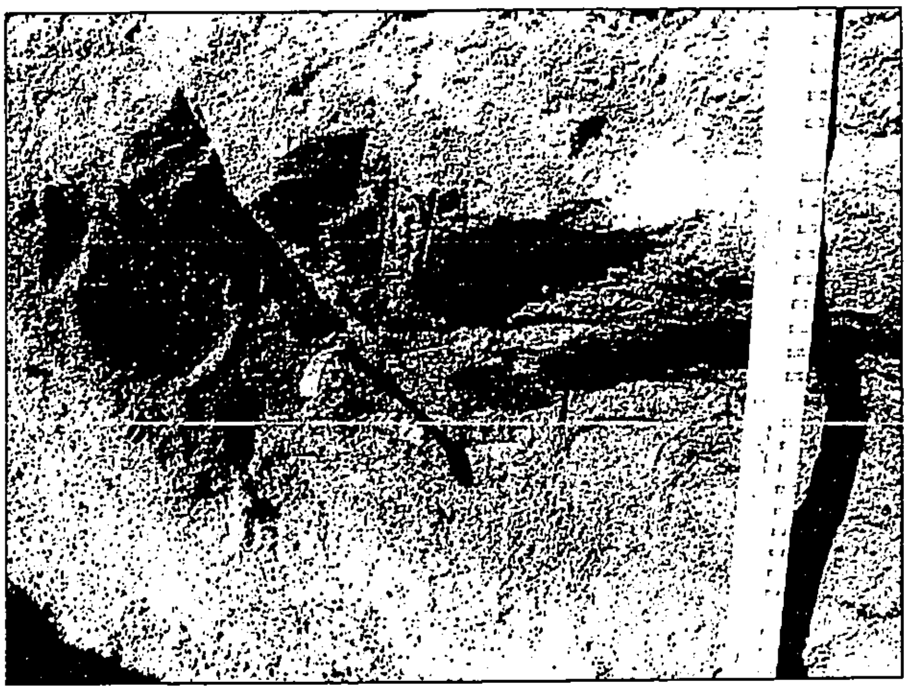


Figure 70. Trench 28 close-up of Feature J.

Figure 71. Trench 28, from foreground - Features H (in front of photo scale), G (immediately behind scale) and F (small round stain towards rear of photo. Looking south.

Trench 29

Trench 29 was 7.2 meters long, 0.7 meters wide and 0.7 meters deep. It was excavated on October 5, 2006 after SHPD requested an additional trench in the western corner of the project area where jaucas sand formed the land surface.

Trench 29 contained natural jaucas sand with an A horizon that is the modern land surface. These natural sediments were largely undisturbed. Figure 74 following the sediment descriptions is a photograph of the southeast wall of the trench.

Trench 29 documented the second burial in the project area, Burial 2. This burial was designated SIHP 50-14-80-6875. Burial 2 was placed directly in the jaucas sand deposit and no pit was visible in the profile. See Section 7.6.2.1 for more information about this burial.

Two features were also located in this trench. Feature K and Feature L were excavated from the A horizon, Stratum I, into the underlying jaucas sand. To ensure that these features were not more burials, they were excavated in their entirety. Neither Feature yielded another burial. Feature K contained a very small 1 centimeter diameter piece of rusted steel. Feature J had similar findings, but the rusted metal was so deteriorated it was only identifiable by orange stained sand that had been cemented together by iron oxide.

These historic/modern features were described in this report, but were not included in SIHP 50-14-80-6875 with Burial 2 because they appear to be relatively isolated and are not stratigraphically related to the burial in any way.

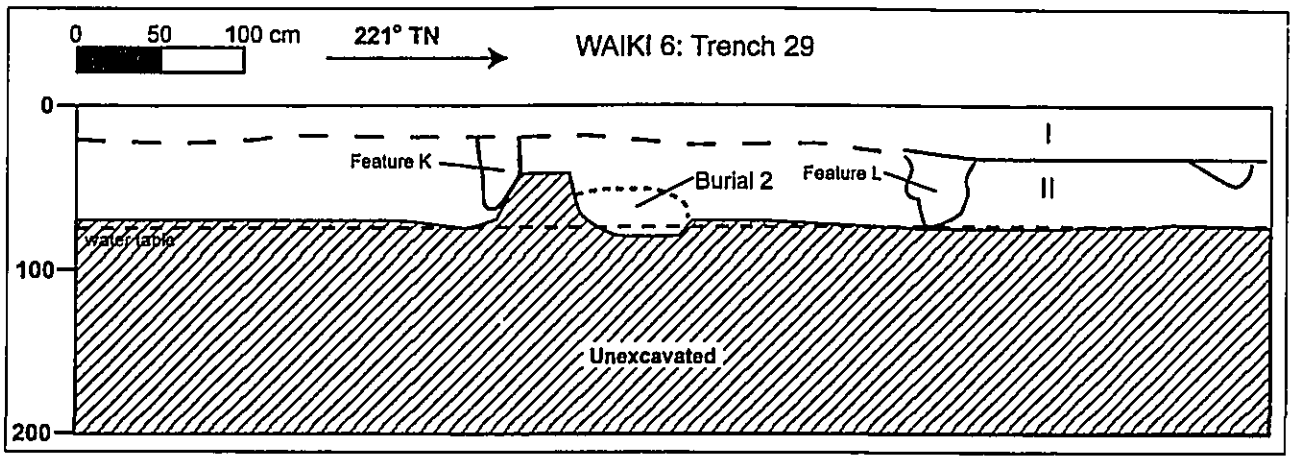


Figure 72. Trench 29 southeast profile, indicating locations of Burial 2, Features K and L

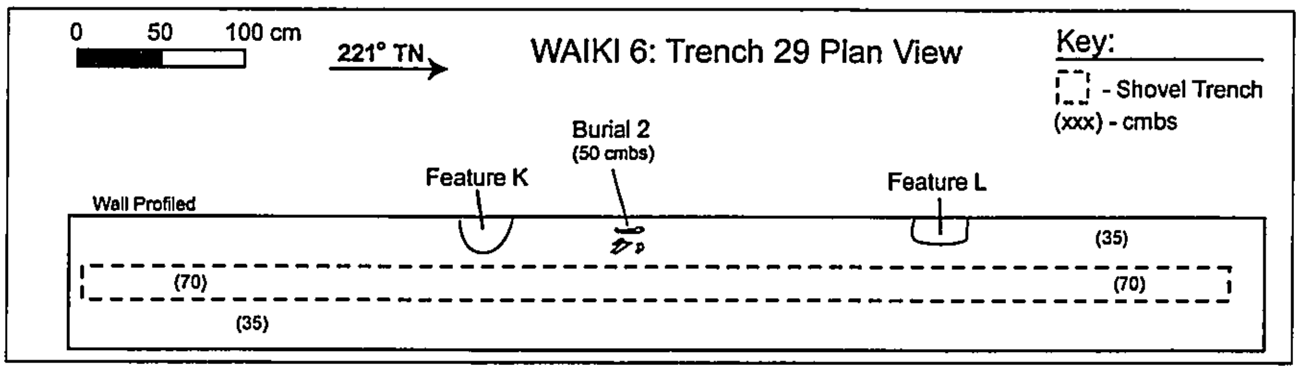


Figure 73. Trench 29 plan view showing location and exposure of Burial 2.

Stratum I: 0 - 18/30 cmbs	A Horizon; 10 YR 4/2, dark grayish brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary - clear where noted with dashed line. Natural land surface, probably intermixed with some top soil from development.

Stratum II: 18/30 - 70 cmbs	Jaucas sand; 10 YR 8/3, very pale brown; coarse. sand; structureless; loose dry consistency; non-plastic; no cementation; lower boundary not visible in trench. Marine deposited beach sand.

Figure 74. Trench 29 southeast wall photograph. Burial 2 was covered with clean sand then a piece of plywood for protection seen just in front of the photo scale.

Trench 30

Trench 30 was 5.3 meters long, 0.8 meters wide and 0.7 meters deep. It was excavated to bound Trench 29 and Burial 2 to the northwest. This trench was one of six trenches (30 – 35) requested by SHPD in the west corner of the project area following the discovery of Burial 2 on October 5, 2006.

Trench 30 contained natural jaucas sand with an A horizon as the modern land surface. These natural sediments were largely undisturbed.

No further burials were found in this trench, thus bounding the burial to the northwest. No further pit features were found, confirming the isolation of Features K and L.

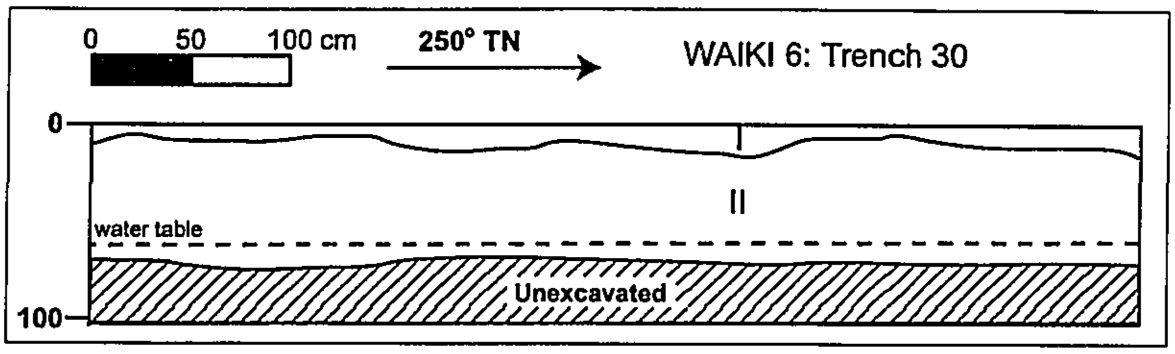


Figure 75. Trench 30 southeast profile

Stratum I: 0 - 5/15 cmbs	A Horizon; 10 YR 4/2, dark grayish brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; abrupt wavy lower boundary. Natural land surface, probably intermixed with some top soil from development.
Stratum II: 5/15 - 70 cmbs	Jaucas sand; 10 YR 8/3, very pale brown; coarse sand; structureless; loose dry consistency; non-plastic; no cementation; lower boundary not visible in trench. Marine deposited beach sand.

Trench 31

Trench 31 was 4.4 meters long, 0.7 meters wide and 0.75 meters deep. This trench was one of six trenches (30 – 35) requested by SHPD in the west corner of the project area following the discovery of Burial 2 on October 5, 2006. It was excavated to bound Trench 29 and Burial 2 to the southwest.

Trench 31 contained natural jaucas sand with an A horizon forming the modern land surface. These natural sediments were largely undisturbed except where this trench intersected the very end of Trench 29. A thin lens of gray color in the jaucas sand, Stratum IIb, was found in this trench. It appears to have been deposited naturally and is similar to lenses found in a number of other trenches in the project area.

No further burials were found in this trench, thus bounding the burial to the southwest. No further pit features were found, confirming the isolation of Features K and L.

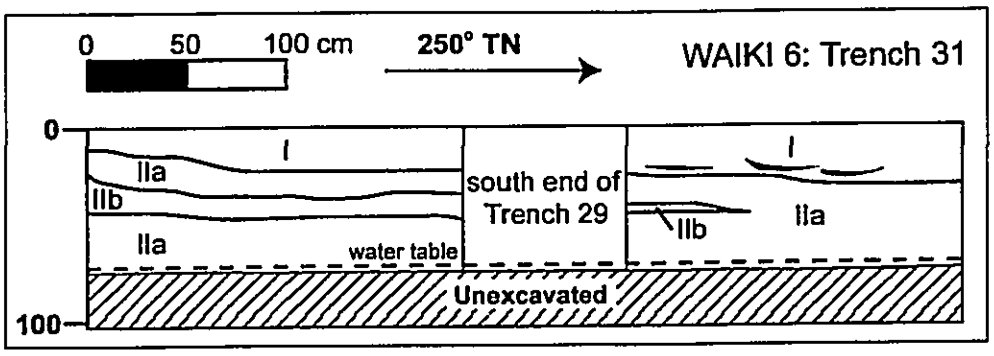


Figure 76. Trench 31 southwest profile

Stratum I: 0 - 5/26 cmbs	A Horizon; 10 YR 4/2, dark grayish brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; abrupt wavy lower boundary. Natural land surface, probably intermixed with some top soil from development.
Stratum IIa: 6/25 - 70 cmbs	Jaucas sand; 10 YR 8/3, very pale brown; coarse sand; structureless; loose dry consistency; non-plastic; no cementation; clear smooth lower boundary. Marine deposited beach sand.

Stratum IIb: 26/42 - 42/44 cmbs	Jaucas sand; 5 YR 4/1, dark gray; coarse sand; structureless; loose dry consistency; non-plastic; not cementation; abrupt smooth lower boundary.; Very similar sediment to Stratum IIa except this stratum is gray in color. This is the same sediment as other gray Jaucas sands in the project area, but appears ina lens in Stratum IIa.

Trench 32

Trench 32 was 5.3 meters long, 0.8 meters wide and 0.7 meters deep. This trench was one of six trenches (30 – 35) requested by SHPD in the west corner of the project area following the discovery of Burial 2 on October 5, 2006. It was excavated to bound Trench 29 and Burial 2 to the southeast.

Trench 32 contained natural jaucas sand with an A horizon forming the modern land surface. These natural sediments were largely undisturbed. Some active root systems were found in this trench as the only sign of disturbance. Stratum Ib is an organically enriches jaucas sand that was probably a root mold.

No further burials were found in this trench, thus bounding the burial to the southeast. No further pit features were found, confirming the isolation of Features K and L.

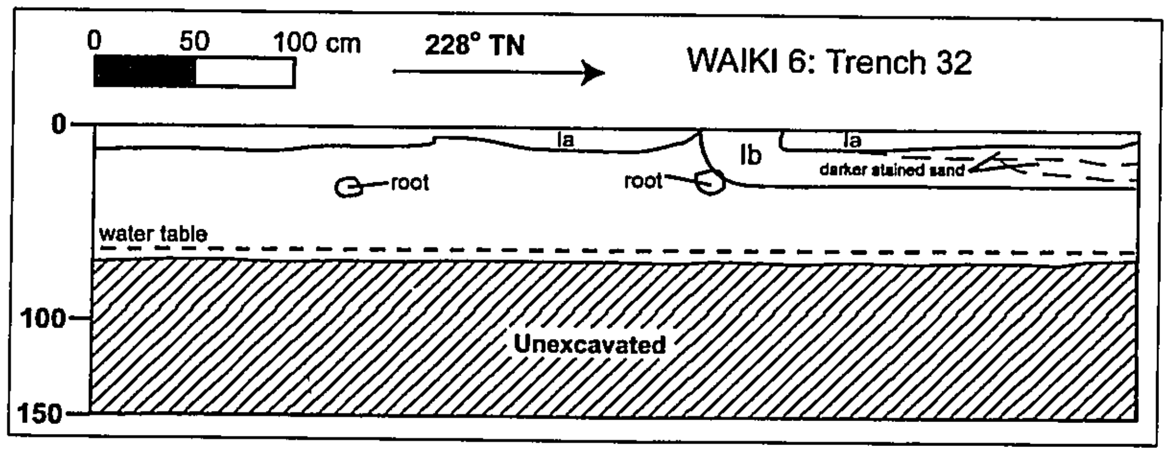


Figure 77. Trench 32 southeast profile

Stratum Ia: 0 - 10 cmbs	A Horizon; 10 YR 4/2, dark grayish brown; sandy loam; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary - clear where noted with dashed line. Natural land surface, probably intermixed with some top soil from development.
Stratum Ib: 10 - 30 cmbs	A Horizon; 10 YR 4/3, brown; coarse, sand; weak, fine, single grain structure; loose moist consistency; non-plastic; no cementation; diffuse irregular lower boundary. Calcareous sand and that has undergone some soil formation. Sediment appears in an unusual shape and includes some very dark lenses of sand near the southwest end of the trench. A root directly underlies this stratum, suggesting the stratum may be could be the remnant of a root system.
Stratum II: 0 - 70 cmbs	Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Trench 33

Trench 33 was 5 meters long, 0.8 meters wide and 0.7 meters deep. This trench was one of six trenches (30 – 35) requested by SHPD in the west corner of the project area following the discovery of Burial 2 on October 5, 2006. It was excavated to bound Trench 29 and Burial 2 to the northeast.

Trench 33 contained natural jaucas sand with an A horizon forming the modern land surface. These natural sediments were undisturbed. Some active roots were found in this trench.

No further burials were found in this trench, thus bounding the burial to the northeast. No further pit features were found, confirming the isolation of Features K and L.

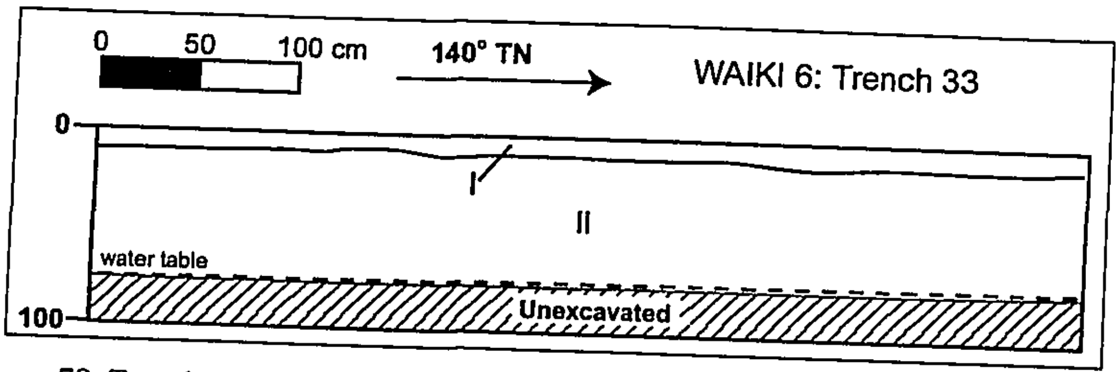


Figure 78. Trench 33 northeast profile

Stratum I: 0 - 10 cmbs

A Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; weak, fine, granular structure; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary;

A very thin and dark sand A horizon that is the modern land surface. Very similar to the land surface in the rest of the southwest corner of the project area.

Stratum II: 10 - 70 cmbs

Jaucas sand; 10 YR 6/3, pale brown; fine to medium, sand; structureless; loose moist consistency; non-plastic; no cementation; abrupt smooth lower boundary.

Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth. Statum extends to watertable. Contains active roots that are densest in east end of trench and measure approximately 1cm - 3cm in diameter.

Trench 34

Trench 34 was 6.2 meters long, 0.8 meters wide and 0.7 meters deep. This trench was one of six trenches (30 – 35) requested by SHPD in the west corner of the project area following the discovery of Burial 2 on October 5, 2006. It was excavated to increase the density of trenches in this corner of the project area.

Trench 34 contained natural jaucas sand with an A horizon forming the modern land surface. These natural sediments were largely undisturbed. No archaeological remains were documented in this trench.

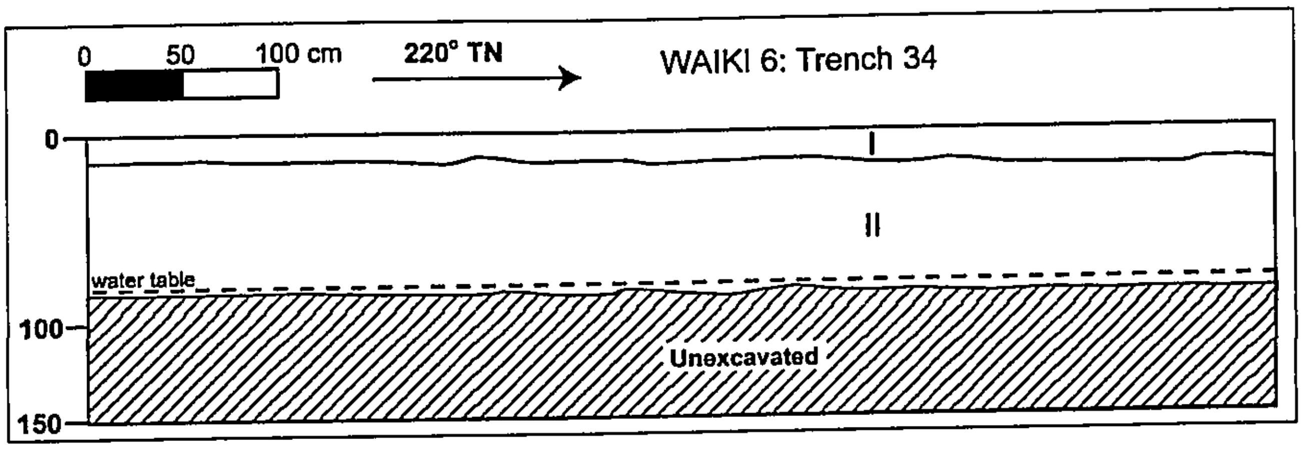


Figure 79. Trench 34 southeast profile

Stratum I: 0 - 15 cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; weak, fine, granular structure; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. A very thin and dark sand A horizon that is the modern land surface.
Stratum II: 15 - 70 cmbs	Jaucas Sand; 10 YR 7/6, yellow; medium, sand; structureless; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. Marine deposited beach sand. The sand in this layer grades to coarse/very coarse sand at its maximum depth.

Trench 35

Trench 35 was 6.25 meters long, 0.8 meters wide and 0.9 meters deep. This trench was one of six trenches (30 – 35) requested by SHPD in the west corner of the project area following the discovery of Burial 2 on October 5, 2006. It was excavated to increase the density of trenches in this corner of the project area.

Trench 35 contained natural jaucas sand with an A horizon forming the modern land surface. These natural sediments were largely undisturbed. No archaeological remains were documented in this trench.

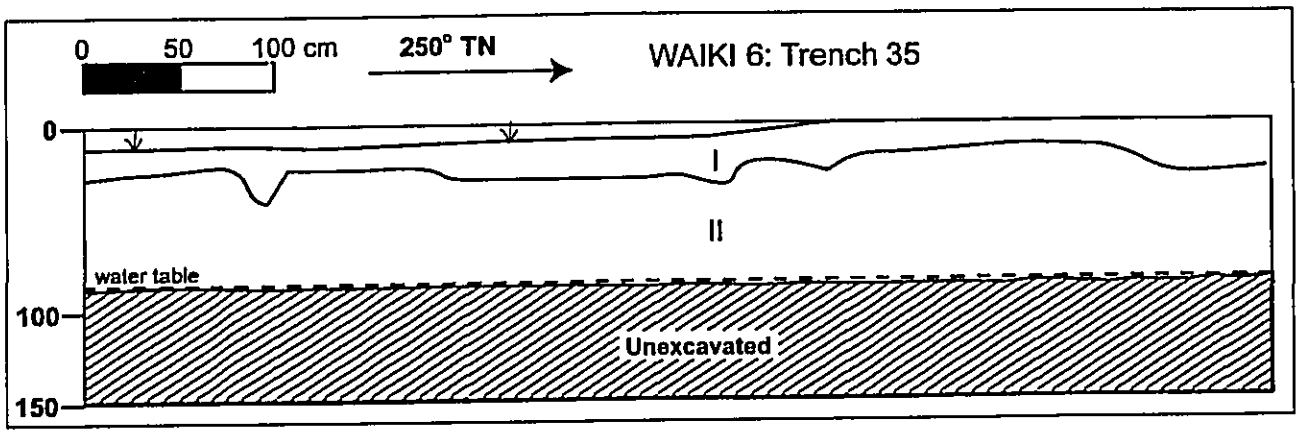


Figure 80. Trench 35 southeast profile

Stratum I: cmbs	A Horizon; 10 YR 3/2, very dark grayish brown; sandy loam; weak, fine, granular structure; loose dry consistency; non-plastic; no cementation; abrupt smooth lower boundary. A very thin and dark sand A horizon that is the modern land surface. Stratum contains several pronounced root molds.
Stratum II: cmbs	Jaucas sand; 10 YR 8/3, very pale brown; coarse, sand; structureless; loose dry consistency; non-plastic; no cementation; lower boundary not visible in trench. Marine deposited beach sand.

Appendix B Cultural Material Catalogue

Accession Number	Site #	Feature	Trench	Stratum	Depth (cmbs)	# of Pieces	Total Weight (g)	Material Type	Volume Screened	
	-6874	A	16	Ic	40-130	14+	-	bottles	hand excavated	not collected;
	-6874	A	16	Ic	40-130	2	-	saw-cut bone	hand excavated	
	-6874	A	16	Ic	40-130	2	-	clay brick	hand excavated	
	-6874	A	16	Ic	40-130	6	-	metal fragments	hand excavated	
	-	B	18	II	45-95	1	-	bottle	hand excavated	not collected;
	-	B	18	II	45-95	50+	-	glass	hand excavated	not colle
	-	B	18	II	45-95	15+	-	saw-cut bone	hand excavated	not
	-	B	18	II	45-95	10	-	metal fragments	hand excavated	n
	-	B	18	II	45-95	5	-	ceramic	hand excavated	not c
	-6874	C	16	II	45-60	35	73.5	charcoal	1 gallon	
	-6874	C	16	II	45-60	2	3.5	rusted nails	1 gallon	
	-6874	C	16	II	45-60	6	28.9	glazed ceramic	1 gallon	fragmens all f
	-6874	C	16	II	45-60	3	8.9	glass	1 gallon	clear glass fr
	-	D	23	II	10-60	3	2.7	glass fragments	4 gallons	
	-	D	23	II	10-60	1	10.1	bottle cap	4 gallons	
	-	D	23	II	10-60	1	1.8	metal fragments	4 gallons	
	-	D	23	II	10-60	4	3.0	bone fragments	4 gallons	
	-	D	23	II	10-60	1	0.1	marine shell	4 gallons	
	-	D	23	II	10-60	-	12.6	charcoal	4 gallons	

Volume creened	Comments
d excavated	not collected; machine made and date to between 1920 and 1940
d excavated	not collected
d excavated	not collected
d excavated	not collected
d excavated	not collected; worcestershire sauce, machine made
d excavated	not collected; smashed bottle fragments
d excavated	not collected; pig and cow bone
d excavated	not collected; rusted metal
d excavated	not collected; from various vessels
1 gallon	
1 gallon	
1 gallon	fragmens all from one vessel - probably a cup or bowl
1 gallon	clear glass fragments from the same bottle - a patent medicine bottle.
4 gallons	
4 gallons	
4 gallons	
4 gallons	unidentifiable
4 gallons	unidentifiable
4 gallons	

Accession Number	Site #	Feature	Trench	Stratum	Depth (cmbs)	# of Pieces	Total Weight (g)	Material Type	Volume Screened	
	-6874	E	28	II	35-65	25	17.7	marine shell	?	
	-6874	E	28	II	35-65	-	26..5	charcoal	?	
	-6874	E	28	II	35-65	2	0.7	marine shell fragments	?	
	-6874	E	28	II	35-65	1	0.1	crustacean	?	v
	-6874	E	28	II	35-65	1	0.3	fresh water snail	?	
	-6874	F	28	II	65-105	-	-	-	entire feature	
	-6874	G	28	II	65-105	-	-	-	entire feature	
	-6874	H	28	II	65-105	1	5.0	metal fragments	entire feature	
	-6874	I	28	II	40-66	9	371.2	glass fragments	?	2 pieces olive bot ba
	-6874	I	28	II	40-66	1	3.8	ceramic	?	whi
	-6874	I	28	II	40-66	1	3.1	marine shell	?	
	-6874	J	28	II	34-58	7	5.1	marine shell	?	
	-6874	J	28	II	34-58	1	8.0	glass	?	
	-6874	J	28	II	34-58	-	5.0	charcoal	?	
	-	K	29	II	20-60	1	-	rusted metal	entire feature	not coll
	-	L	29	II	20-60	1	-	rusted metal	entire feature	not collec

ume ened	Comments
?	*Nerita picea*
?	
?	too small to ID
?	very small crab claw
?	species unknown
feature	No findings
feature	No findings
feature	
?	2 pieces olive bottle glass, the rest amber (one a bottle base maked "JAPAN 5"
?	white ceramic lip fragment
?	Family Cypraeidae
?	*Nerita picea*
?	olive glass
?	
feature	not collected; small metal fragment
feature	not collected; iron oxide cemented sand

Accession Number	Site #	Feature	Trench	Stratum	Depth (cmbs)	# of Pieces	Total Weight (g)	Material Type	Volume Screened	
	-	Sample 01	1	II	65-90	9	27.7	glass	2.5 gallons	
	-	Sample 01	1	II	65-90	6	16.1	glass	2.5 gallons	
	-	Sample 01	1	II	65-90	1	0.7	marine shell	2.5 gallons	
	-	Sample 01	1	II	65-90	1	0.1	fish bone	2.5 gallons	
		Sample 02	4	II	70-85	-	-	charcoal	2 gallons	very s
	-	Sample 03	5	II	75-95	19	4.6	marine shell	2 gallons	
	-	Sample 03	5	II	75-95	1	0.1	marine shell fragments	2 gallons	
	-	Sample 03	5	II	75-95	-	5.1	charcoal	2 gallons	
	-	Sample 04	5	II	75-95	18	5.2	marine shell	2 gallons	
	-	Sample 04	5	II	75-95	3	0.2	marine shell	2 gallons	
	-	Sample 05	5	III	85-120	2	0.2	marine shell	2 gallons	
	-	Sample 05	5	III	85-120	76	33.5	marine shell	2 gallons	
	-	Sample 06	6	II	150-170	-	-	-	2 gallons	
	-	Sample 07	7	II	80-90	-	-	-	2 gallons	
	-	Sample 08	11	II	65-80	-	-	-	2 gallons	
	-	Sample 09	13	II	50-65	-	-	-	2 gallons	

ume ened	Comments
allons	olive glass
allons	white glass
allons	*Nerita picea*
allons	unidentifiable
llons	very small amount, not collected
llons	*Nerita picea*
llons	unidentifiable
llons	
llons	*Nerita picea*
llons	Family Mytilacea
llons	unidentifiable
llons	*Nerita picea*
llons	No findings
llons	No findings
llons	No findings
llons	No findings

Accession Number	Site #	Feature	Trench	Stratum	Depth (cmbs)	# of Pieces	Total Weight (g)	Material Type	Volume Screened	
	-	Sample 10	15	II	30-70	17	1.7	marine shell	2 gallons	
	-	Sample 10	15	II	30-70	2	0.8	marine shell	2 gallons	
	-	Sample 10	15	II	30-70	-	1.7	charcoal	2 gallons	
	-	Sample 11	24	IIa	40-55	6	33.3	metal fragments	3 gallons	
	-	Sample 11	24	IIa	40-55	7	3.3	bone fragments	3 gallons	
	-	Sample 11	24	IIa	40-55	5	1.4	calcined (burned) bone	3 gallons	
	-	Sample 11	24	IIa	40-55	-	11.9	charcoal	3 gallons	

ume ened	Comments
allons	unidentifiable
allons	*Nerita picea*
allons	
allons	
allons	small mammal
allons	unidentifiable
allons	

Appendix C Radiocarbon Dating Results

Beta Analytic Results

Mr. Matt McDermott

Report Date: 11/15/2006

Cultural Surveys Hawaii

Material Received: 11/6/2006

Sample Data	Measured Radiocarbon Age	13C/12C Ratio	Conventional Radiocarbon Age(*)
Beta - 222944	210 +/- 40 BP	-25.2 o/oo	210 +/- 40 BP

SAMPLE : WAIKI6
ANALYSIS : AMS-ADVANCE delivery
MATERIAL/PRETREATMENT : (charred material): acid/alkali/acid
2 SIGMA CALIBRATION : Cal AD 1640 to 1690 (Cal BP 310 to 260) AND Cal AD 1730 to 1810 (Cal BP 220 to 140)
Cal AD 1920 to 1950 (Cal BP 30 to 0)

CALIBRATION OF RADIOCARBON AGE TO CALENDAR YEARS

(Variables: C13/C12=-25.2:lab. mult=1)

Laboratory number: **Beta-222944**

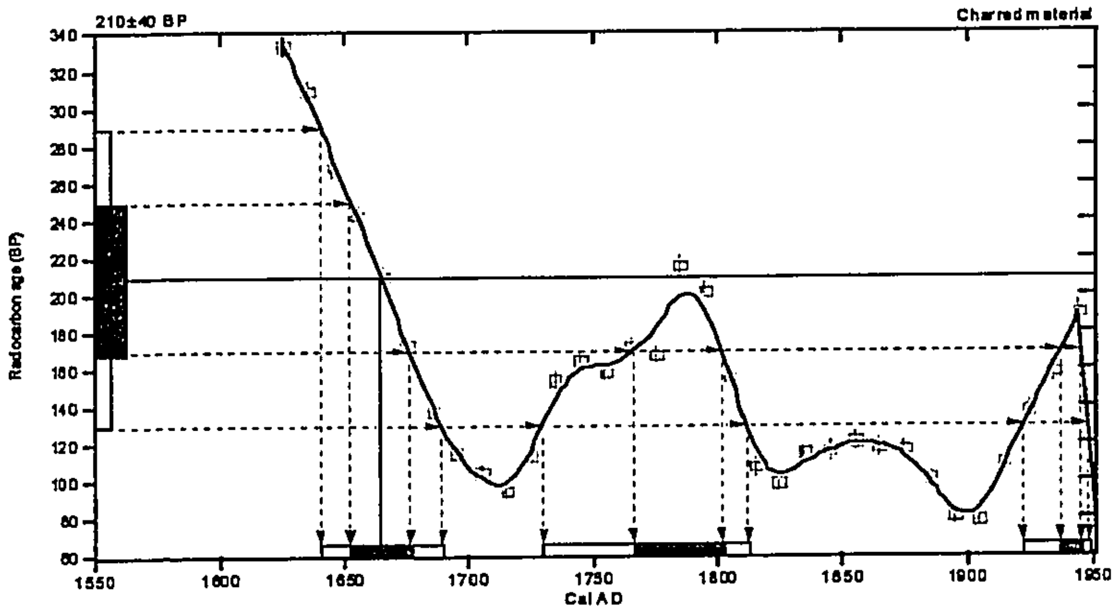
Conventional radiocarbon age: **210±40 BP**

2 Sigma calibrated results: (95% probability) **Cal AD 1640 to 1690 (Cal BP 310 to 260) and Cal AD 1730 to 1810 (Cal BP 220 to 140) and Cal AD 1920 to 1950 (Cal BP 30 to 0)**

Intercept data

Intercept of radiocarbon age with calibration curve: Cal AD 1660 (Cal BP 290)

1 Sigma calibrated results: (68% probability) Cal AD 1650 to 1680 (Cal BP 300 to 270) and Cal AD 1770 to 1800 (Cal BP 180 to 150) and Cal AD 1940 to 1950 (Cal BP 10 to 0)



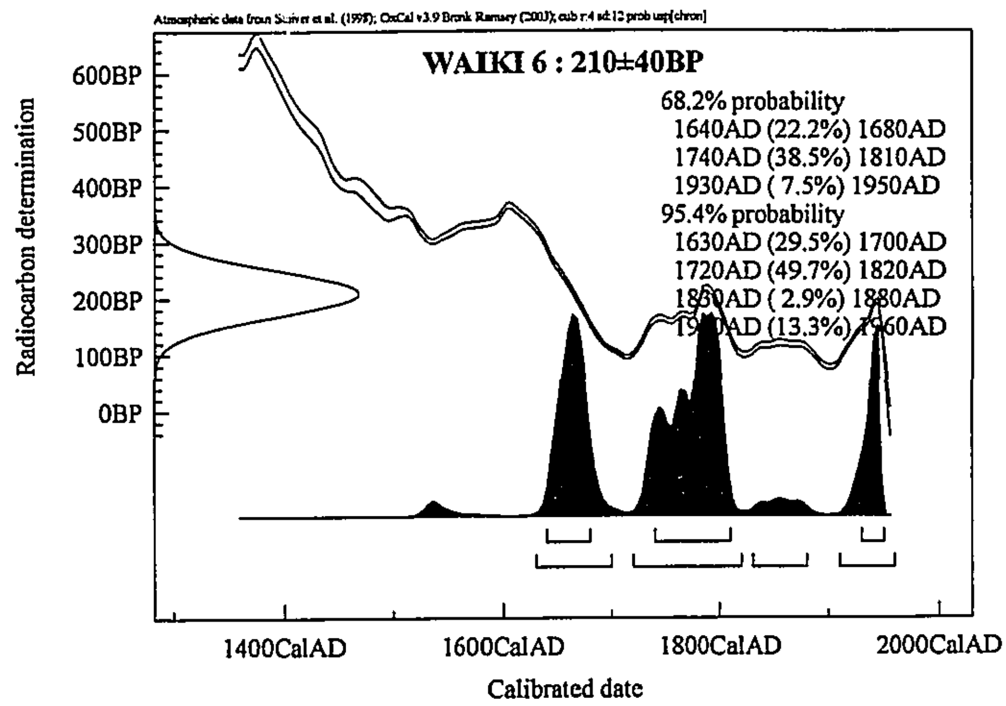
References:

Database used
INTCAL98
Calibration Database
Editorial Comment
Stuiver, M., van der Plicht, H., 1998, Radiocarbon 40(3), pxii-xiii
INTCAL98 Radiocarbon Age Calibration
Stuiver, M., et. al., 1998, Radiocarbon 40(3), p1041-1083
Mathematics
A Simplified Approach to Calibrating C14 Dates
Talma, A. S., Vogel, J. C., 1993, Radiocarbon 35(2), p317-322

Beta Analytic Radiocarbon Dating Laboratory

4985 S.W. 74th Court, Miami, Florida 33155 • Tel: (305)667-5167 • Fax: (305)663-0964 • E-Mail: beta@radiocarbon.com

OxCal Calibration Results



Appendix D Historic Property UTM Coordinates

GPS data was collected with a Trimble Pro XR backpack GPS unit with a TSCI Datalogger and real-time differential correction. Average accuracy is approximately 0.5 meters. The boundaries of the subsurface deposits that make up historic property SIHP 50-8-014-6874 were established through interpolation. Trench stratigraphic documentation and the results of cultural content sampling of specific layers helped establish this culturally-enriched layer's areal extent. Boundaries were drawn mid-way between trenches that had these layers and the surrounding trenches that did not.

Burial UTM coordinates (for SIHP 50-8-014-6873 and 50-8-014-6875) are on the following page where they can be more easily removed from this report, per the requirements of HAR Chapter 13-300-31, should the location information be deemed sensitive.

SIHP 50-80-14-6873

Boundaries: 2-meter radius around Burial 1. See the following page for coordinates.

SIHP 50-80-14-6873

Boundaries: Interpolated around trenches containing closely spaced pit features

(UTM NAD 83 Zone 4 North)

Northing (N)	Easting (E)
2354414.75	0620885.82
2354406.90	0620882.54
2354384.04	0620891.40
2354378.40	0620898.70
2354384.60	0620913.80
2354391.75	0620916.40
2354400.75	0620913.25
2354416.60	0620892.40

SIHP 50-80-14-6875

Boundaries: 20-meter radius around Burial 2. See the following page for coordinates.

SIHP 50-80-14-6873

Burial 1

N 2354370.7

E 0620939.3

NAD 1983 UTM 4N

Recorded with GPS

SIHP 50-80-14-6875

Burial 2

N 2354427.0

E 0620838.2

NAD 1983 UTM 4N

Recorded with GPS

Appendix E Cultural Consultation Letters

Hui Malama Consultation

Cultural Surveys Hawai'i Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President

Providing Excellence in Cultural Resource Management

O'ahu P.O. Box 1114 Kailua, HI 96734 Ph.: (808) 262-9972 Fax.: (808) 262-4950
Maui 16 S. Market St., #2N Wailuku, HI 96793 Ph.: (808) 242-9882 Fax.: (808) 244-1994
Kaua'i P.O. Box 498 Lawai, HI 96765 Ph.: (808) 245-4883

CSH Job Code: WAIKI 6

2 November 2006

Edward Halealoha Ayau
Executive Director
Hui Mālama I Nā Kūpuna o Hawaiʻi Nei (Hui Mālama)
Via email = halealoha@wave.hicv.net

Subject: CSH's request to Hui Mālama for cultural consultation and/or comment regarding the archaeological inventory survey fieldwork results, historic property significance evaluations, and proposed historic property treatment/mitigation for the Fifield Companies' Allure Development, Waikiki, Kona, Oahu, TMK [1] 2-6-013:001, 003, 004, 007, 008, 009, 011 and 012.

Dear Mr. Ayau:

In compliance with the State Historic Preservation Division (SHPD)-approved archaeological inventory survey plan for the project, Cultural Surveys Hawai'i, Inc. (CSH) recently completed fieldwork for an archaeological inventory survey associated with Fifield Companies' proposed 2.3-acre Allure Development. This residential condominium development with associated parking and commercial space is proposed for the site of the former Wave Waikīkī nightclub, at the corner of Kalākaua Avenue and Ena Road, refer the to attached areal photograph of the project area.

With this letter, CSH is providing Hui Mālama with a summary of the archaeological inventory survey fieldwork results and the significance assessments and mitigation recommendations for the three historic properties located within the project area. Two of these historic properties consist of human skeletal remains, each appears to be a single individual, that have been determined by SHPD, based on available evidence, to be most likely Native Hawaiian. Accordingly, these historic properties are recommended eligible to the Hawai'i Register of Historic Places (Hawai'i Register) under criterion E, for their traditional cultural significance to Native Hawaiians.

Pursuant to Hawai'i Administrative Rules (HAR) Chapter 13-284-6, 13-284-8, and 13-276-5, CSH is hereby seeking Hui Mālama's input regarding the significance and treatment of these historic properties, particularly those containing Native Hawaiian burials. As part of this inventory survey consultation effort, Fifield Companies and their consultant, Ku'iwalu, has held a project-related informational presentation with the O'ahu Island Burial Council (11 October 2006) and sought input from potential lineal and cultural descendants for these burials. A project-related consultation letter similar to this will be sent to the Office of Hawaiian Affairs with a similar request for consultation/comment. A formal presentation will be made before the Oahu Island Burial Council on our findings at their earliest opportunity. A project-specific cultural impact assessment (Mitchell and Hammatt 2006) was recently prepared to identify cultural issues and potential impacts to ongoing cultural practices related to the development project.

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The project's archaeological inventory survey fieldwork was carried out in September and October 2006. Background research confirmed that that the project area's surface architecture was less than 50 years old. With no potential for surface historic properties, the archaeological inventory survey investigation focused on locating any subsurface historic properties through a program of backhoe and hand excavation test trenching. The locations of the thirty-five trenches that were excavated are shown on the attached aerial photograph of the project area. Also shown are the locations of the three historic properties found during the inventory survey investigation. These historic properties are briefly described below. State inventory of historic property (SIHP) numbers will be assigned to these historic properties in the project's archaeological inventory survey report.

CSH 1 consists of a single human burial discovered Sept. 14, 2006 in trench #3. Stratigraphy in trench 3 consists of three layers of gravel and/or terrigenous fill sediment (Strat. Ia-Ic), over lying a remnant sand A horizon (the pre-fill land surface--Strat. II), over lying jaucas sand (Strat. III). The burial was discovered during hand excavation within the underlying jaucas sand layer, approximately 105 cm below the current land surface. There was no evidence of a pit cut down from overlying sediments. No artifacts and/or grave goods were observed in association with the burial. There was no indication of a coffin or other Western-type burial practices. As little as possible of the skeleton was exposed, but based on what was observed, the burial appears to be a complete, primary burial. Based on the position of the skeletal elements observed, it appears that the burial was in flexed position. Based on the available evidence, including the project area's cultural context, the burial is most likely traditional Native Hawaiian. SHPD has made a formal ethnicity determination of most likely Native Hawaiian for this burial.

CSH 2 consists of an ephemeral subsurface cultural deposit comprised of 11 documented subsurface features associated with a buried A-horizon. This A-horizon (Strat. II) was the old land surface prior to the importation of fill sediments (Strat. I) into the project area. The cultural features associated with the A- horizon are modest, consisting of shallow and narrow post holes and pit features, most containing rusted metal and glass, that protrude downward from the A-horizon into the underlying jaucas sand deposit (Strat. III). One of the features sampled contained fairly abundant charcoal and what appears to be marine shell food remains. A charcoal sample from this feature was sent for radiocarbon dating analysis to determine if this feature resulted from prehistoric activity. Based on the fact that most of the features contained historic artifacts, it appears that CSH 2 resulted from historic activity; the radiocarbon dating results will help better establish when the subsurface cultural layer accumulated.

CSH 3 consists of a single human burial discovered Oct. 5, 2006 in trench #29. Stratigraphy in trench 29 consists of a modern sand A horizon (the present land surface--Strat. I), over lying jaucas sand (Strat. II). The burial was discovered during hand excavation within the underlying jaucas sand layer, approximately 50 cm below the current land surface. There was no evidence of a pit cut down from overlying Strat. I. No artifacts and/or grave goods were observed in association with the burial. There was no indication of a coffin or other Western-type burial practices. As little as possible of the skeleton was exposed. The burial is located near the water table and is in a poor state of preservation. A human humerus fragment and various other bone fragments were identified. There is no conclusive information regarding burial position. Based on the available evidence, including the project area's cultural context and the results of past archaeological investigations in the vicinity, the burial is most likely traditional Native Hawaiian. SHPD has made a formal ethnicity determination of most likely Native Hawaiian for this burial.

CSH 1 and 3, the burial deposits, are recommended eligible to the Hawai'i Register under criteria D, for their information content, and E, for their traditional cultural significance to Native Hawaiians. Proposed mitigation for these previously identified burial deposits will consist of the preparation of a burial treatment plan for consideration of SHPD and the O'ahu Island Burial Council. This burial treatment plan will propose to preserve in place CSH 1 and relocated CSH 3 to the location of CSH 1. Additionally, proposed mitigation will include an archaeological monitoring program to help identify and properly treat any additional burials located during the project's construction.

CSH 2, the subsurface cultural layer, is recommended eligible to the Hawai Register under criterion D, for its information content. The geographic extent and types of features that make up this ephemeral historic property have been duly recorded as part of the project's inventory survey. Proposed mitigation for this historic property is an archaeological monitoring program that will help identify and document any additional features of CSH 2.

I hope the attached summary provides the information required for Hui Mālama to comment on the inventory survey findings and the proposed historic property significance assessments and treatment. Per the requirements of HAR Chapter 13-284-6, and 284-8, CSH is particularly interested in Hui Mālama's input and comment regarding the significance and treatment of the buried cultural deposits, particularly the Native Hawaiian inhumations.

Thank you very much for your assistance with this matter. Please contact me with any questions.

Sincerely,
Cultural Surveys Hawai'i, Inc.

Matt McDermott
Projects Manager
(email: mmcdermott@culturalsurveys.com)

Attachment

C: Ben Ortega and Tim O'Brien, W/ attachment, Fifield Companies; Dawn Chang, W/ attachment, Ku'iwalu

Mitchell, Aulii and Hallett H. Hammatt
2006 *Cultural Impact Assessment Of a 2.3-acre Project Area, Waikīkī Ahupua'a, Kona District, O'ahu (TMK 2-6-13: 1,3,4,7,8,9,11, and 12)*. Job Code: WAIKI 4. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Office of Hawaiian Affairs Consultation

Cultural Surveys Hawai'i Inc.
Archaeological and Cultural Impact Studies
Hallett H. Hammatt, Ph.D., President

Providing Excellence In Cultural Resource Management

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Lawai, HI 96765
Ph.: (808) 245-4883

CSH Job Code: WAIKI 6

2 November 2006

Mr. Clyde W. Nāmu'o
Administrator
State of Hawai'i Office of Hawaiian Affairs (OHA)
711 Kapi'olani Boulevard, Suite 500
Honolulu, Hawai'i 96813

Subject: CSH's request to OHA for cultural consultation and/or comment regarding the archaeological inventory survey fieldwork results, historic property significance evaluations, and proposed historic property treatment/mitigation for the Fifield Companies' Allure Development, Waikiki, Kona, Oahu, TMK [1] 2-6-013:001, 003, 004, 007, 008, 009, 011 and 012.

Dear Mr. Nāmu'o:

In compliance with the State Historic Preservation Division (SHPD)-approved archaeological inventory survey plan for the project, Cultural Surveys Hawai'i, Inc. (CSH) recently completed fieldwork for an archaeological inventory survey associated with Fifield Companies' proposed 2.3-acre Allure Development. This residential condominium development with associated parking and commercial space is proposed for the site of the former Wave Waikīkī nightclub, at the corner of Kalākaua Avenue and Ena Road, refer the to attached areal photograph of the project area.

With this letter, CSH is providing OHA with a summary of the archaeological inventory survey fieldwork results and the significance assessments and mitigation recommendations for the three historic properties located within the project area. Two of these historic properties consist of human skeletal remains, each appears to be a single individual, that have been determined by the SHPD, based on available evidence, to be most likely Native Hawaiian. Accordingly, these historic properties are recommended eligible to the Hawai'i Register of Historic Places (Hawai'i Register) under criterion E, for their traditional cultural significance to Native Hawaiians. Fifield Companies' cultural consultants, Ku'iwalu, have briefed Mr. Kai Markell, of your office, on this project.

Pursuant to Hawai'i Administrative Rules (HAR) Chapter 13-284-6 and 13-276-5, CSH is hereby seeking OHA's input regarding the significance and treatment of these historic properties, particularly those containing Native Hawaiian burials. As part of this inventory survey consultation effort, Fifield Companies and their consultant, Ku'iwalu, has held a project-related informational presentation with the O'ahu Island Burial Council (11 October 2006) and sought input from potential lineal and cultural descendants for these burials. A project-related consultation letter similar to this will be sent to *Hui Malama I Na Kupuna 'O Hawai'i Nei* with a similar request for consultation/comment. A formal presentation will be made before the Oahu Island Burial Council on our findings at their earliest opportunity. A project-specific cultural impact assessment (Mitchell and Hammatt 2006) was recently prepared to identify cultural issues and potential impacts to ongoing cultural practices related to the development project.

www.culturalsurveys.com info@culturalsurveys.com

The project's archaeological inventory survey fieldwork was carried out in September and October 2006. Background research confirmed that that the project area's surface architecture was less than 50 years old. With no potential for surface historic properties, the archaeological inventory survey investigation focused on locating any subsurface historic properties through a program of backhoe and hand excavation test trenching. The locations of the thirty-five trenches that were excavated are shown on the attached aerial photograph of the project area. Also shown are the locations of the three historic properties found during the inventory survey investigation. These historic properties are briefly described below. State inventory of historic property (SIHP) numbers will be assigned to these historic properties in the project's archaeological inventory survey report.

CSH 1 consists of a single human burial discovered Sept. 14, 2006 in trench #3. Stratigraphy in trench 3 consists of three layers of gravel and/or terrigenous fill sediment (Strat. Ia-Ic), over lying a remnant sand A horizon (the pre-fill land surface--Strat. II), over lying jaucas sand (Strat. III). The burial was discovered during hand excavation within the underlying jaucas sand layer, approximately 105 cm below the current land surface. There was no evidence of a pit cut down from overlying sediments. No artifacts and/or grave goods were observed in association with the burial. There was no indication of a coffin or other Western-type burial practices. As little as possible of the skeleton was exposed, but based on what was observed, the burial appears to be a complete, primary burial. Based on the position of the skeletal elements observed, it appears that the burial was in flexed position. Based on the available evidence, including the project area's cultural context, the burial is most likely traditional Native Hawaiian. SHPD has made a formal ethnicity determination of most likely Native Hawaiian for this burial.

CSH 2 consists of an ephemeral subsurface cultural deposit comprised of 11 documented subsurface features associated with a buried A-horizon. This A-horizon (Strat. II) was the old land surface prior to the importation of fill sediments (Strat. I) into the project area. The cultural features associated with the A- horizon are modest, consisting of shallow and narrow post holes and pit features, most containing rusted metal and glass, that protrude downward from the A-horizon into the underlying jaucas sand deposit (Strat. III). One of the features sampled contained fairly abundant charcoal and what appears to be marine shell food remains. A charcoal sample from this feature was sent for radiocarbon dating analysis to determine if this feature resulted from prehistoric activity. Based on the fact that most of the features contained historic artifacts, it appears that CSH 2 resulted from historic activity; the radiocarbon dating results will help better establish when the subsurface cultural layer accumulated.

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CSH 2, the subsurface cultural layer, is recommended eligible to the Hawai Register under criterion D, for its information content. The geographic extent and types of features that make up this ephemeral historic property have been duly recorded as part of the project's inventory survey. Proposed mitigation for this historic property is an archaeological monitoring program that will help identify and document any additional features of CSH 2.

I hope the attached summary provides the information you require to comment on the inventory survey findings and the proposed historic property significance assessments and treatment. Per the requirements of HAR Chapter 13-284-8, CSH is particularly interested in OHA's input and comment regarding the significance and treatment of the buried cultural deposits, particularly the Native Hawaiian inhumations.

Thank you very much for your assistance with this matter. Please contact me with any questions.

Sincerely,
Cultural Surveys Hawai'i, Inc.

Matt McDermott
Projects Manager
(email: mmcdermott@culturalsurveys.com)

Attachment

C: Ben Ortega and Tim O'Brien, W/ attachment, Fifield Companies; Dawn Chang, W/ attachment, Kuiwalu; Kai Markell, Office of Hawaiian Affairs, W/ attachment

Mitchell, Aulii and Hallett H. Hammatt
2006 *Cultural Impact Assessment Of a 2.3-acre Project Area, Waikīkī Ahupua'a, Kona District, O'ahu (TMK 2-6-13: 1,3,4,7,8,9,11, and 12).* Job Code: WAIKI 4. Cultural Surveys Hawai'i, Inc., Kailua, Hawai'i.

Appendix F Inventory Survey Plan Acceptance Letter

LINDA LINGLE
GOVERNOR OF HAWAII

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

ROBERT K. MASUDA
DEPUTY DIRECTOR - LAND

DEAN NAKANO
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
STATE HISTORIC PRESERVATION DIVISION
601 KAMOKILA BOULEVARD, ROOM 555
KAPOLEI, HAWAII 96707

July 17, 2006

LOG NO: 2006.2424
DOC NO: 0607AJ18
Archaeology

Mr. David Shideler
Cultural Surveys Hawai'i
P.O. Box 1114
Kailua, Hawai'i 96734

Dear Mr. Shideler:

SUBJECT: **Chapter 6E-42 Historic Preservation Review –**
Revised Archaeological Inventory Survey Plan for a 2.3-acre Project Area
Waikīkī Ahupua'a, Honolulu [Kona] District, Island of O'ahu
TMK: (1) 2-6-013:001, 003, 004, 007, 008, 009, 011 & 012

Thank you for submitting the revised report by Tulchin *et al.* (2006), which we received on July 14, 2006. In a letter dated July 5, 2006 (LOG NO: 2006.2226; DOC NO: 0606AJ33), we asked for one, minor, editorial revision to the archaeological inventory survey plan, which you have made to our satisfaction.

The archaeological inventory survey plan is accepted as fulfilling the requirements of Hawai'i Administrative Rules (HAR) 13-13-284.

Please contact Mr. Adam Johnson at (808) 692-8015 if you have any questions or concerns regarding this letter.

Aloha,

Melanie Chinen, Administrator
State Historic Preservation Division

AJ:cmm

APPENDIX VIII

ENVIRONMENTAL NOISE ASSESSMENT

D. L. ADAMS ASSOCIATES, LTD.
Consultants in Acoustics and Performing Arts Technologies

Environmental Noise Assessment Report
Waikiki Allure Condominiums
Waikiki, Oahu, Hawaii

June 2006

DLAA Project No. 06-32

Prepared for:
Fifield Companies
Honolulu, Hawaii

970 N. KALAHEO AVE. • SUITE A311 • KAILUA, HAWAII 96734
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APPENDIX

1.0 EXECUTIVE SUMMARY

1.1 The proposed high rise condominium development is approximately 100,217 square feet and located on the corner of Kalakaua Avenue and Ena Road in Waikiki, Hawaii. Approximately 300 residential units are planned for the 35 story condominium building. A commercial building with restaurant facilities is also planned and will be located adjacent to the residential building.

1.2 The project area currently experiences high noise levels typical of an urban environment. Noise measurements taken on the existing project property show an average day-night level, L_{dn}, of 67 dBA. These noise levels are above both the current and future EPA noise design goal of $L_{dn} \leq 65$ dBA and $L_{dn} \leq 55$ dBA, respectively.

1.3 During the project construction, the dominant noise sources will likely be pile drivers and earth moving equipment, such as bulldozers and diesel powered trucks. Noise from construction activities will occur on the project site. Noise from construction activities should be short term and must comply with State of Hawaii Community Noise Control Rules and a construction noise permit issued by the Department of Health.

1.4 The results of the vehicular traffic noise analyses show negligible increases in traffic noise levels due to the project. In addition, all existing and future predicted noise levels are expected to be below the FHWA/HDOT maximum noise limit of 67 dBA. Therefore, the project is not expected to produce a significant traffic noise impact.

2.0 PROJECT DESCRIPTION

The proposed high rise condominium development is approximately 100,217 square feet and located on the corner of Kalakaua Avenue and Ena Road in Waikiki, Hawaii, as shown in Figure 1. Two buildings are planned for development with residential and commercial uses. The two story commercial building will be located near the northeast property line and will be accessible from Kalakaua Avenue. The residential building is expected to be 35 stories high, with approximately 315 apartment units on the upper thirty levels and parking on the first five levels. The project site currently contains several unoccupied commercial and residential buildings and vacant lots that will be razed for the new development.

3.0 NOISE STANDARDS

Various local and federal agencies have established guidelines and standards for assessing environmental noise impacts and set noise limits as a function of land use. A brief description of common acoustic terminology used in these guidelines and standards is presented in Appendix A.

3.1 State of Hawaii, Community Noise Control

The State of Hawaii Community Noise Control Rule [Reference 1] defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to *stationary* noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc. The Community Noise Control Rule does not address most *moving* sources, such as vehicular traffic noise, air traffic noise, or rail traffic noise. However, the Community Noise Control Rule does regulate noise related to agricultural, construction, and industrial activities, which may not be stationary.

The maximum permissible noise levels are enforced by the State Department of Health (DOH) for any location at or beyond the property line and shall not be exceeded for more than 10% of the time during any 20-minute period. The specified noise limits which apply are a function of the zoning and time of day as shown in Figure 2. With respect to mixed zoning districts, the rule specifies that the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level. In determining the maximum permissible sound level, the background noise level is taken into account by the DOH.

3.2 U.S. Federal Highway Administration (FHWA)

The FHWA defines four land use categories and assigns corresponding maximum hourly equivalent sound levels, $L_{eq(h)}$, for traffic noise exposure [Reference 2], which are listed in Figure 3. For example, Category B, defined as picnic and recreation areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals, has a corresponding maximum exterior L_{eq} of 67dBA and a maximum interior L_{eq} of 52 dBA. These limits are viewed as design goals, and all projects meeting these limits are deemed in conformance with FHWA noise standards.

3.3 Hawaii Department of Transportation (HDOT)

The HDOT has adopted FHWA's design goals for traffic noise exposure in its noise analysis and abatement policy [Reference 3]. According to the policy, a traffic noise impact occurs when the predicted traffic noise levels "approach" or exceed FHWA's design goals or when the predicted traffic noise levels "substantially exceed the existing noise levels." The policy also states that "approach" means at least 1 dB less than FHWA's design goals and "substantially exceed the existing noise levels" means an increase of at least 15 dB.

3.4 U.S. Environmental Protection Agency (EPA)

The U.S. EPA has identified a range of yearly day-night equivalent sound levels, L_{dn}, sufficient to protect public health and welfare from the effects of environmental noise [Reference 4]. The EPA has established a goal to reduce exterior environmental noise to an L_{dn} not exceeding 65 dBA and a future goal to further reduce exterior environmental noise to an L_{dn} not exceeding 55 dBA. Additionally, the EPA states that these goals are not intended as regulations as it has no authority to regulate noise levels, but rather they are intended to be viewed as levels below which the general population will not be at risk from any of the identified effects of noise.

4.0 EXISTING ACOUSTICAL ENVIRONMENT

Two types of noise measurements were conducted to assess the existing acoustical environment in the vicinity of the project location. The first noise measurement type consisted of continuous long-term ambient noise level measurements (Location L1), as shown in Figure 1. The second type of noise measurement was short-term and included traffic counts (Location S1 and S2), also shown in Figure 1. The purpose of the short-term noise measurements and corresponding traffic counts were to calibrate a traffic noise prediction model. All noise measurements were conducted between June 12, 2006 and June 15, 2006.

4.1 Noise Measurement Procedure

Long-Term Noise Measurement Procedure

Continuous, hourly, statistical sound levels were recorded for 72 hours. The measurements were taken using a Larson-Davis Laboratories, Model 820, Type-1 Sound Level Meter together with a Larson-Davis, Model 2560 Type-1 Microphone. Calibration was checked before and after the measurements with a Larson-Davis Model CAL200 calibrator. Both the sound level meter and the calibrator have been certified by the manufacturer within the recommended calibration period.

The microphone was mounted on a tripod at approximately 3 feet above the roof of the existing building on the site. The microphone had a direct line of sight to Kalakaua Avenue. A windscreen covered the microphone during the entire measurement period. The sound level meter was secured in a weather resistant case.

Short-Term Noise Measurement Procedure

An approximate 30-minute equivalent sound level, L_{eq}, was measured. Vehicular traffic counts and traffic mix were documented during the measurement period. The noise measurement was taken using a Larson-Davis Laboratories, Model 824, Type-1 Sound Level Meter together with a Larson-Davis, Model 2541 Type-1 Microphone. Calibration was checked before and after the measurements with a Larson-Davis Model CAL200 calibrator. Both the sound level meter and the calibrator have been certified by the manufacturer within the recommended calibration period.

The microphone and sound level meter were mounted on a tripod, approximately 6 feet above grade. A windscreen covered the microphone during the entire measurement period.

4.2 Noise Measurement Locations

Long-Term Noise Measurement Locations

Location L1: Positioned above the roofline of the former Wave Waikiki Building, on the lanai and approximately 30 feet above grade. The building is located in the middle of the proposed development site, approximately 60 feet south of the edge-of-pavement of Kalakaua Avenue.

Short-Term Noise Measurement Locations

Location S1: Positioned on Makaoe Lane, approximately 32 feet south of the edge-of-pavement of Kalakaua Avenue.

Location S2: Positioned adjacent to Hobron Lane, approximately 30 feet south of the edge-of-pavement.

4.3 Long-Term Noise Measurement Results

The sound levels are relatively dynamic and depend significantly on the vehicular traffic patterns of Kalakaua Avenue. The daytime (7:00 AM to 10:00 PM) hourly equivalent sound levels, L_{eq}, ranges from 60 dBA to 69 dBA. The nighttime (10:00 PM to 7:00 AM) L_{eq} ranges from 54 dBA to 66 dBA. The average day-night level, L_{dn}, was calculated from the measured noise levels to be 67 dBA, which is typical of an urban environment.

The dominant and secondary noise sources are described below:

Noise Sources

Dominant:	Vehicular traffic noise from Kalakaua Avenue.
Secondary:	Typical urban noises such as sirens, car horns, etc., pedestrians, aircraft flyovers, wind, birds.

5.0 POTENTIAL NOISE IMPACTS DUE TO THE PROJECT

5.1 Project Construction Noise

Development of project areas will involve excavation, grading, pile driving, and other typical construction activities during construction. The various construction phases of the project may generate significant amounts of noise. The actual noise levels produced during construction will be a function of the methods employed during each stage of the construction process. Typical ranges of construction equipment noise are shown in Figure 4. Pile driving and earthmoving equipment, e.g., bulldozers and diesel-powered trucks, will probably be the loudest equipment used during construction.

5.2 Project Generated Stationary Mechanical Noise & Compliance with State of Hawaii Community Noise Control Rule

The new buildings will incorporate stationary mechanical equipment that is typical of residential and commercial buildings. Expected mechanical equipment may include air handling equipment, condensing units, chillers, emergency generators, exhaust fans, etc. Noise from this mechanical equipment and other stationary equipment must meet the State DOH noise rules, which stipulate maximum permissible noise limits at the property line. These noise limits are 60 dBA during the daytime hours (7:00 am to 10:00 pm) and 50 dBA during the night time hours (10:00 pm to 7:00 am) for multi-family housing. Mechanical noise from the two story commercial building must also comply with the State DOH noise rules at the property line and at the new condominium building.

5.3 Compliance with FHWA/HDOT Noise Limits

A vehicular traffic noise analysis was completed for the existing conditions, future year 2009 projections without the Waikiki Allure project, and future year 2009 projections with the project using the FHWA Traffic Noise Model Look-up Tables Software Version 2.5 (2004) [Reference 6]. The traffic noise analysis is based on the traffic counts provided by the Traffic Consultant [Reference 7]. Vehicular traffic noise levels were calculated for 3 locations, Locations A, B, and C, as shown in Figure 1. The short-term noise measurement and corresponding traffic counts were used to calibrate the software at the noise prediction locations. The results of the traffic noise analysis for the existing and future year projections are described below and summarized in Table 3.

5.3.1 Vehicular Traffic Noise Impacts on the Surrounding Community

Peak hour traffic volumes on the streets in the vicinity of the project site, e.g., Ala Wai Boulevard, Ena Road, and Lipeepee Street, are not projected to increase by a significant amount due to the Waikiki Allure project [Reference 7]. Therefore, residential buildings along these roads will not experience a significant increase in traffic noise due to the project.

Noise Prediction Location A

Future year traffic projections show that traffic noise levels at the residential buildings located approximately 40 feet from Hobron Lane will be below the FHWA/DOT maximum noise limit of 67 dBA both with and without the project. The increase in traffic noise due to the Waikiki Allure project is expected to be negligible.

Noise Prediction Locations B

Future year traffic projections with and without the Waikiki Allure project show that traffic noise levels at the Landmark residential and commercial building, approximately 50 feet mauka of Kalakaua Avenue, will be below the FHWA/DOT maximum noise limit of 67 dBA. The projected increase in traffic noise due to the project is expected to be negligible.

5.3.2 Vehicular Traffic Noise Impacts on the Project

Noise Prediction Locations C

Noise level projections at the proposed Waikiki Allure Condominiums are predicted to be below the FHWA/HDOT maximum noise limits. Therefore, a significant noise impact on the project due to vehicular traffic noise is not expected.

5.4 Compliance with EPA Noise Guidelines

The result from the long-term noise measurements conducted at the proposed project site show a calculated average day-night level, L_{dn}, of 67 dBA. Therefore, the noise levels at the proposed Waikiki Allure Condominium site exceed both the current and future EPA design goals. Design of the condominium building should incorporate attenuation measures to reduce noise levels to 45 dBA or less within the residential units. It is important to note that the EPA noise guidelines are design goals and are not enforceable regulations. However, these guidelines and design goals are useful tools for assessing the noise environment.

6.0 NOISE IMPACT MITIGATION

6.1 Mitigation of Construction Noise

In cases where construction noise exceeds, or is expected to exceed the State's "maximum permissible" property line noise levels [Reference 1], a permit must be obtained from the State DOH to allow the operation of vehicles, cranes, construction equipment, power tools, etc., which emit noise levels in excess of the "maximum permissible" levels.

In order for the State DOH to issue a construction noise permit, the Contractor must submit a noise permit application to the DOH, which describes the construction activities for the project. Prior to issuing the noise permit, the State DOH may require action by the Contractor to incorporate noise mitigation into the construction plan. The DOH may also require the Contractor to conduct noise monitoring or community meetings inviting the neighboring residents and business owners to discuss construction noise. The Contractor should use reasonable and standard practices to mitigate noise, such as using mufflers on diesel and gasoline engines, using properly tuned and balanced machines, etc. However, the State DOH may require additional noise mitigation, such as temporary noise barriers, or time of day usage limits for certain kinds of construction activities.

Specific permit restrictions for construction activities [Reference 1] are:

> "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels ... before 7:00 a.m. and after 6:00 p.m. of the same day, Monday through Friday."
>
> "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels... before 9:00 a.m. and after 6:00 p.m. on Saturday."
>
> "No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays."

The use of hoe rams and jack hammers 25 lbs. or larger, high pressure sprayers, chain saws, and pile drivers are restricted to 9:00 a.m. to 5:30 p.m., Monday through Friday. In addition, construction equipment and on-site vehicles or devices whose operations involve the exhausting of gas or air, excluding pile hammers and pneumatic hand tools weighing less than 15 pounds, must be equipped with mufflers [Reference 1].

The DOH noise permit does not limit the noise level generated at the construction site, but rather the times at which noisy construction can take place. Therefore, noise mitigation for construction activities should be addressed using project management, such that the time restrictions within the DOH permit are followed.

6.2 Mitigation of Project Generated Mechanical Noise

The design of the proposed residential building should give consideration to controlling the noise emanating from stationary mechanical equipment, such as chillers, compressors, air conditioning units, etc. so as to comply with the State of Hawaii Community Noise Control rules [Reference 1]. Noisy equipment should be located away from neighbors and residential units, as much as is practical. Enclosed mechanical rooms may be required for some equipment.

In order for the commercial building to be compatible with the adjacent residential areas, noise mitigation measures should be implemented. Typical noise mitigation for stationary equipment such as air-conditioning and ventilation equipment, refrigerators, compressors, etc, includes mufflers, silencers, acoustical enclosures, noise barrier walls, etc. However, other noise sources may include non-stationary equipment such as trucks loading and unloading supplies. Consideration could also be given to the layout of the commercial areas to meet DOH noise regulations and reduce the noise impact. For example, noisier activities, such as traffic access and loading areas, should be located away from nearby residential areas. Restrictions may need to be placed on all commercial uses allowed in the commercial area in order to strictly control development of potential noise producing industries within the commercial area. For example, sale and lease documents for the commercial property should disclose and emphasize the significance of the DOH noise regulations with respect to the abutting residential areas.

6.3 Mitigation of Vehicular Traffic Noise

The traffic noise analysis shows no significant noise impacts to the surrounding community, or at the proposed Waikiki Allure condominiums. Therefore, noise mitigation for vehicular traffic noise is not required.

REFERENCES

1. Chapter 46, *Community Noise Control*, Department of Health, State of Hawaii, Administrative Rules, Title 11, September 23, 1996.

2. *Department of Transportation, Federal Highway Administration Procedures for Abatement of Highway Traffic Noise*, Title 23, CFR, Chapter 1, Subchapter J, Part 772, 38 FR 15953, June 19, 1973; Revised at 47 FR 29654, July 8, 1982.

3. *Noise Analysis and Abatement Policy*, Department of Transportation, Highways Division, State of Hawaii, June 1977.

4. *Toward a National Strategy for Noise Control*, U.S. Environmental Protection Agency, April 1977.

5. *Department of Housing and Urban Development Environmental Criteria and Standards*, Title 24 CFR, Part 51, 44 FR 40860, July 12, 1979, Amended by 49 FR 880, January 6, 1984.

6. *Federal Highway Administration's Traffic Noise Model Look-up Tables Software*, Ver. 2.5; U.S. Department of Transportation, December 17, 2004.

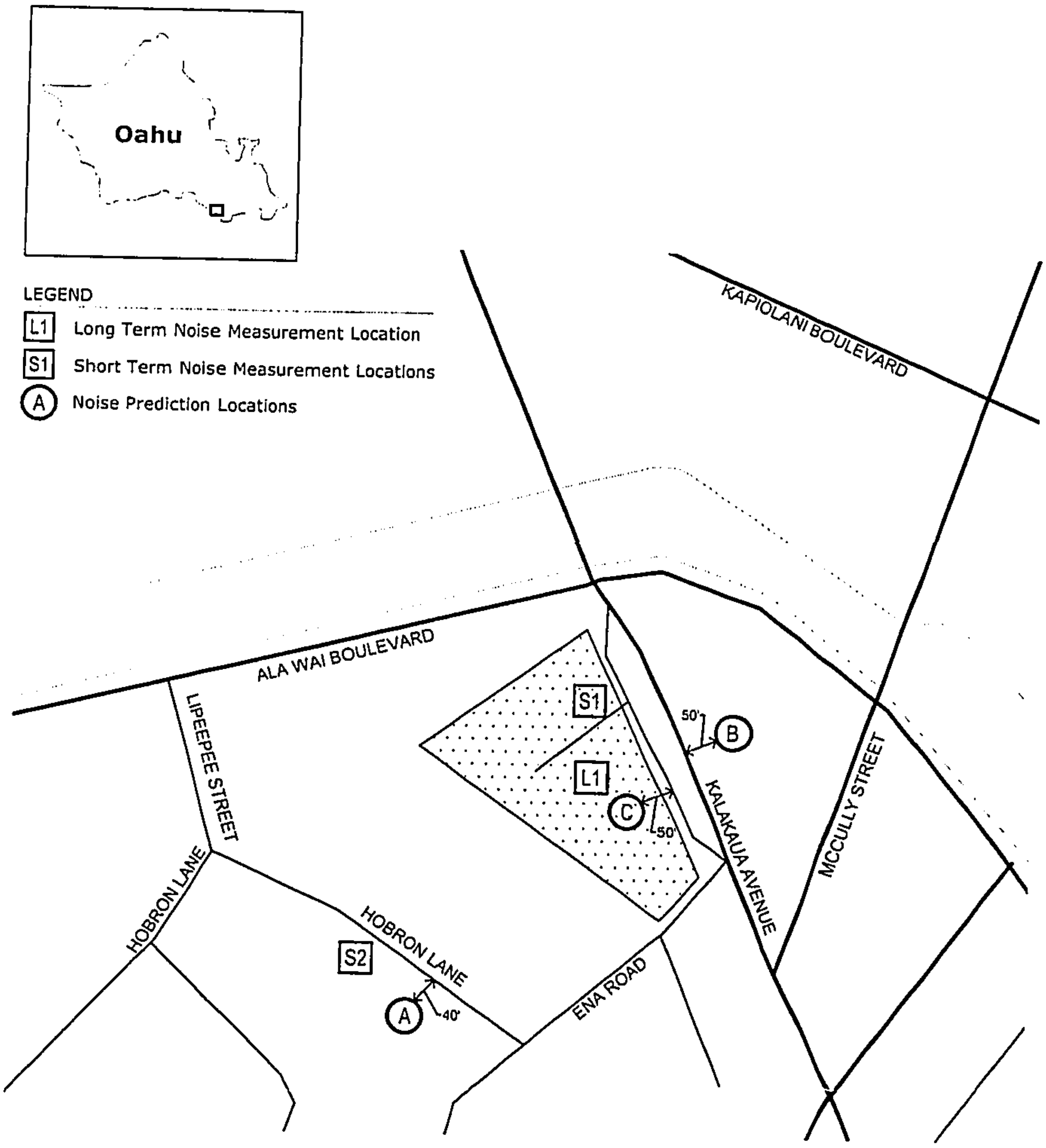
7. *Traffic Impact Report - Waikiki Allure Condominium*, Wilson Okamoto Corporation, May 2006.

TABLE 1:
Predicted Traffic Noise Levels With and Without the Project and Resulting Increases Due to the Project+

Noise levels shown in the table are based on peak-hour traffic volumes, and are expressed in A-weighted decibels (dBA).

	Location A*		Location B*		Location C*	
	AM	PM	AM	PM	AM	PM
Existing (Calculated)	62.8	63.0	59.2	57.0	62.3	62.4
Future Without Project (2009)	63.5	63.7	60.0	57.7	62.9	63.1
Future With Project (2009)	63.5	64.0	60.3	57.8	63.0	63.3
Future Increase Without Project (2009)	0.7	0.7	0.8	0.7	0.6	0.7
Future Increase With Project (2009)	0.7	1.0	1.1	0.8	0.7	0.9
Future Increase Due to Project (2009)	**0.0**	**0.3**	**0.3**	**0.1**	**0.1**	**0.2**

+ The noise level calculations were based on the traffic study provided by the Traffic Consultant [Reference 12].
* Location A - 40 feet south of Hobron Lane edge of pavement
Location B - 50 feet north of Kalakaua Avenue edge of pavement
Location C - 50 feet south of Kalakaua Avenue edge of pavement



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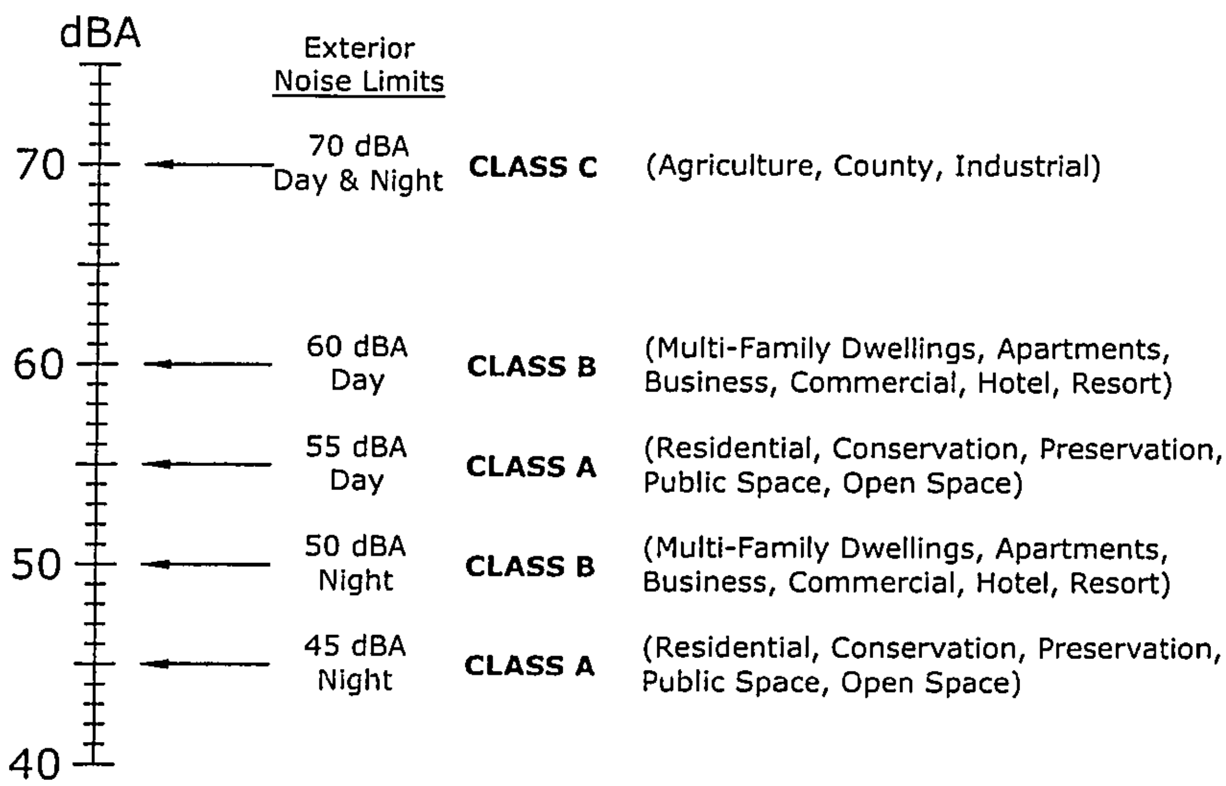
Noise Measurement and Prediction Locations

Waikiki Allure Condominiums

Not to Scale

Date	Project No.	Drawn By	Figure No
June 2006	06-32	DFD	1

Zoning District	Day Hours (7 AM to 10 PM)	Night Hours (10 PM to 7 AM)
CLASS A Residential, Conservation, Preservation, Public Space, Open Space	55 dBA (Exterior)	45 dBA (Exterior)
CLASS B Multi-Family Dwellings, Apartments, Business, Commercial, Hotel, Resort	60 dBA (Exterior)	50 dBA (Exterior)
CLASS C Agriculture, Country, Industrial	70 dBA (Exterior)	70 dBA (Exterior)



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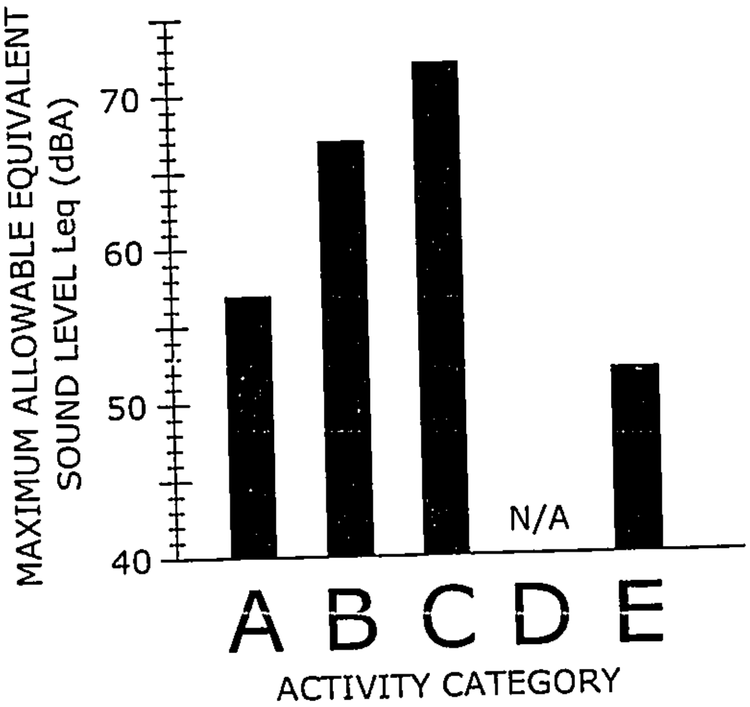
Hawaii Maximum Permissible Sound Levels for Various Zoning Districts

Waikiki Allure Condominium

Not to Scale

Date	Project No.	Drawn By	Figure No
June 2006	06-32	TRB	2

ACTIVITY CATEGORY	ACTIVITY CATEGORY DESCRIPTION	MAXIMUM EQUIVALENT SOUND LEVEL $L_{eq(h)}$
A	LANDS ON WHICH SERENITY AND QUIET ARE OF EXTRAORDINARY SIGNIFICANCE AND SERVE AN IMPORTANT PUBLIC NEED AND WHERE THE PRESERVATION OF THOSE QUALITIES IS ESSENTIAL IF THE AREA IS TO CONTINUE TO SERVE ITS INTENDED PURPOSE.	57 dBA (EXTERIOR)
B	PICNIC AREAS, RECREATION AREAS, PLAYGROUNDS, ACTIVE SPORT AREAS, PARKS, RESIDENCES, MOTELS, HOTELS, SCHOOLS, CHURCHES, LIBRARIES, AND HOSPITALS.	67 dBA (EXTERIOR)
C	DEVELOPED LANDS, PROPERTIES, OR ACTIVITIES NOT INCLUDED IN ACTIVITY CATEGORIES A OR B ABOVE.	72 dBA (EXTERIOR)
D	UNDEVELOPED LAND	N/A
E	RESIDENCES, MOTELS, HOTELS, PUBLIC MEETING ROOMS, SCHOOLS, CHURCHES, LIBRARIES, HOSPITALS, AND AUDITORIUMS.	52 dBA (INTERIOR)



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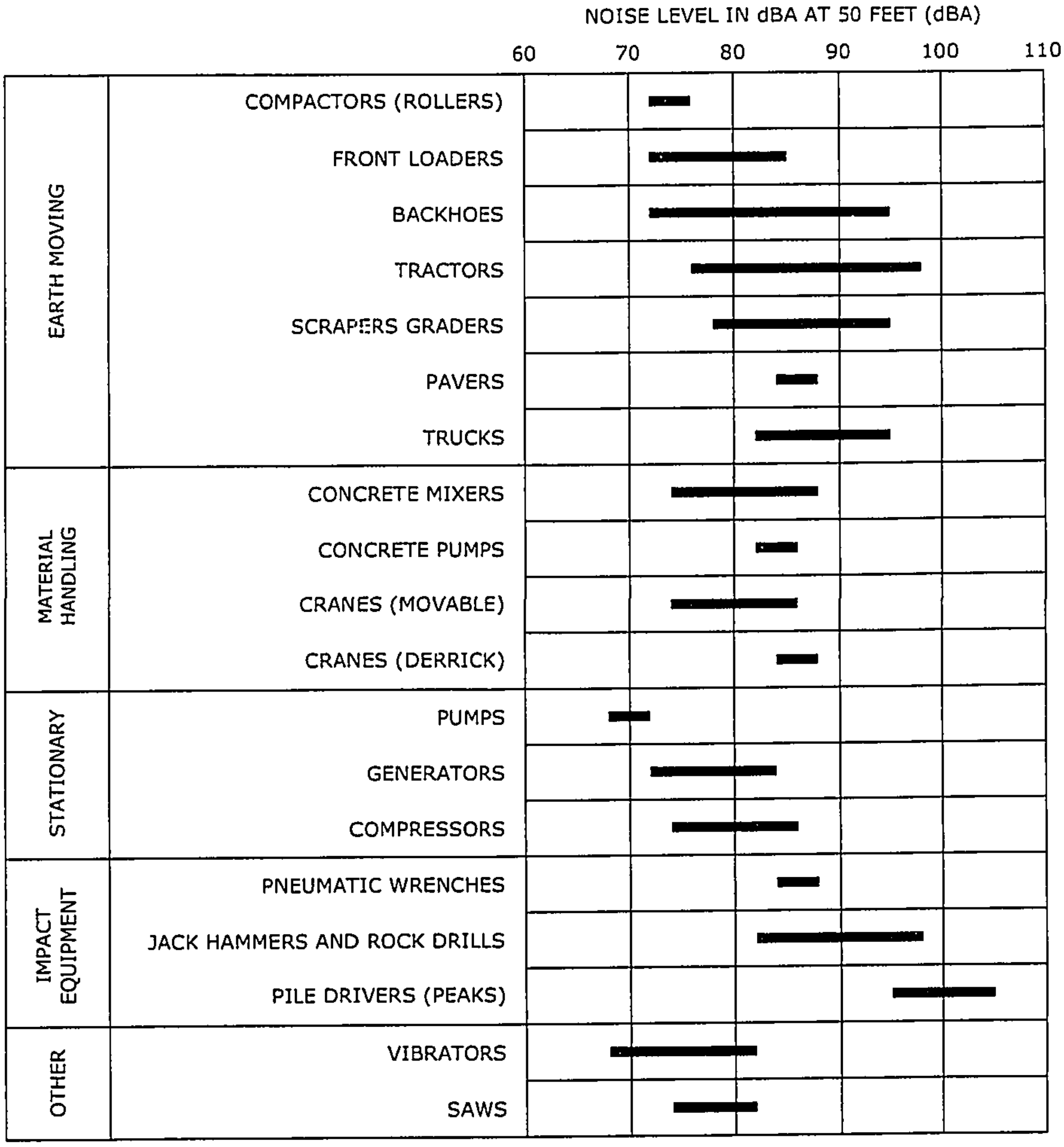
Federal Highways Administration Recommended Equivalent Hourly Sound Levels Based on Land Use

Waikiki Allure Condominium

Not to Scale

Date	Project No.	Drawn By
June 2006	06-32	TRB

Figure No
3



NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES

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Typical Sound Levels from Construction Equipment

Waikiki Allure Condominium

Not to Scale

Date	Project No.	Drawn By	Figure No
June 2006	06-32	TRB	4

APPENDIX A

Acoustic Terminology

Acoustic Terminology

Sound Pressure Level

Sound, or noise, is the term given to variations in air pressure that are capable of being detected by the human ear. Small fluctuations in atmospheric pressure (sound pressure) constitute the physical property measured with a sound pressure level meter. Because the human ear can detect variations in atmospheric pressure over such a large range of magnitudes, sound pressure is expressed on a logarithmic scale in units called decibels (dB). Noise is defined as "unwanted" sound.

Technically, sound pressure level (SPL) is defined as:

$$SPL = 20 \log (P/P_{ref}) \text{ dB}$$

where P is the sound pressure fluctuation (above or below atmospheric pressure) and P_{ref} is the reference pressure, 20 μPa, which is approximately the lowest sound pressure that can be detected by the human ear. For example:

If P = 20 μPa, then SPL = 0 dB
If P = 200 μPa, then SPL = 20 dB
If P = 2000 μPa, then SPL = 40 dB

The sound pressure level that results from a combination of noise sources is not the arithmetic sum of the individual sound sources, but rather the logarithmic sum. For example, two sound levels of 50 dB produce a combined sound level of 53 dB, not 100 dB. Two sound levels of 40 and 50 dB produce a combined level of 50.4 dB.

Human sensitivity to changes in sound pressure level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotions and expectations. However, in general, a change of 1 or 2 dB in the level of sound is difficult for most people to detect. A 3 dB change is commonly taken as the smallest perceptible change and a 6 dB change corresponds to a noticeable change in loudness. A 10 dB increase or decrease in sound level corresponds to an approximate doubling or halving of loudness, respectively.

A-Weighted Sound Level

Studies have shown conclusively that at equal sound pressure levels, people are generally more sensitive to certain higher frequency sounds (such as made by speech, horns, and whistles) than most lower frequency sounds (such as made by motors and engines)[1] at the same level. To address this preferential response to frequency, the A-weighted scale was developed. The A-weighted scale adjusts the sound level in each frequency band in much the same manner that the

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1 D.W. Robinson and R.S. Dadson, "A Re-Determination of the Equal-Loudness Relations for Pure Tones," *British Journal of Applied Physics*, vol. 7, pp. 166 - 181, 1956. (Adopted by the International Standards Organization as Recommendation R-226.

human auditory system does. Thus the A-weighted sound level (read as "dBA") becomes a single number that defines the level of a sound and has some correlation with the sensitivity of the human ear to that sound. Different sounds with the same A-weighted sound level are perceived as being equally loud. The A-weighted noise level is commonly used today in environmental noise analysis and in noise regulations. Typical values of the A-weighted sound level of various noise sources are shown in Figure A-1.

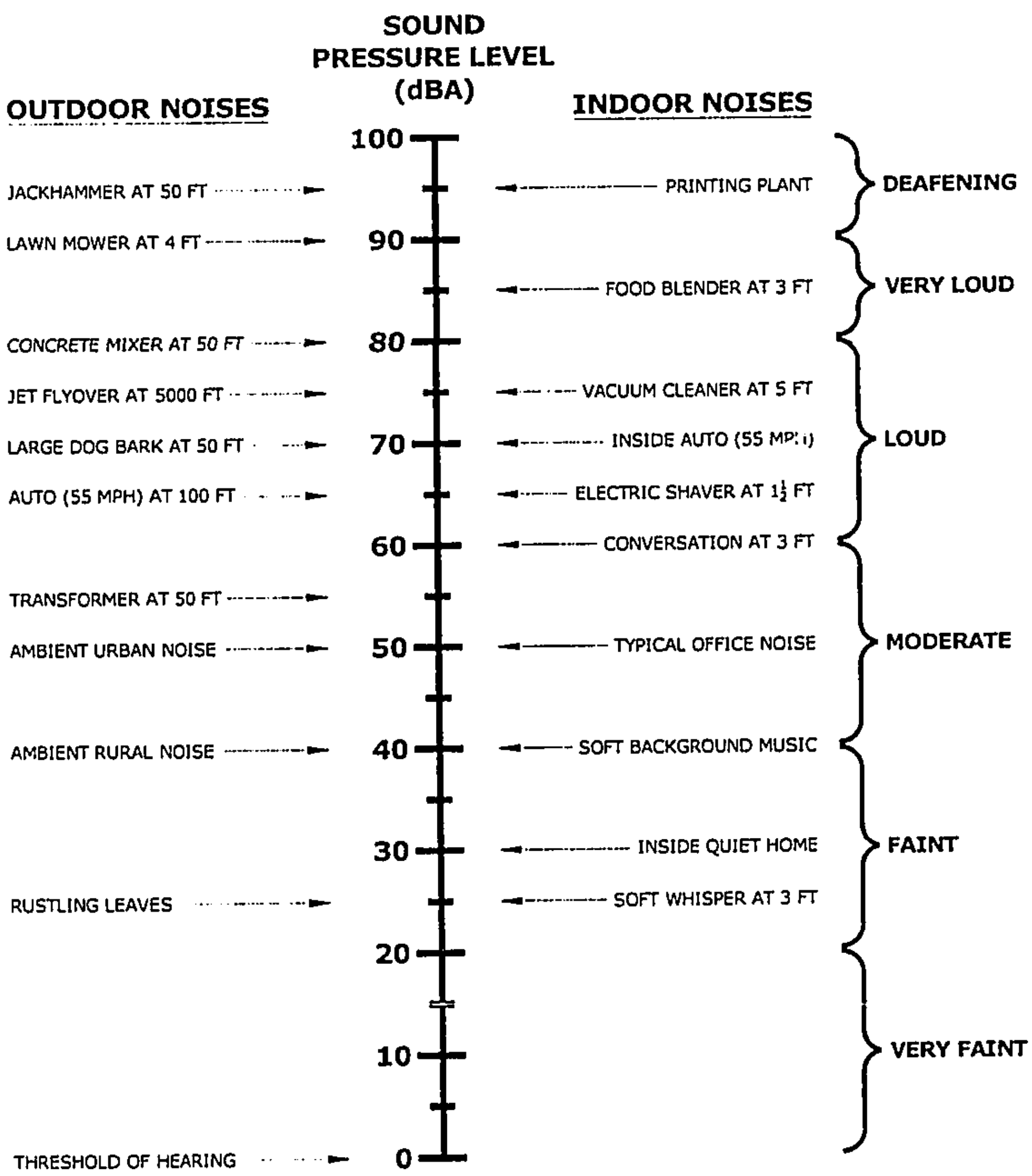

Figure A-1. Common Outdoor/Indoor Sound Levels

Equivalent Sound Level

The Equivalent Sound Level (L_{eq}) is a type of average which represents the steady level that, integrated over a time period, would produce the same energy as the actual signal. The actual *instantaneous* noise levels typically fluctuate above and below the measured L_{eq} during the measurement period. The A-weighted L_{eq} is a common index for measuring environmental noise. A graphical description of the equivalent sound level is shown in Figure A-2.

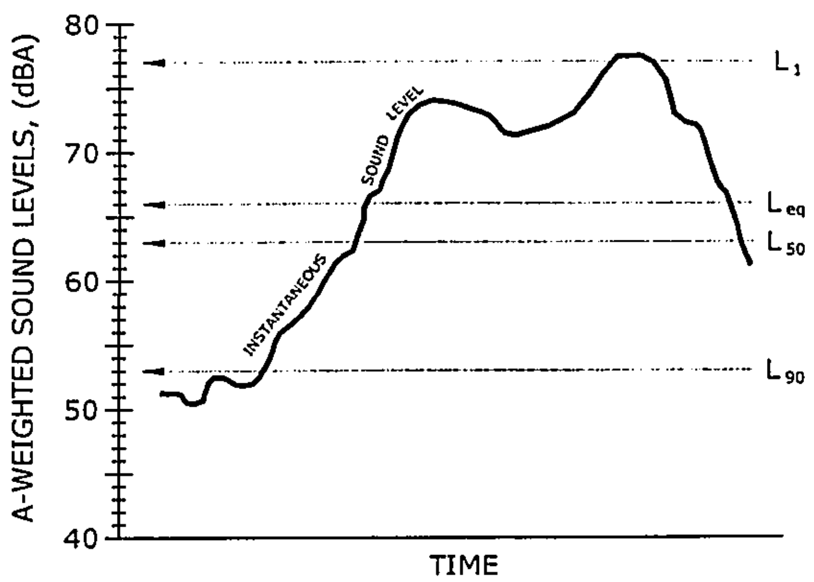

Figure A-2. Example Graph of Equivalent and Statistical Sound Levels

Statistical Sound Level

The sound levels of long-term noise producing activities such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, a statistically-based method of expressing sound or noise levels has been developed. It is known as the Exceedence Level, L_n. The L_n represents the sound level that is exceeded for n% of the measurement time period. For example, L_{10} = 60 dBA indicates that for the duration of the measurement period, the sound level exceeded 60 dBA 10% of the time. Typically, in noise regulations and standards, the specified time period is one hour. Commonly used Exceedence Levels include L_{01}, L_{10}, L_{50}, and L_{90}, which are widely used to assess community and environmental noise. A graphical description of the equivalent sound level is shown in Figure A-2.

Day-Night Equivalent Sound Level

The Day-Night Equivalent Sound Level, L_{dn}, is the Equivalent Sound Level, L_{eq}, measured over a 24-hour period. However, a 10 dB penalty is added to the noise levels recorded between 10 p.m. and 7 a.m. to account for people's higher sensitivity to noise at night when the background noise level is typically lower. The L_{dn} is a commonly used noise descriptor in assessing land use compatibility, and is widely used by federal and local agencies and standards organizations.

APPENDIX IX

LAND USE ORDINANCE STANDARDS

ALLURE WAIKIKI CONDO FOR FIFIELD COMPANIES
OPTION 1B-2
LUO Information and Schematic Design Unit Counts
(Revised August 30, 2006)
(Revised September 1, 2006)
(Revised September 20, 2006)
(Revised October 11, 2006)
(Revised November 7, 2006)
(Revised November 12, 2006)
(Revised November 27, 2006)
(Revised December 6, 2006)
(Revised December 7, 2006)

ARCHITECTS·HAWAII

1. **Zoning:** WSD in Resort Commercial Precinct – 3.5 FAR Max. Density
Permitted Uses: Pkg., Apts., Restaurants, Retail & Others, not hotel
Allowed Height: 320 Ft.

2. **Zoning Lot:** TMK: 2-6-13: Lot 1, 11,707 SF; Lot 3, 10,469 SF; Lot 4, 24,601 SF; Lot 7, 19,819 SF; Lot 8, 4,866 SF; Lot 9, 7,010 SF; Lot 11, 5,027 SF; Lot 12, 10,207 SF; Pau Lane, 2,268 SF; Makaoe Lane, 3,767 SF = 99,741 Total Record

3. **Permissible Floor Area** with Bonuses: (must be high as 4. below)

a. Zoning Lot Area	99,678.00	SF	x	1.75 FAR	=	174,436.50 SF
b. One Half Streets						
1) Kalakaua	19,428.37	SF				
2) Ena Road	2,121.75	SF				
3) One Quarter Intersection	1,035.62	SF				
One-Half Streets	22,585.74	SF	x	1.75 FAR	=	39,525.04 SF
c. Open Space Bonuses						
1) Public Open Space (20% Perimeter OK)						
Kalakaua & Ena Rd Park	12,911.00	SF	x	10 Bonus	=	129,110.00 SF
2) Open Space						
Kalakau@ Ena & Driveway	3,030.00	SF				
Kalakaua Off Porch	869.00	SF				
Kalakaua @ Ala Wai End	9,118.00	SF				
Recreation Area	12,863.00	SF				
	25,880.00	SF	x	5 Bonus	=	129,400.00 SF
3) Arcade – Porch, Side & Rest.	3,564.00	SF	x	3 Bonus	=	10,692.00 SF
Permissible Floor Areas with Bonuses						483,163.54 SF

4. **Maximum Density Floor Area** Based on 3.5 FAR **(this governs)**

a. Zoning Lot Area	99,678.00	SF	x	3.5 FAR =	348,873 SF
b. One-Half Streets	22,585.74	SF	x	3.5 FAR =	79,050.09 SF
Maximum Density Floor Area Based upon 3.5 FAR					427,923.09 SF

FiField Allure Waikiki Condo - Option 1B-2
(Revised December 7, 2006)

		Square Footages		
5. Concept Design Unit Counts		**LUO**	**Gross**	**Cars**
a. Ground Floor			(Approx)	
1) Retail		9,000	9,000	0
2) Lobby, Security, Mail, Elev. & Stairs Service: Management, Mech, Elec. Com, Trash		11,234	11,234	0
3) Truck Loading Areas		0	1,218	0
	Subtotal Ground Floor	20,234	21,452	0
b. 5 Parking Floors (1st through 5th)				
1) 1, 1A & 1B Parking & Ramps		0	36,029	103
2) 2 & 2A Floor Parking		0	32,920	95
3) 3 & 3A Floor Parking		0	40,352	122
4) 4 & 4A Floor Parking		0	42,496	131
5) 5 Floor Parking		0	19,253	49
	Subtotal Parking Floors (342.1 SF/Stall)	0	171,050	500
c. 6th Floor Recreation Deck				
1) Fitness Room/Toilets		2,194	1,663	0
2) Community / Yoga Room w/ Kitchenette & Restroom		1,089	1,093	0
3) Open Deck w/ cabanas, umbrellas & Pool		0	19,566	0
	Subtotal Recreation Deck	3,283	22,322	0

d. 30 Apartment Floors (6th through 35th)

1) 6th Floor (1 Floor)

1 - 1 BR @ 837.0 CSF	=	837 CSF	
8 - 2 BR @ 1,094.0 CSF (Ave)	=	8,849 CSF	
9 Units Per Floor	=	9,586 CSF	
9 Units on 1 Floor	=		9,586 CSF

2) 7th through 23rd (17 Floors)

1 - 1BR @ 837.0 CSF	=	837 CSF	
10 - 2 BR @ 1,095.0 CSF (Ave)	=	10,946 CSF	
11 Units Per Floor	=	11,783 CSF	
187 Units on 17 Floors	=		200,311 CSF

3) 24th through 31st (8 Floors)

7 - 2 BR @ 1,115.0 CSF (Ave)	=	7,805 CSF	
2 - 3 BR @ 1,511.5 CSF (Ave)	=	3,023 CSF	
9 Units Per Floor	=	10,828 CSF	
72 Units on 8 Floors	=		86,624 CSF

4) 32nd through 35th Floors (4 Floors)

6 - 2 BR @ 1,146.0 CSF (Ave) =	6,876 CSF				
2 - 3 BR @ 1,511.5 CSF (Ave) =	3,023 CSF				
8 Units Per Floor =	9,899 CSF				
24 Units on 3 Floors =		40,188 CSF			
5) 300 Total Units in CSF	336,117 CSF • 8341 Efficiency		402,980	402,980	
6) Lanais (Area Update In Progress)			0	29,996	
7) 30 Floors Ext. Corridor			0	22,230	
Subtotal 30 Apartment Floors			402,980	455,206	

e. Roof Level

1) Elevator Machine & Stairs	1,414	1,414	0
2) Cooling Towers / AC Equipment	0	4,852	0
Subtotal Roof Level	1,414	6,266	0
TOTAL PROVIDED	427,914	676,296	500
MAXIMUM DENSITY FLOOR AREA ALLOWED	427,923		
Unused Area	9.0		

Saleable Goal	337,000
Saleable Provided (Retail 9,000 SF + Apt. 336,117 CSF)	345,117

m

Unit Mix Totals

1-Bedroom	18 Units
2-Bedrooms	258 Units
3-Bedrooms	24 Units
Total	300 Units

6. **Parking Spaces:**

a. LUO Requirements:

Apartments	1 Space per Apartment (300 Units)	300 Spaces
Retail	9,000 SF ÷ 800 SF per Space	11 Spaces
	LUO Required Parking	311 Spaces

b. Developer

Apartments	1.56 Spaces per Apartment (300 Units)	469 Spaces
Guest Parking	4.0% x 300 Units	12 Spaces
Retail:	9,000 SF ÷ 480 SF per Space	19 Spaces
	Owner Required Parking	500 Spaces

FiField Allure Waikiki Condo - Option 1B-2
(Revised December 7, 2006)

7. **LUO Required Loading**

a.	Apartment	151 to 300 Units	2 Spaces
b.	Retail	2,000 to 10,000 SF	1 Spaces
		LUO Required Loading Spaces	3 Spaces

8. **Required Yard Setbacks** up to 40 ft. building height

a.	Front Yard on Kalakaua Avenue (average)	20 Ft.
b.	Side Yard adjacent Waipuna (Apartment Precinct Garage < 10 Ft.)	0 Ft.
c.	Rear Yard adjacent 1717 (Apartment Precinct Garage < 20 Ft.)	0 Ft.
d.	Side Yard adjacent Office Associates (Resort-Commercial Precinct)	0 Ft.

9. **Transitional Height Requirement** for 320 ft. building height

a.	In addition to any front, side or rear yard setback	28 Ft.

10. **Park Dedication Required** (lesser of a. or b.)

a.	10% x Maximum Permitted (Density) of 427,923.09 SF =	42,792.31 SF
b.	110 SF x 300 Units	33,000 SF

11. **Park Dedication Supplied**

a.	Kalakaua & Ena Rd (Area A)		15,942.00 SF
b.	Kalakaua @ Ala Wai End (Area B)		6,251.00 SF
c.	Recreation Area (Area C)		9,845.00 SF
		Total Area Supplied	32,038.00 SF
		Short of Requirement	962.00 SF
d.	Other Possible Supplied Areas		
	1) Recreation Facilities Cost ÷ Land Value/SF		
	a) Example: Rec. Fac. Cost of $1,000,000 ÷ $300/SF		3,333.00 SF
		Over Requirement	2,371.00 SF
	2) Rec. Deck Area if City Revises LUO		19,556.00 SF

APPENDIX X

AIR QUALITY

AIR QUALITY STUDY

FOR THE PROPOSED

WAIKIKI ALLURE PROJECT

WAIKIKI, OAHU, HAWAII

Prepared for:

Fifield Companies

June 2006

B.D. NEAL & ASSOCIATES

*Applied Meteorology * Air Quality * Computer Science*

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CONTENTS

FIGURES

TABLES

TABLES (cont.)

1.0 SUMMARY

Fifield Companies is proposing to develop the Waikiki Allure Condominium in Waikiki, Oahu near the intersection of Kalakaua Avenue and Ena Road. The proposed project will include 315 residential condominium units and commercial space for a restaurant. The project is expected to be developed and occupied by 2009. This study examines the potential short- and long-term air quality impacts that could occur as a result of construction and use of the proposed facilities and suggests mitigative measures to reduce any potential air quality impacts where possible and appropriate.

Both federal and state standards have been established to maintain ambient air quality. At the present time, seven parameters are regulated including: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone and lead. Hawaii air quality standards are comparable to the national standards except those for nitrogen dioxide and carbon monoxide which are more stringent than the national standards.

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. The climate of the Waikiki area is very much affected by its leeward and coastal situation. Winds are predominantly trade winds from the east northeast except for occasional periods when kona storms may generate strong winds from the south or when the trade winds are weak and landbreeze-seabreeze circulations may develop. Wind speeds typically vary between about 5 and 15 miles per hour providing relatively good ventilation much of the time. Temperatures in leeward areas of Oahu are generally very moderate with average daily temperatures ranging from about 70°F to 84°F. The extreme minimum temperature recorded at Honolulu Airport is 54°F, while the extreme maximum temperature is 95°F. This area of Oahu is one of the drier locations in the state with rainfall often highly variable from one year to the next. Monthly rainfall has been measured to vary from as little as a trace to as much as 10 inches. Average annual rainfall amounts to about 21 inches with summer months being the driest.

The present air quality of the project area appears to be reasonably good based on nearby air quality monitoring data. Air quality data from the nearest monitoring stations operated by the Hawaii Department of Health suggest that all national air quality standards are currently being met, although occasional exceedances of the more stringent state standards for carbon monoxide may occur near congested roadway intersections.

If the proposed project is given the necessary approvals to proceed, it may be inevitable that some short- and/or long-term impacts on air quality will occur either directly or indirectly as a consequence of project construction and use. Short-term impacts from fugitive dust will likely occur during the project construction phase. To a lesser extent, exhaust emissions from stationary and mobile construction equipment, from the disruption of traffic, and from workers' vehicles may also affect air quality during the period of construction. State air pollution control regulations require that there be no visible fugitive dust emissions at the property line. Hence, an effective dust control plan must be implemented to ensure compliance with state regulations. Fugitive dust emissions can be controlled to a large extent by watering active work areas, using wind screens, keeping adjacent paved roads clean, and covering open-bodied trucks. Other dust control measures could include limiting the area that can be disturbed at any given time and/or mulching or chemically stabilizing inactive areas that have been worked. Paving and landscaping of project areas early in the construction schedule will also reduce dust emissions. Monitoring dust at the project boundary during the period of construction could be considered as a means to evaluate the effectiveness of the project dust control program. Exhaust emissions can be mitigated by moving construction equipment and workers to and from the project site during off-peak traffic hours.

After construction, motor vehicles coming to and from the proposed development will result in a long-term increase in air pollution emissions in the project area. To assess the impact of emissions from these vehicles, an air quality modeling study was undertaken to estimate current ambient concentrations of carbon monoxide at intersections in the project vicinity and to predict future levels both with and without the proposed project. During worst-case conditions, model results indicated that present 1-hour and 8-hour carbon monoxide concentrations are within both the state and the national ambient air quality standards. In the year 2009, even with the somewhat higher traffic volumes that are expected, ambient carbon monoxide concentrations were predicted to remain essentially unchanged either with or without the proposed project. Thus, emissions from project motor vehicle traffic should have negligible long-term impact on air quality in the project area. Implementing mitigation measures for traffic-related air quality impacts is probably unnecessary and unwarranted.

2.0 INTRODUCTION

Fifield Companies is proposing to develop the Waikiki Allure Condominium on approximately 2.3 acres of land in Waikiki on the island of Oahu. The project site is located at the southwest corner of the intersection of Kalakaua Avenue and Ena Road. The project includes 315 residential condominium units and approximately 12,000 square feet of commercial space for a restaurant. Access to the project site will be provided via a new two-way driveway off Kalakaua Avenue and a new exit only driveway off Ena Road. The proposed project is expected to be completed and occupied by the year 2009.

The purpose of this study is to describe existing air quality in the project area and to assess the potential short- and long-term direct and indirect air quality impacts that could result from construction and use of the proposed facilities as planned. Measures to mitigate impacts by the project are suggested where possible and appropriate.

3.0 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 1 summarizes both the national and the state AAQS that are specified in the cited documents. As indicated in the table, national and state AAQS have been established for particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. The state has also set a standard for hydrogen sulfide. National AAQS are stated in terms of both primary and secondary standards for most of the regulated air pollutants. National primary standards are designed to protect the public health with an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both national and state standards allow a specified number of exceedances each year.

The Hawaii AAQS are in some cases considerably more stringent than the comparable national AAQS. In particular, the Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit. The U.S. Environmental Protection Agency (EPA) is currently working on a plan to phase out the national 1-hour ozone standard in favor of the new (and more stringent) 8-hour standard.

The Hawaii AAQS for sulfur dioxide were relaxed in 1986 to make the state standards essentially the same as the national limits. In 1993, the state also revised its particulate standards to follow those set by the federal government. During 1997, the federal government again revised its standards for particulate, but the new standards were challenged in federal court. A Supreme Court ruling was issued during February 2001, and as a result, the new standards for particulate were implemented during 2005. To date, the Hawaii Department of Health has not updated the state particulate standards. In September 2001, the state vacated the state 1-hour standard for ozone and an 8-hour standard was adopted.

4.0 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affects the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Although the climate of Hawaii is relatively moderate throughout most of the state, significant differences in these parameters may occur from one location to another. Most differences in regional and local climates within the state are caused by the mountainous topography.

Hawaii lies well within the belt of northeasterly trade winds generated by the semi-permanent Pacific high pressure cell to the north and east. On the island of Oahu, the Koolau and Waianae Mountain Ranges are oriented almost perpendicular to the trade winds, which accounts for much of the variation in the local climatology of the island. The site of the proposed project is located in the leeward area of the Koolau Mountains.

Wind frequency data for Honolulu International Airport (HIA), which is located about 10 miles to the east of the project site, are given in Table 2. These data can be expected to be reasonably representative of the project area. Wind frequency for HIA show that the annual prevailing wind direction for this area of Oahu is east northeast. On an annual basis, 34.7 percent of the time the wind is from this direction, and more than 70 percent of the time the wind is in the northeast quadrant. Winds from the south are infrequent occurring only a few days during the year and mostly in winter in association with kona storms. Wind speeds average about 10 knots (12 mph) and mostly vary between about 5 and 15 knots (6 and 17 mph).

Air pollution emissions from motor vehicles, the formation of photochemical smog and smoke plume rise all depend in part on air temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawaii, the annual and daily variation of temperature depend to a large degree on elevation above sea level, distance inland and exposure to the trade winds. Average temperatures at locations near sea level generally are warmer than those at higher elevations. Areas exposed to the trade winds tend to have the least temperature variation, while inland and leeward areas often have the most. Based on more than 25 years of data collected at Honolulu International Airport, average annual daily minimum and maximum temperatures in the project area are about 70°F and 84°F, respectively [1]. The extreme minimum temperature on record at the airport is 54°F, and the extreme maximum is 95°F.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is oftentimes measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In the Waikiki area, stability class 5 is probably the highest stability class that occurs, developing during clear, calm nighttime or early morning hours when temperature inversions form due to radiational cooling. Stability classes 1 through 4 occur during the daytime, depending mainly on the amount of cloud cover and incoming solar radiation and the onset and extent of the sea breeze.

Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations because contaminants emitted from or near the surface can become trapped within the mixing layer. In Hawaii, minimum mixing heights tend to be high because of mechanical mixing caused by the trade winds and because of the temperature moderating effect of the surrounding ocean. Low mixing heights may sometimes occur, however, at inland locations and even at times along coastal areas early in the morning following a clear, cool, windless night. Coastal areas also may experience low mixing levels during sea breeze conditions when cooler ocean air rushes in over warmer land. Mixing heights in Hawaii typically are above 3000 feet (1000 meters).

Rainfall can have a beneficial effect on the air quality of an area in that it helps to suppress fugitive dust emissions, and it also may "washout" gaseous contaminants that are water-soluble. Rainfall in Hawaii is highly variable depending on elevation and on location with respect to the trade wind. The Waikiki area is one of the drier areas on Oahu due to its leeward and near sea level location. Average annual rainfall measured at nearby Black Point amounts to about 21 inches [2]. Most of the rainfall usually occurs during the winter months. Monthly rainfall may vary from as little as a trace to more than 10 inches.

5.0 PRESENT AIR QUALITY

Present air quality in the project area is mostly affected by air pollutants from motor vehicles due to the urban situation. Table 3 presents an air pollutant emission summary for the island of Oahu for calendar year 1993. The emission rates shown in the table pertain to manmade emissions only, i.e., emissions from natural sources are not included. As suggested in the table, much of the particulate emissions on Oahu originate from area sources, such as the mineral products industry and agriculture. Sulfur oxides are emitted almost exclusively by point sources, such as power plants and refineries. Nitrogen oxides emissions emanate predominantly from industrial point sources, although area sources (mostly motor vehicle traffic) also contribute a significant share. The majority of carbon monoxide emissions occur from area sources (motor vehicle traffic), while hydrocarbons are emitted mainly from point sources. Based on previous emission inventories that have been reported for Oahu, emissions of particulate and nitrogen oxides may have increased during the past ten years, while emissions of sulfur oxides, carbon monoxide and hydrocarbons probably have declined.

Natural sources of air pollution emissions that could affect the project area at times but cannot be quantified very accurately include the ocean (sea spray), plants (aero-allergens), wind-blown dust, and perhaps distant volcanoes on the island of Hawaii.

The State Department of Health operates a network of air quality monitoring stations at various locations on Oahu. Each station, however, typically does not monitor the full complement of air quality parameters. Table 4 shows annual summaries of air quality measurements that were made nearest to the project area for several of the regulated air pollutants for the period 2000 through 2004. These are the most recent data that are currently available.

During the 2000-2004 period, sulfur dioxide was monitored by the State Department of Health at an air quality station located at downtown Honolulu. Concentrations monitored were consistently low compared to the standards. Annual second-highest 3-hour concentrations (which are most relevant to the air quality standards) ranged from 30 to 67 $\mu g/m^3$, while the annual second-highest 24-hour concentrations ranged from 9 to 25 $\mu g/m^3$. Annual average concentrations were only about 1 to 3 $\mu g/m^3$. There were no exceedances of the state/national 3-hour or 24-hour AAQS for sulfur dioxide during the 5-year period.

Particulate matter less than 10 microns in diameter (PM-10) is also measured at the downtown Honolulu monitoring station. Annual second-highest 24-hour PM-10 concentrations ranged from 31 to 43 $\mu g/m^3$ between 2000 and 2004. Average annual concentrations ranged from 13 to 16 $\mu g/m^3$. All values reported were within the state and national AAQS.

Carbon monoxide measurements were obtained at a monitoring station in Waikiki. The annual second-highest 1-hour concentrations ranged from 3.1 to 4.7 mg/m^3. The annual second-highest 8-hour concentrations ranged from 1.6 to 2.0 mg/m^3. No exceedances of the state or national 1-hour or 8-hour AAQS were reported.

Nitrogen dioxide is monitored by the Department of Health at the Kapolei monitoring station, which is about 16 miles west of the project area. Annual average concentrations of this pollutant ranged from 8 to 9 $\mu g/m^3$, safely inside the state and national AAQS.

The nearest available ozone measurements were obtained at Sand Island (about 3 miles west of the project area). The second-highest 8-hour concentrations for the period 2002 through 2004 ranged between 77 and 108 μg/m^3, which is well inside the state and federal standards. The 8-hour standard for ozone did not exist prior to 2002. Prior to 2002, the now obsolete state 1-hour standard was typically exceeded several times each year.

Although not shown in the table, the nearest and most recent measurements of ambient lead concentrations that have been reported were made at the downtown Honolulu monitoring station between 1996 and 1997. Average quarterly concentrations were near or below the detection limit, and no exceedances of the state AAQS were recorded. Monitoring for this parameter was discontinued during 1997.

Based on the data and discussion presented above, it appears likely that the State of Hawaii AAQS for sulfur dioxide, nitrogen dioxide, particulate matter, ozone and lead are currently being met at the project site. While carbon monoxide measurements at the Waikiki monitoring station suggest that concentrations are within the state and national standards, local "hot spots" may exist near traffic-congested intersections. The potential for this within the project area is examined later in this report.

6.0 SHORT-TERM IMPACTS OF PROJECT

Short-term direct and indirect impacts on air quality could potentially occur due to project construction. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project construction: (1) fugitive dust from vehicle movement and soil excavation; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term impacts from slow-moving construction equipment traveling to and from the project site, from a temporary increase in local traffic caused by commuting construction workers, and from the disruption of normal traffic flow caused by lane closures of adjacent roadways.

Fugitive dust emissions may arise from the grading and dirt-moving activities associated with site clearing and preparation work. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately. This is because of its elusive nature of emission and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA [3] has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions at the project site would likely be somewhere near that level, depending on the amount of rainfall that occurs. In any case, State of Hawaii Air Pollution Control Regulations [4] prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for the project construction phase is essential.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust. In dust-prone or dust-sensitive areas, other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials that could be blown away. Haul trucks tracking dirt onto paved streets from unpaved areas is often a significant source of dust in construction areas. Some means to alleviate this problem, such as road cleaning or tire washing, may be appropriate. Paving of parking areas and/or establishment of landscaping as early in the construction schedule as possible can also lower the potential for fugitive dust emissions. Monitoring dust at the project property line could be considered to quantify and document the effectiveness of dust control measures.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

Project construction activities will also likely obstruct the normal flow of traffic at times to such an extent that overall vehicular emissions in the project area will temporarily increase. The only means to alleviate this problem will be to attempt to keep roadways open during peak traffic hours and to move heavy construction equipment and workers to and from construction areas during periods of low traffic volume. Thus, most potential short-term air quality impacts from project construction can be mitigated.

7.0 LONG-TERM IMPACTS OF PROJECT

After construction is completed, use of the proposed facilities will result in increased motor vehicle traffic in the project area, potentially causing long-term impacts on ambient air quality. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide. They also emit nitrogen oxides and other contaminates.

Federal air pollution control regulations require that new motor vehicles be equipped with emission control devices that reduce emissions significantly compared to a few years ago. In 1990, the President signed into law the Clean Air Act Amendments. This legislation requires further emission reductions, which have been phased in since 1994. More recently, additional restrictions were signed into law during the Clinton administration, which will begin to take effect during the next decade. The added restrictions on emissions from new motor vehicles will lower average emissions each year as more and more older vehicles leave the state's roadways. It is estimated that carbon monoxide emissions, for example, will go down by an average of about 30 to 40 percent per vehicle during the next 10 years due to the replacement of older vehicles with newer models.

To evaluate the potential long-term indirect ambient air quality impact of increased roadway traffic associated with a project such as this, computerized emission and atmospheric dispersion models can be used to estimate ambient carbon monoxide concentrations along roadways leading to and from the project. Carbon monoxide is selected for modeling because it is both the most stable and the most abundant of the pollutants generated by motor vehicles. Furthermore, carbon monoxide air pollution is generally considered to be a microscale problem that can be addressed locally to some extent, whereas nitrogen oxides air pollution most often is a regional issue that cannot be addressed by a single new development.

For this project, three scenarios were selected for the carbon monoxide modeling study: (1) year 2006 with present conditions, (2) year 2009 without the project, and (3) year 2009 with the project. To begin the modeling study of the three scenarios, critical receptor areas in the vicinity of the project were identified for analysis. Generally speaking, roadway intersections are the primary concern because of traffic congestion and because of the increase in vehicular emissions associated with traffic queuing. For this study, several of the key intersections identified in the traffic study were also selected for air quality analysis. These included the following intersections:

- Kalakaua Avenue at Ena Road
- Kalakaua Avenue at Ala Wai Boulevard
- Ala Wai Boulevard at Lipeepee Street
- Lipeepee Street at Hobron Lane
- Hobron Lane at Ena Road

The traffic impact report for the project [5] describes the projected future traffic conditions and laneage configurations of these intersections in detail. In performing the air quality impact analysis, it was assumed that all recommended traffic mitigation measures would be implemented.

The main objective of the modeling study was to estimate maximum 1-hour average carbon monoxide concentrations for each of the three scenarios studied. To evaluate the significance of the estimated concentrations, a comparison of the predicted values for each scenario can be made. Comparison of the estimated values to the national and state AAQS was also used to provide another measure of significance.

Maximum carbon monoxide concentrations typically coincide with peak traffic periods. The traffic impact assessment report evaluated morning and afternoon peak traffic periods. These same periods were evaluated in the air quality impact assessment.

The EPA computer model MOBILE6 [6] was used to calculate vehicular carbon monoxide emissions for each year studied. One of the key inputs to MOBILE6 is vehicle mix. Unless very detailed information is available, national average values are typically assumed, which is what was used for the present study. Based on national average vehicle mix figures, the present vehicle mix in the project area was estimated to be 40.9% light-duty gasoline-powered automobiles, 46.2% light-duty gasoline-powered trucks and vans, 3.6% heavy-duty gasoline-powered vehicles, 0.2% light-duty diesel-powered vehicles, 8.5% heavy-duty diesel-powered trucks and buses, and 0.6% motorcycles. For the future scenarios studied, the vehicle mix was estimated to change slightly with fewer light-duty gasoline-powered automobiles and more light-duty gasoline-powered trucks and vans.

Ambient temperatures of 59 and 68 degrees Fahrenheit were used for morning and afternoon peak-hour emission computations, respectively. These are conservative assumptions since morning/afternoon ambient temperatures will generally be warmer than this, and emission estimates given by MOBILE6 generally have an inverse relationship to the ambient temperature.

After computing vehicular carbon monoxide emissions through the use of MOBILE6, these data were then input to an atmospheric dispersion model. EPA air quality modeling guidelines [7] currently recommend that the computer model CAL3QHC [8] be used to assess carbon monoxide concentrations at roadway intersections, or in areas where its use has previously been established, CALINE4 [9] may be used. Until a few years ago, CALINE4 was used extensively in Hawaii to assess air quality impacts at roadway intersections. In December 1997, the California Department of Transportation recommended that the intersection mode of CALINE4 no longer be used because it was thought the model had become outdated. Studies have shown that CALINE4 may tend to over-predict maximum concentrations in some situations. Therefore, CAL3QHC was used for the subject analysis.

CAL3QHC was developed for the U.S. EPA to simulate vehicular movement, vehicle queuing and atmospheric dispersion of vehicular emissions near roadway intersections. It is designed to predict 1-hour average pollutant concentrations near roadway intersections based on input traffic and emission data, roadway/receptor geometry and meteorological conditions.

Although CAL3QHC is intended primarily for use in assessing atmospheric dispersion near signalized roadway intersections, it can also be used to evaluate unsignalized intersections. This is accomplished by manually estimating queue lengths and then applying the same techniques used by the model for signalized intersections. Currently, three of the study intersections are unsignalized. These include Ala Wai Boulevard at Lipeepee Street, Lipeepee Street at Hobron Lane and Hobron Lane at Ena Road. In accordance with the traffic report, these intersections were assumed to remain unsignalized for the future scenarios studied.

Input peak-hour traffic data were obtained from the traffic study cited previously. This included vehicle approach volumes, saturation capacity estimates, intersection laneage and signal timings (where applicable). All emission factors that were input to CAL3QHC for free-flow traffic on roadways were obtained from MOBILE6 based on assumed free-flow vehicle speeds corresponding to the posted speed limits.

Model roadways were set up to reflect roadway geometry, physical dimensions and operating characteristics. Concentrations predicted by air quality models generally are not considered valid within the roadway-mixing zone. The roadway-mixing zone is usually taken to include 3 meters on either side of the traveled portion of the roadway and the turbulent area within 10 meters of a cross street. Model receptor sites were thus located at the edges of the mixing zones near all intersections that were studied for all three scenarios. This implies that pedestrian sidewalks either already exist or are assumed to exist in the future. All receptor heights were placed at 1.8 meters above ground to simulate levels within the normal human breathing zone.

Input meteorological conditions for this study were defined to provide "worst-case" results. One of the key meteorological inputs is atmospheric stability category. For these analyses, atmospheric stability category 5 was assumed for the morning cases, while atmospheric stability category 4 was assumed for the afternoon cases. These are the most conservative stability categories that are generally used for estimating worst-case pollutant dispersion within urban areas for these periods. A surface roughness length of 400 cm and a mixing height of 1,000 meters were used in all cases. Worst-case wind conditions were defined as a wind speed of 1 meter per second with a wind direction resulting in the highest predicted concentration. Concentration estimates were calculated at wind directions of every 5 degrees.

Background contributions of carbon monoxide from sources or roadways not directly considered in the analysis were accounted for by adding a background concentration of 1.0 ppm to all predicted concentrations for 2006. Although increased traffic is expected to occur within the project area during the next several years with or without the project, background carbon monoxide concentrations may not change significantly since individual emissions from motor vehicles are forecast to decrease with time.

Hence, a background value of 1.0 ppm was assumed to persist for the future scenarios studied.

Predicted Worst-Case 1-Hour Concentrations

Table 5 summarizes the final results of the modeling study in the form of the estimated worst-case 1-hour morning and afternoon ambient carbon monoxide concentrations. These results can be compared directly to the state and the national AAQS. Estimated worst-case carbon monoxide concentrations are presented in the table for three scenarios: year 2006 with existing traffic, year 2009 without the project and year 2009 with the project. The locations of these estimated worst-case 1-hour concentrations all occurred at or very near the indicated intersections.

As indicated in the table, the highest estimated 1-hour concentration within the project vicinity for the present (2006) case was 5.4 mg/m^3. This was projected to occur during the morning peak traffic hour near the intersection of Kalakaua Avenue and Ala Wai Boulevard. Concentrations at other locations and times studied were 4.6 mg/m^3 or lower. All predicted worst-case 1-hour concentrations for the 2006 scenario were within both the national AAQS of 40 mg/m^3 and the state standard of 10 mg/m^3.

In the year 2009 without the proposed project, the highest worst-case 1-hour concentration was again predicted to occur during the morning at the intersection of Kalakaua Avenue and Ala Wai Boulevard. A value of 5.3 mg/m^3 was predicted to occur at this location and time. Peak-hour worst-case values at the other locations and times studied for the 2009 without project scenario ranged between 2.3 and 4.5 mg/m^3. Compared to the existing case, the concentrations were essentially unchanged. All projected worst-case concentrations for this scenario remained within the state and national standards.

In the year 2009 with the proposed project, the predicted highest worst-case 1-hour concentration continued to occur during the morning at the intersection of Kalakaua Avenue and Ala Wai Boulevard with a value of 5.3 mg/m^3, which is unchanged compared to the without project case. Other concentrations for this scenario ranged between 2.4 and 4.5 mg/m^3 and were either unchanged or increased only very slightly compared to the without project scenario. All values remained within the state and federal standards.

Predicted Worst-Case 8-Hour Concentrations

Worst-case 8-hour carbon monoxide concentrations were estimated by multiplying the worst-case 1-hour values by a persistence factor of 0.5. This accounts for two factors: (1) traffic volumes averaged over eight hours are lower than peak 1-hour values, and (2) meteorological conditions are more variable (and hence more favorable for dispersion) over an 8-hour period than they are for a single hour. Based on monitoring data, 1-hour to 8-hour persistence factors for most locations generally vary from 0.4 to 0.8 with 0.6 being the most typical. One study based on modeling [10] concluded that 1-hour to 8-hour persistence factors could typically be expected to range from 0.4 to 0.5. EPA guidelines [11] recommend using a value of 0.7 unless a locally derived persistence factor is available. Recent monitoring data for locations on Oahu reported by the Department of Health [12] suggest that this factor may range between about 0.2 and 0.6 depending on location and traffic variability. Considering the location of the project and the traffic pattern for the area, a 1-hour to 8-hour persistence factor of 0.5 will likely yield reasonable estimates of worst-case 8-hour concentrations.

The resulting estimated worst-case 8-hour concentrations are indicated in Table 6. For the 2006 scenario, the estimated worst-case 8-hour carbon monoxide concentrations for the five locations studied ranged from 1.2 mg/m^3 to 2.7 mg/m^3, with the highest concentration occurring at Kalakaua Avenue and Ala Wai Boulevard The estimated worst-case concentrations for the existing case were within both the state standard of 5 mg/m^3 and the national limit of 10 mg/m^3.

For the year 2009 without project scenario, worst-case concentrations ranged between 1.2 and 2.6 mg/m^3, which is nearly unchanged compared to the existing case. All predicted concentrations were within the standards.

For the 2009 with project scenario, worst-case concentrations remained unchanged compared to the without project case. All predicted 8-hour concentrations were within both the national and the state AAQS.

Conservativeness of Estimates

The results of this study reflect several assumptions that were made concerning both traffic movement and worst-case meteorological conditions. One such assumption concerning worst-case meteorological conditions is that a wind speed of 1 meter per second with a steady direction for 1 hour will occur. A steady wind of 1 meter per second blowing from a single direction for an hour is extremely unlikely and may occur only once a year or less. With wind speeds of 2 meters per second, for example, computed carbon monoxide concentrations would be only about half the values given above. The 8-hour estimates are also conservative in that it is unlikely that anyone would occupy the assumed receptor sites (within 3 m of the roadways) for a period of 8 hours.

8.0 CONCLUSIONS AND RECOMMENDATIONS

The major potential short-term air quality impact of the project will occur from the emission of fugitive dust during construction. Uncontrolled fugitive dust emissions from construction activities are estimated to amount to about 1.2 tons per acre per month, depending on rainfall. To control dust, active work areas and any temporary unpaved work roads should be watered at least twice daily on days without rainfall. Use of wind screens and/or limiting the area that is disturbed at any given time will also help to contain fugitive dust emissions. Wind erosion of inactive areas of the site that have been disturbed could be controlled by mulching or by the use of chemical soil stabilizers. Dirt-hauling trucks should be covered when traveling on roadways to prevent windage. A routine road cleaning and/or tire washing program will also help to reduce fugitive dust emissions that may occur as a result of trucks tracking dirt onto paved roadways in the project area. Paving of parking areas and establishment of landscaping early in the construction schedule will also help to control dust. Monitoring dust at the project boundary during the period of construction could be considered as a means to evaluate the effectiveness of the project dust control program and to adjust the program if necessary.

During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from vehicles used by construction workers and from trucks traveling to and from the project. Increased vehicular emissions due to disruption of traffic by construction equipment and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours.

After construction of the proposed project is completed and it is fully occupied, carbon monoxide concentrations in the project area due to motor vehicle traffic should remain nearly unchanged compared to both the existing case and the without-project scenario. Worst-case concentrations with or without the project through the year 2009 should continue to comply with state and federal standards. Implementing any air quality mitigation measures for long-term traffic-related impacts is probably unnecessary and unwarranted.

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6. User's Guide to MOBILE6.0, Mobile Source Emission Factor Model, U.S. Environmental Protection Agency, Office of Transportation and Air Quality, Assessment and Standards Division, Ann Arbor, Michigan, January 2002.

7. Guideline on Air Quality Models (Revised), Including Supplements A and B, EPA-450/2-78-027R, U.S. Environmental Protection Agency, Research Triangle Park, NC, July 1986.

8. User's Guide to CAL3QHC Version 2.0: A Modeling Methodology for Predicting Pollutant Concentrations Near Roadway Intersections, U.S. Environmental Protection Agency, November 1992.

9. CALINE4 - A Dispersion Model for Predicting Air Pollutant Concentrations Near Roadways, FHWA/CA/TL-84/15, California State Department of Transportation, November 1984 with June 1989 Revisions.

10. "Persistence Factors for Mobile Source (Roadway) Carbon Monoxide Modeling", C. David Cooper, Journal of the Air & Waste Management Association, Volume 39, Number 5, May 1989.

11. Guideline for Modeling Carbon Monoxide from Roadway Intersections, U.S. Environmental Protection Agency, EPA-454/R-92-005, November 1992.

12. Annual Summaries, Hawaii Air Quality Data, 2000-2004, State of Hawaii Department of Health.

Figure 1 - Project Location

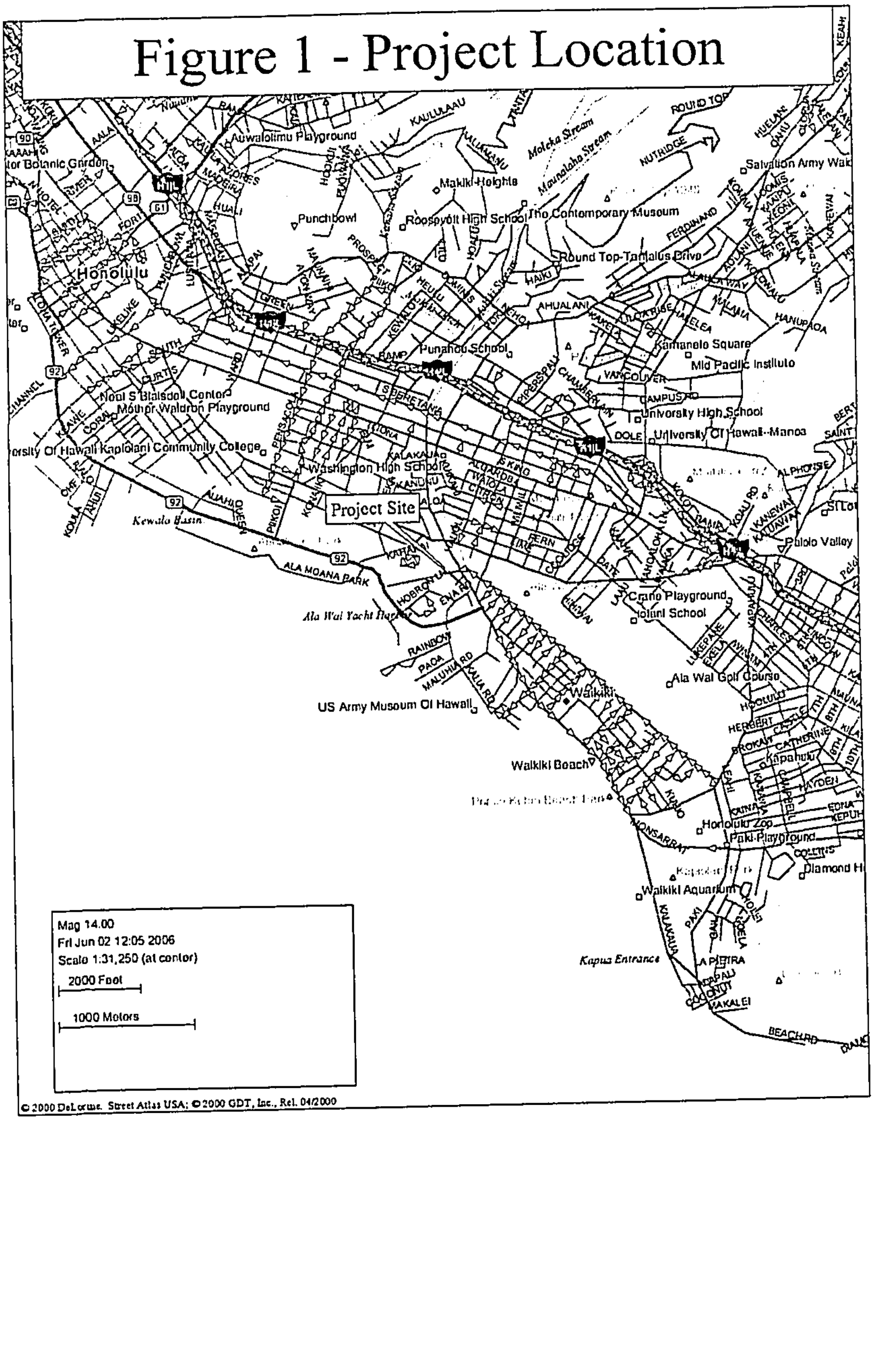

Table 1

SUMMARY OF STATE OF HAWAII AND NATIONAL
AMBIENT AIR QUALITY STANDARDS

Pollutant	Units	Averaging Time	Maximum Allowable Concentration		
			National Primary	National Secondary	State of Hawaii
Particulate Matter (<10 microns)	$\mu g/m^3$	Annual 24 Hours	50[a] 150[b]	50[a] 150[b]	50 150[c]
Particulate Matter (<2.5 microns)	$\mu g/m^3$	Annual 24 Hours	15[a] 65[d]	15[a] 65[d]	- -
Sulfur Dioxide	$\mu g/m^3$	Annual 24 Hours 3 Hours	80 365[c] -	- - 1300[c]	80 365[c] 1300[c]
Nitrogen Dioxide	$\mu g/m^3$	Annual	100	100	70
Carbon Monoxide	mg/m^3	8 Hours 1 Hour	10[c] 40[c]	- -	5[c] 10[c]
Ozone	$\mu g/m^3$	8 Hours 1 Hour	157[e] 235[f]	157[e] 235[f]	157[e] -
Lead	$\mu g/m^3$	Calendar Quarter	1.5	1.5	1.5
Hydrogen Sulfide	$\mu g/m^3$	1 Hour	-	-	35[c]

[a] Three-year average of annual arithmetic mean.
[b] 99th percentile value averaged over three years.
[c] Not to be exceeded more than once per year.
[d] 98th percentile value averaged over three years.
[e] Three-year average of fourth-highest daily 8-hour maximum.
[f] Standard is attained when the expected number of exceedances is less than or equal to 1.

Table 2

ANNUAL WIND FREQUENCY FOR HONOLULU INTERNATIONAL AIRPORT (%)

Wind Direction	Wind Speed (knots)									Total
	0-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	>40	
N	0.5	2.5	1.3	0.5	0.0	0.0	0.0	0.0	0.0	4.8
NNE	0.3	1.2	1.6	1.5	0.2	0.0	0.0	0.0	0.0	4.7
NE	0.3	2.1	6.1	11.0	3.2	0.3	0.0	0.0	0.0	23.0
ENE	0.2	2.5	10.9	16.6	4.1	0.3	0.0	0.0	0.0	34.7
E	0.1	1.0	2.5	2.8	0.5	0.0	0.0	0.0	0.0	7.0
ESE	0.0	0.3	0.4	0.3	0.0	0.0	0.0	0.0	0.0	1.1
SE	0.0	0.3	0.8	1.0	0.1	0.0	0.0	0.0	0.0	2.2
SSE	0.1	0.4	1.2	0.7	0.1	0.0	0.0	0.0	0.0	2.4
S	0.1	0.5	1.4	0.6	0.1	0.0	0.0	0.0	0.0	2.7
SSW	0.0	0.3	0.8	0.3	0.0	0.0	0.0	0.0	0.0	1.5
SW	0.0	0.2	0.8	0.4	0.0	0.0	0.0	0.0	0.0	1.5
WSW	0.0	0.3	0.5	0.4	0.0	0.0	0.0	0.0	0.0	1.2
W	0.1	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1
WNW	0.2	1.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	2.0
NW	0.4	2.3	0.8	0.1	0.0	0.0	0.0	0.0	0.0	3.8
NNW	0.5	2.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	3.8
Calm	2.5									2.5
Total	5.4	18.3	30.6	36.5	8.5	0.7	0.0	0.0	0.0	100.0

Source: Climatography of the United States No. 90 (1965-1974), Airport Climatological Summary, Honolulu International Airport, Honolulu, Hawaii, U.S. Department of Commerce, National Climatic Center, Asheville, NC, August 1978.

Table 3

AIR POLLUTION EMISSIONS INVENTORY FOR ISLAND OF OAHU, 1993

Air Pollutant	Point Sources (tons/year)	Area Sources (tons/year)	Total (tons/year)
Particulate	25,891	49,374	75,265
Sulfur Oxides	39,230	nil	39,230
Nitrogen Oxides	92,436	31,141	123,577
Carbon Monoxide	28,757	121,802	150,559
Hydrocarbons	4,160	421	4,581

Source: Final Report, "Review, Revise and Update of the Hawaii Emissions Inventory Systems for the State of Hawaii", prepared for Hawaii Department of Health by J.L. Shoemaker & Associates, Inc., 1996

Table 4

ANNUAL SUMMARIES OF AIR QUALITY MEASUREMENTS FOR MONITORING STATIONS NEAREST WAIKIKI ALLURE PROJECT

Parameter / Location	2000	2001	2002	2003	2004
Sulfur Dioxide / Downtown Honolulu					
3-Hour Averaging Period:					
No. of Samples	2832	2920	2830	2612	2889
Highest Concentration (µg/m³)	65	45	30	67	56
2nd Highest Concentration (µg/m³)	18	44	27	50	46
No. of State AAQS Exceedances	0	0	0	0	0
24-Hour Averaging Period:					
No. of Samples	357	347	363	330	364
Highest Concentration (µg/m³)	9	25	9	17	25
2nd Highest Concentration (µg/m³)	7	20	8	16	13
No. of State AAQS Exceedances	0	0	0	0	0
Annual Average Concentration (µg/m³)	1	2	3	1	1
Particulate (PM-10) / Downtown Honolulu					
24-Hour Averaging Period:					
No. of Samples	361	365	351	314	342
Highest Concentration (µg/m³)	83	63	90	47	39
2nd Highest Concentration (µg/m³)	31	33	43	34	35
No. of State AAQS Exceedances	0	0	0	0	0
Annual Average Concentration (µg/m³)	14	16	15	16	13
Carbon Monoxide / Waikiki					
1-Hour Averaging Period:					
No. of Samples	8728	8680	8687	8729	6475
Highest Concentration (mg/m³)	4.3	5.0	3.4	4.8	3.3
2nd Highest Concentration (mg/m³)	4.3	4.7	3.1	3.4	3.2
No. of State AAQS Exceedances	0	0	0	0	0
8-Hour Averaging Period:					
No. of Samples	1094	1087	1086	8747	6472
Highest Concentration (mg/m³)	2.2	2.9	1.7	1.7	2.1
2nd Highest Concentration (mg/m³)	2.0	1.8	1.6	1.7	1.8
No. of State AAQS Exceedances	0	0	0	0	0
Nitrogen Dioxide / Kapolei					
Annual Average Concentration (µg/m³)	9	8	9	9	9
Ozone / Sand Island					
8-Hour Averaging Period:					
No. of Samples	-	-	8549	8641	8474
Highest Concentration (µg/m³)	-	-	89	79	110
2nd Highest Concentration (µg/m³)	-	-	88	77	108
No. of State AAQS Exceedances	-	-	0	0	0

Source: State of Hawaii Department of Health, "Annual Summaries, Hawaii Air Quality Data, 2000 - 2004"

Table 5

ESTIMATED WORST-CASE 1-HOUR CARBON MONOXIDE CONCENTRATIONS ALONG ROADWAYS NEAR WAIKIKI ALLURE PROJECT (milligrams per cubic meter)

Roadway Intersection	Year/Scenario					
	2006/Present		2009/Without Project		2009/With Project	
	AM	PM	AM	PM	AM	PM
Kalakaua Avenue at Ena Road	3.8	4.0	3.7	3.9	3.8	4.0
Kalakaua Avenue at Ala Wai Boulevard	5.4	4.6	5.3	4.5	5.3	4.5
Ala Wai Boulevard at Lipeepee Street	2.5	2.3	2.4	2.3	2.4	2.3
Lipeepee Street at Hobron Lane	2.4	2.3	2.4	2.5	2.4	2.5
Hobron Lane at Ena Road	2.4	2.4	2.3	2.5	2.4	2.5

Hawaii State AAQS: 10
National AAQS: 40

Table 6

ESTIMATED WORST-CASE 8-HOUR CARBON MONOXIDE CONCENTRATIONS ALONG ROADWAYS NEAR WAIKIKI ALLURE PROJECT (milligrams per cubic meter)

Roadway Intersection	Year/Scenario		
	2006/Present	2009/Without Project	2009/With Project
Kalakaua Avenue at Ena Road	2.0	2.0	2.0
Kalakaua Avenue at Ala Wai Boulevard	2.7	2.6	2.6
Ala Wai Boulevard at Lipeepee Street	1.2	1.2	1.2
Lipeepee Street at Hobron Lane	1.2	1.2	1.2
Hobron Lane at Ena Road	1.2	1.2	1.2

Hawaii State AAQS: 5
National AAQS: 10

Table 7

ESTIMATED INDIRECT AIR POLLUTION EMISSIONS FROM
UNIVERSITY OF HAWAII WEST OAHU PROJECT ELECTRICAL DEMAND[a]

Air Pollutant	Emission Rate (tons/year)
Particulate	10
Sulfur Dioxide	80
Carbon Monoxide	6
Volatile Organics	<1
Nitrogen Oxides	35

[a]Based on U.S. EPA emission factors for utility boilers [3]. Assumes electrical demand of 240 million kilowatt-hrs per year and low-sulfur oil used to generate power.

Table 8

ESTIMATED INDIRECT AIR POLLUTION EMISSIONS FROM UNIVERSITY OF HAWAII WEST OAHU PROJECT SOLID WASTE DISPOSAL DEMAND[a]

Air Pollutant	Emission Rate (tons/year)
Particulate	<1
Sulfur Dioxide	4
Carbon Monoxide	7
Volatile Organics	<1
Nitrogen Oxides	18
Lead	<1

[a]Based on U.S. EPA emission factors for municipal waste incinerators [3]. Assumes mass burn unit with 99 percent control of particulate emissions and solid waste disposal demand of 40 tons per day.

APPENDIX XI

PHOTOGRAPHS AND AXONOMETRIC VIEWS

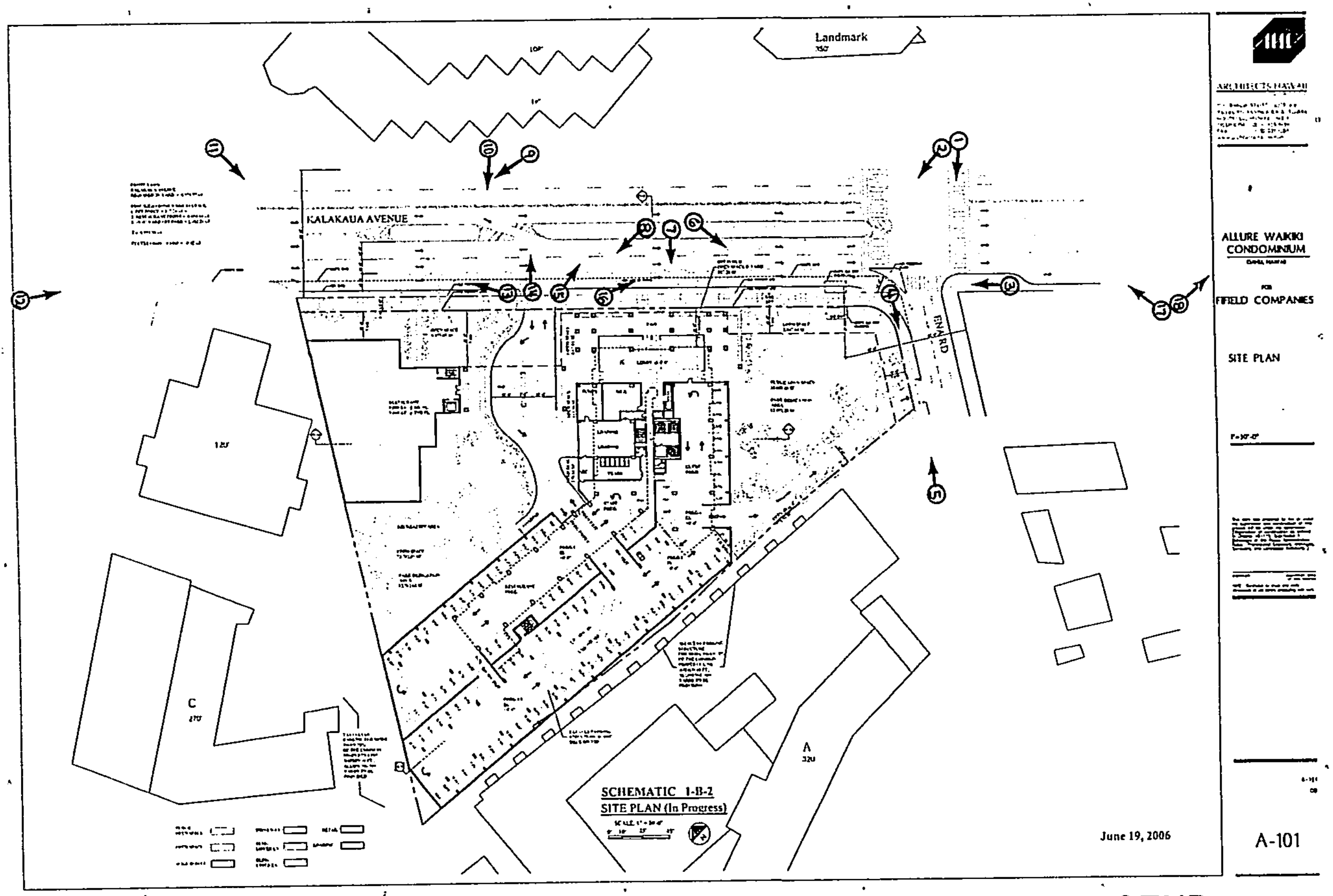

PHOTO LEGEND

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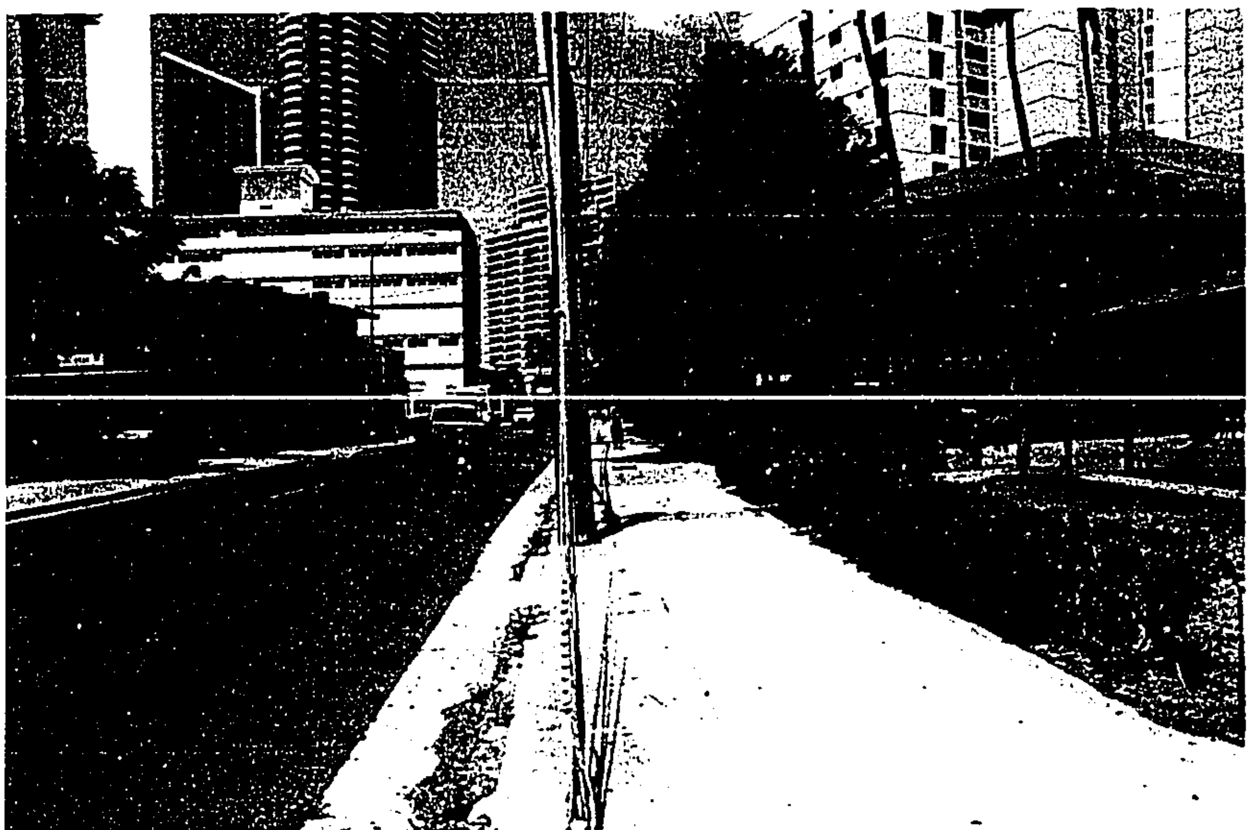

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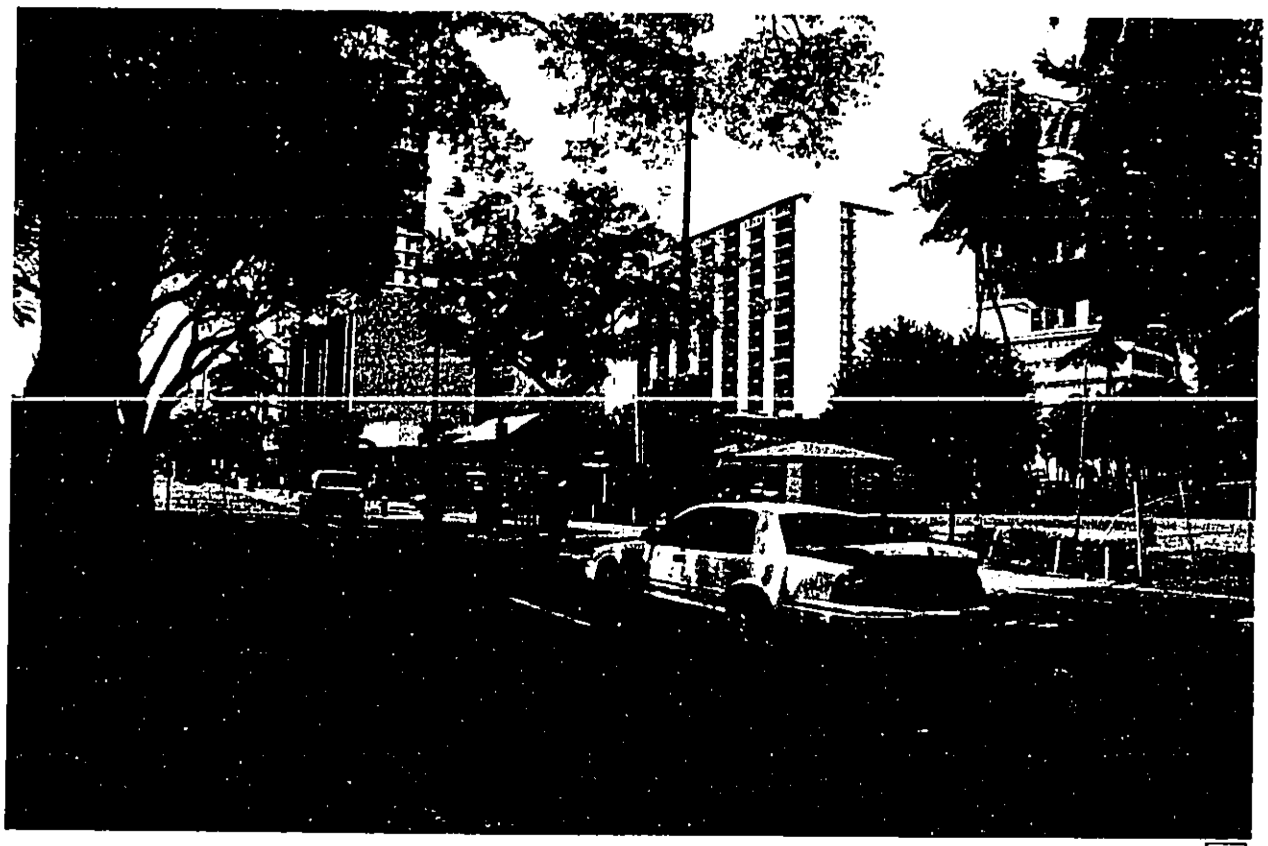

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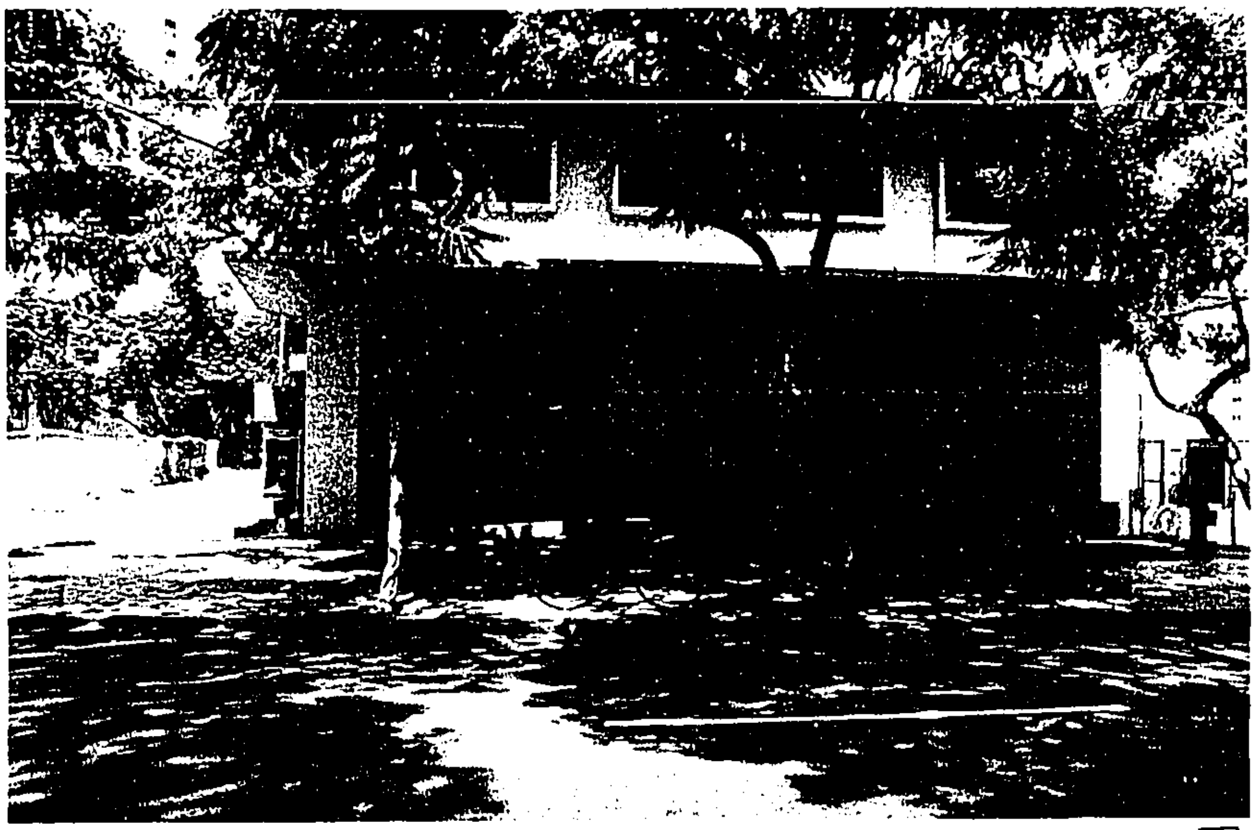

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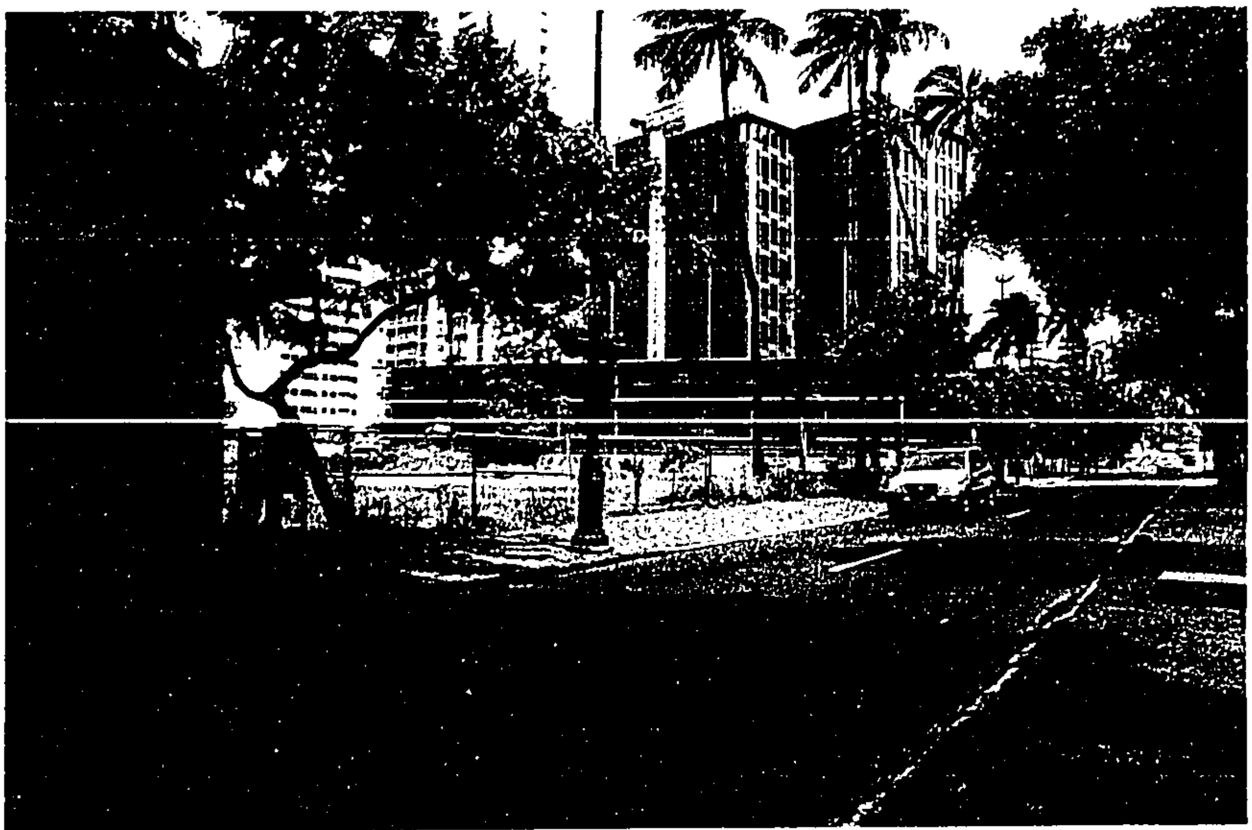

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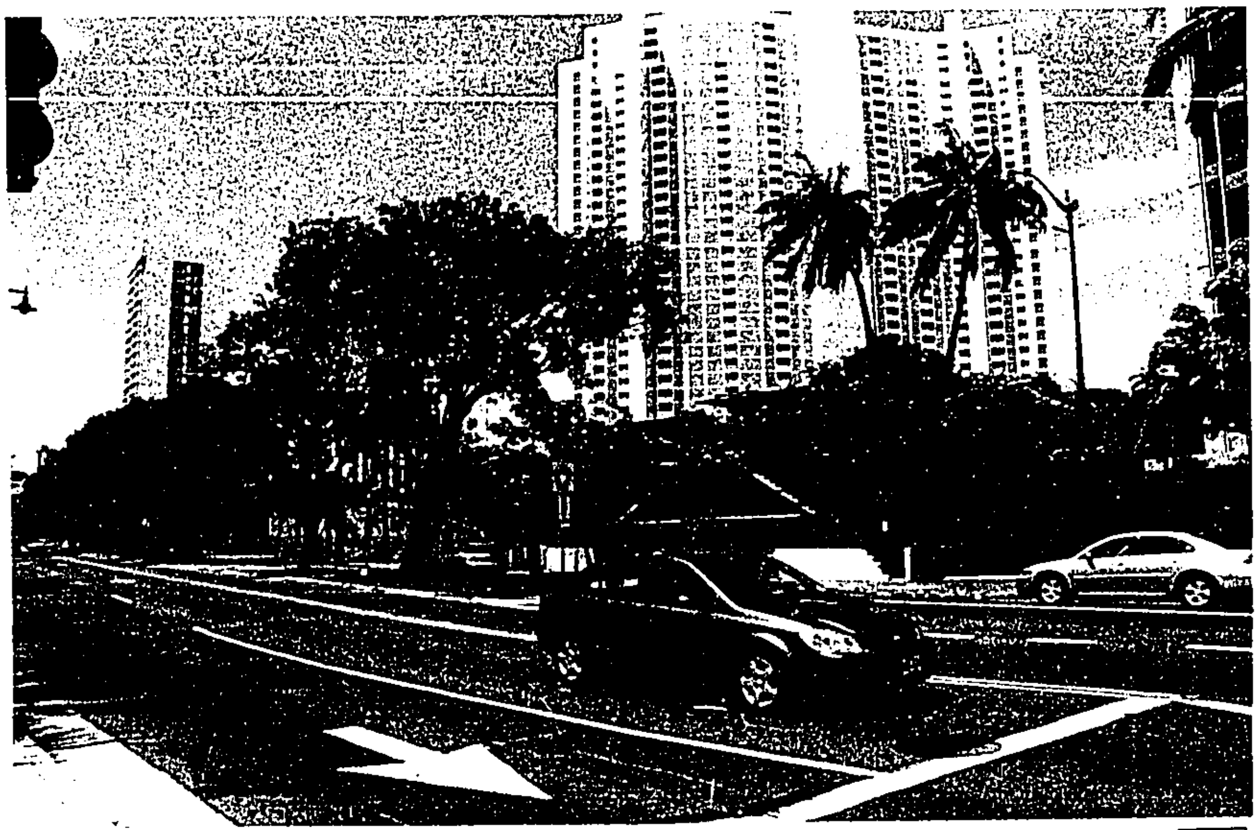

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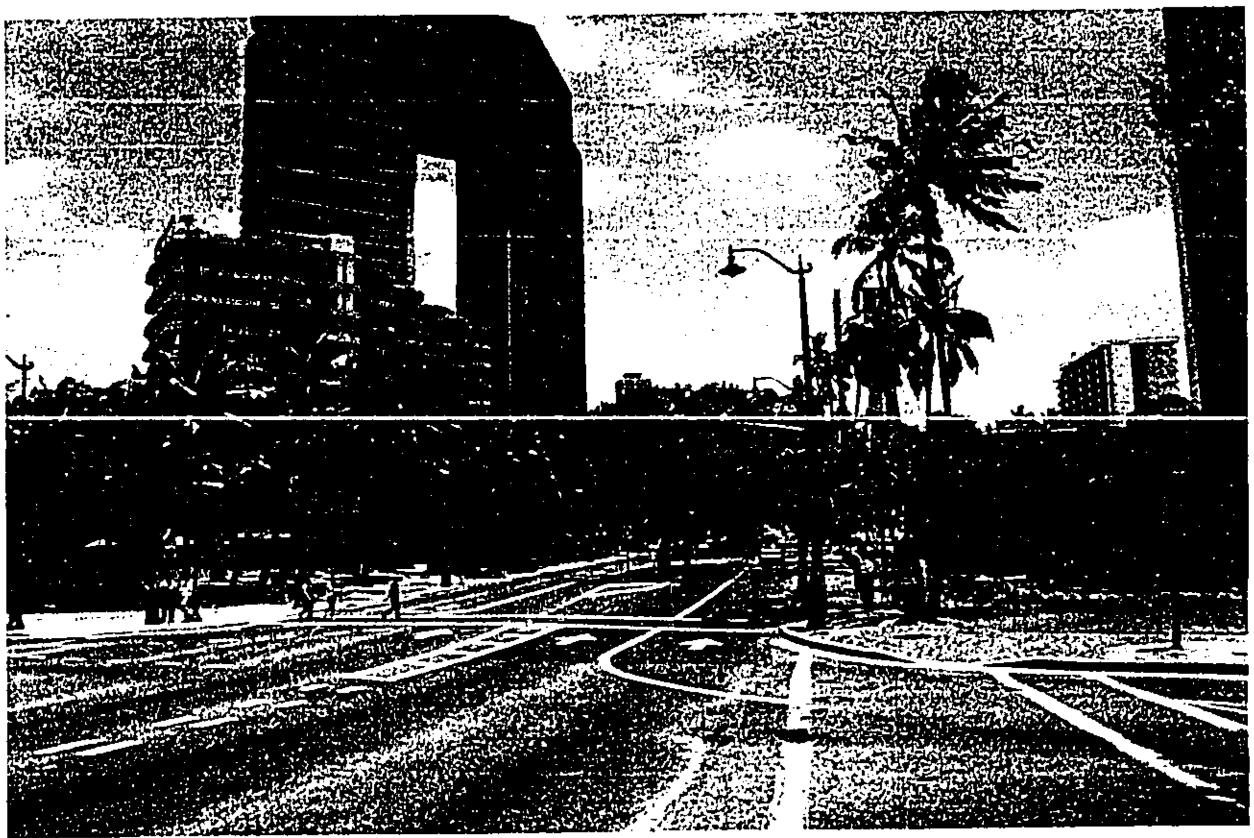

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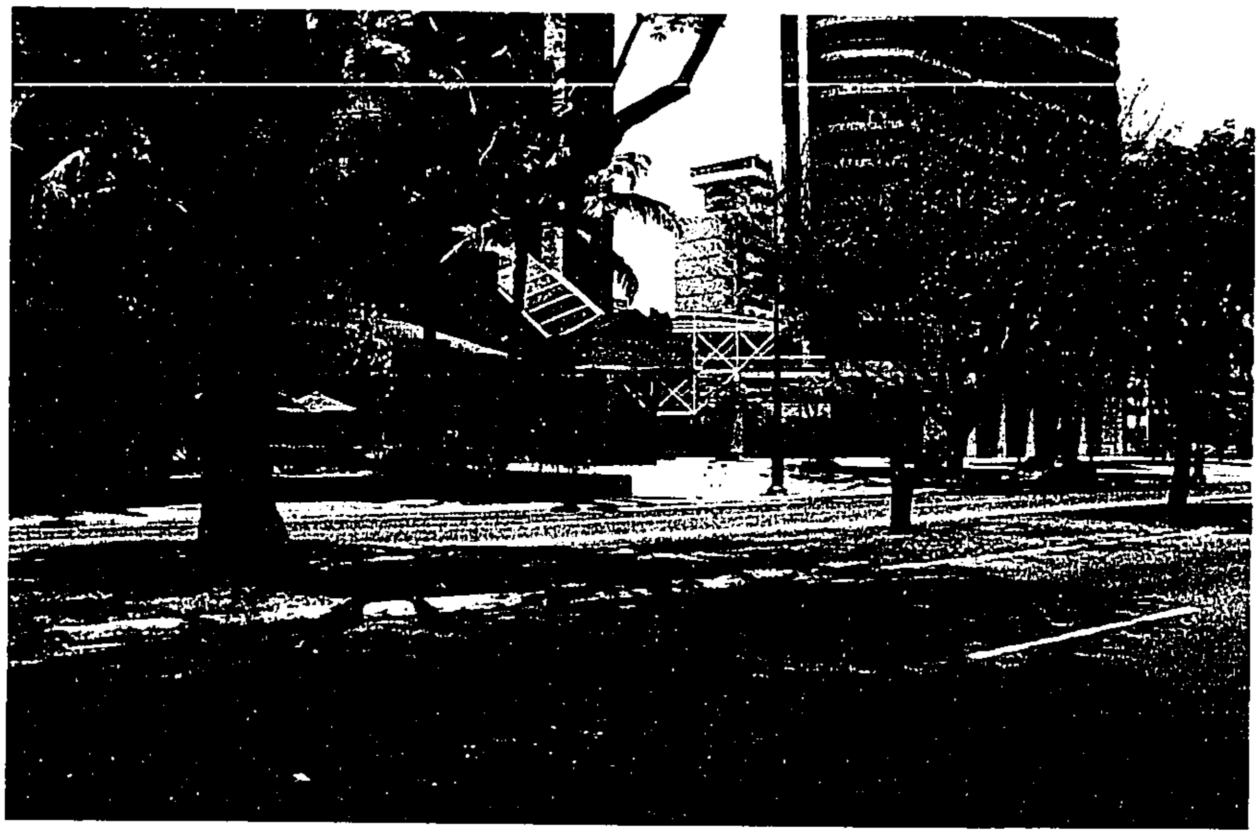

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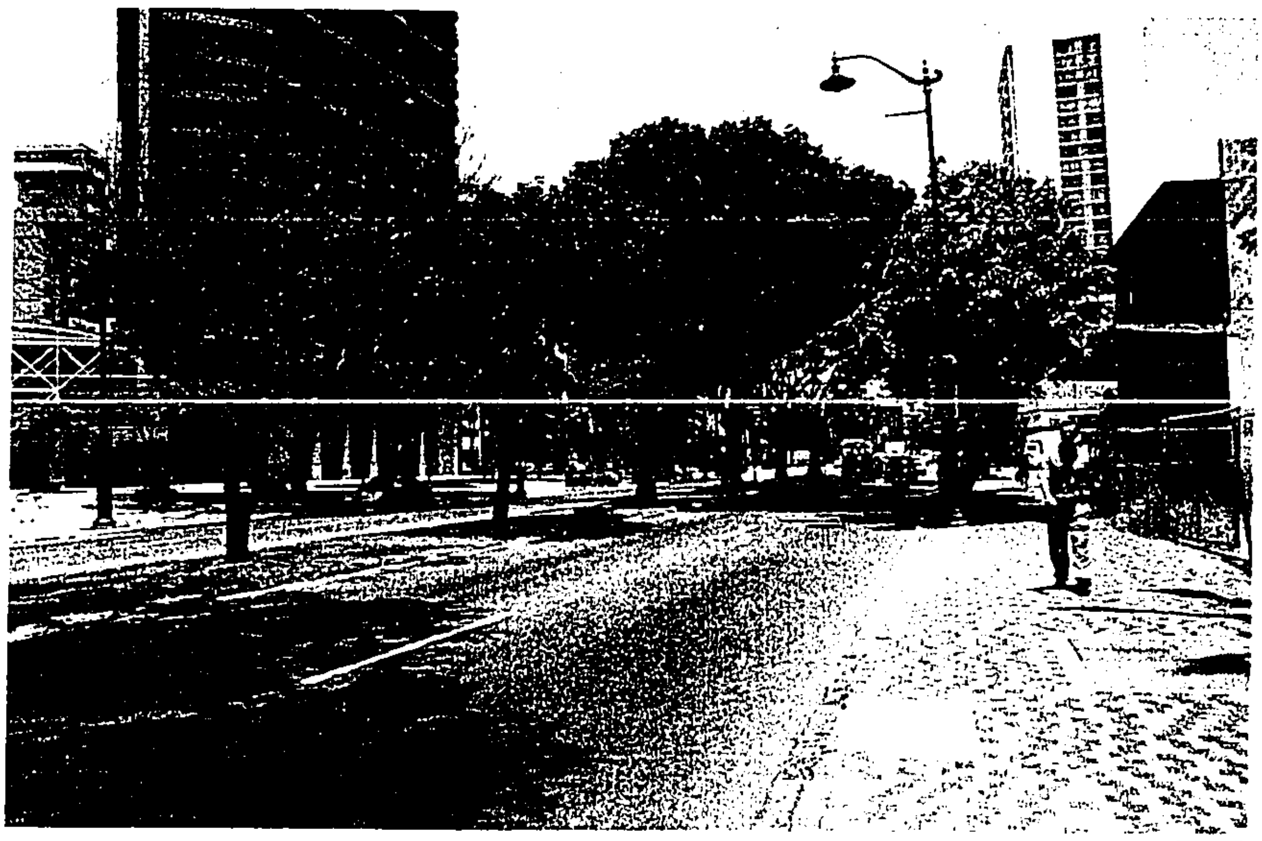

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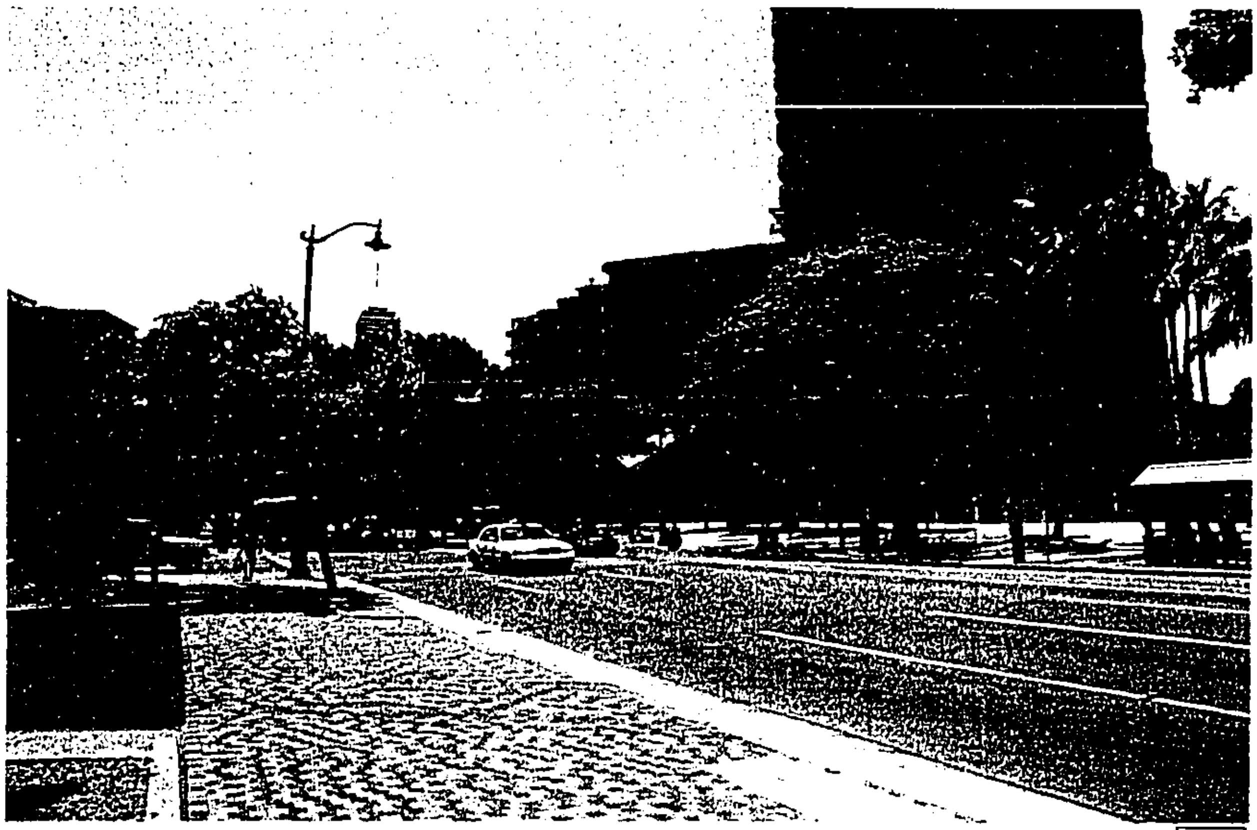

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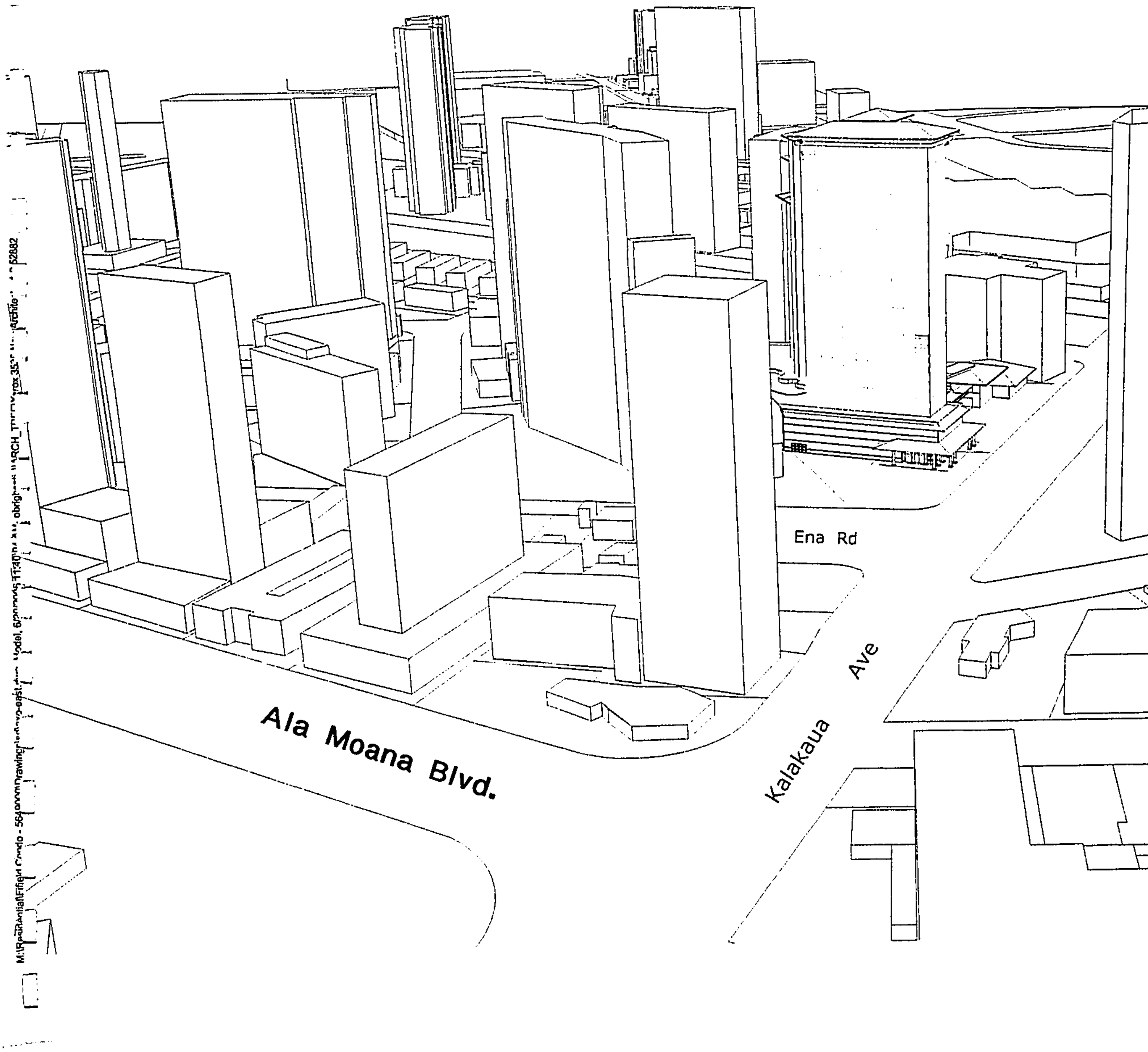
Ena Rd
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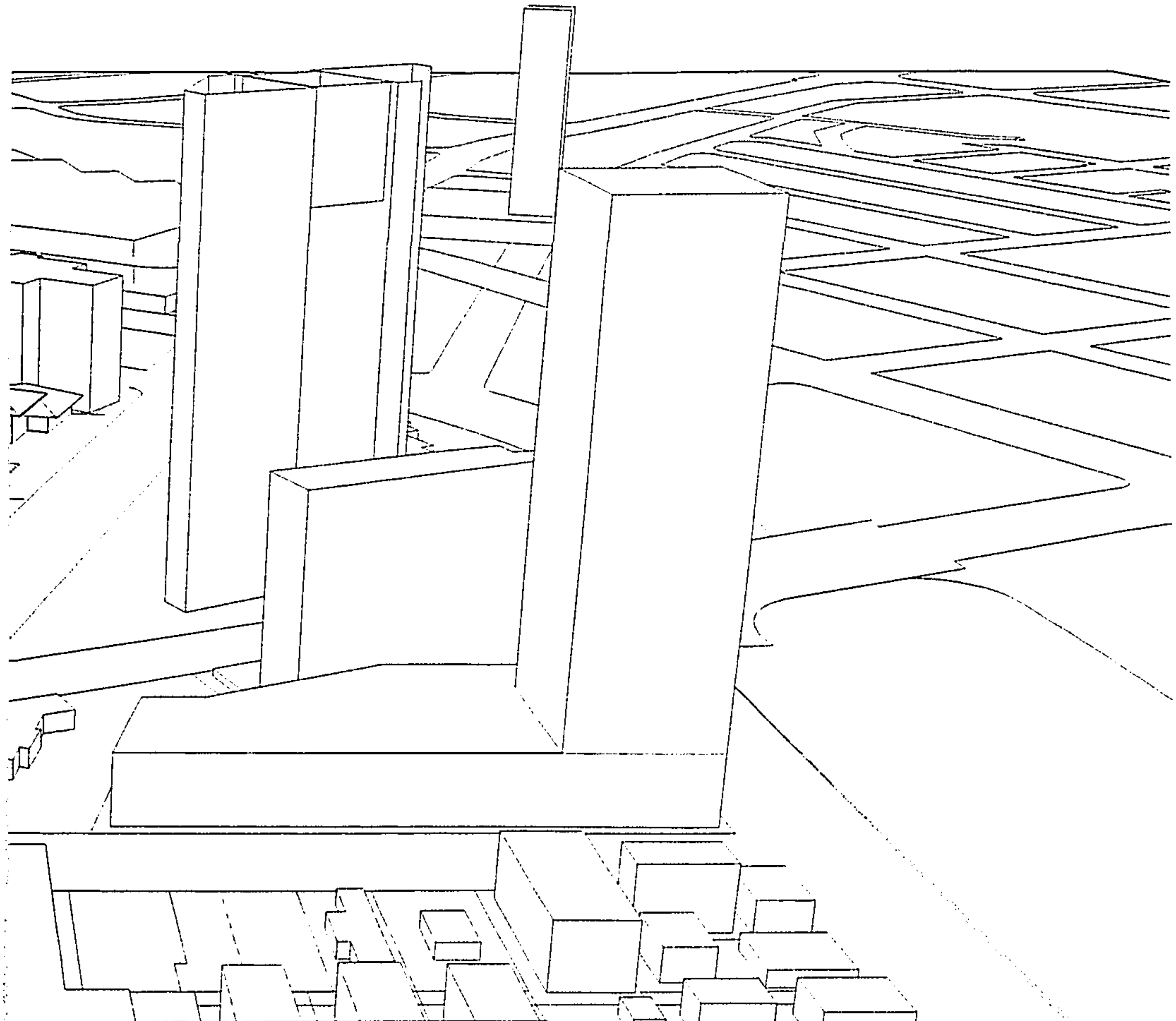
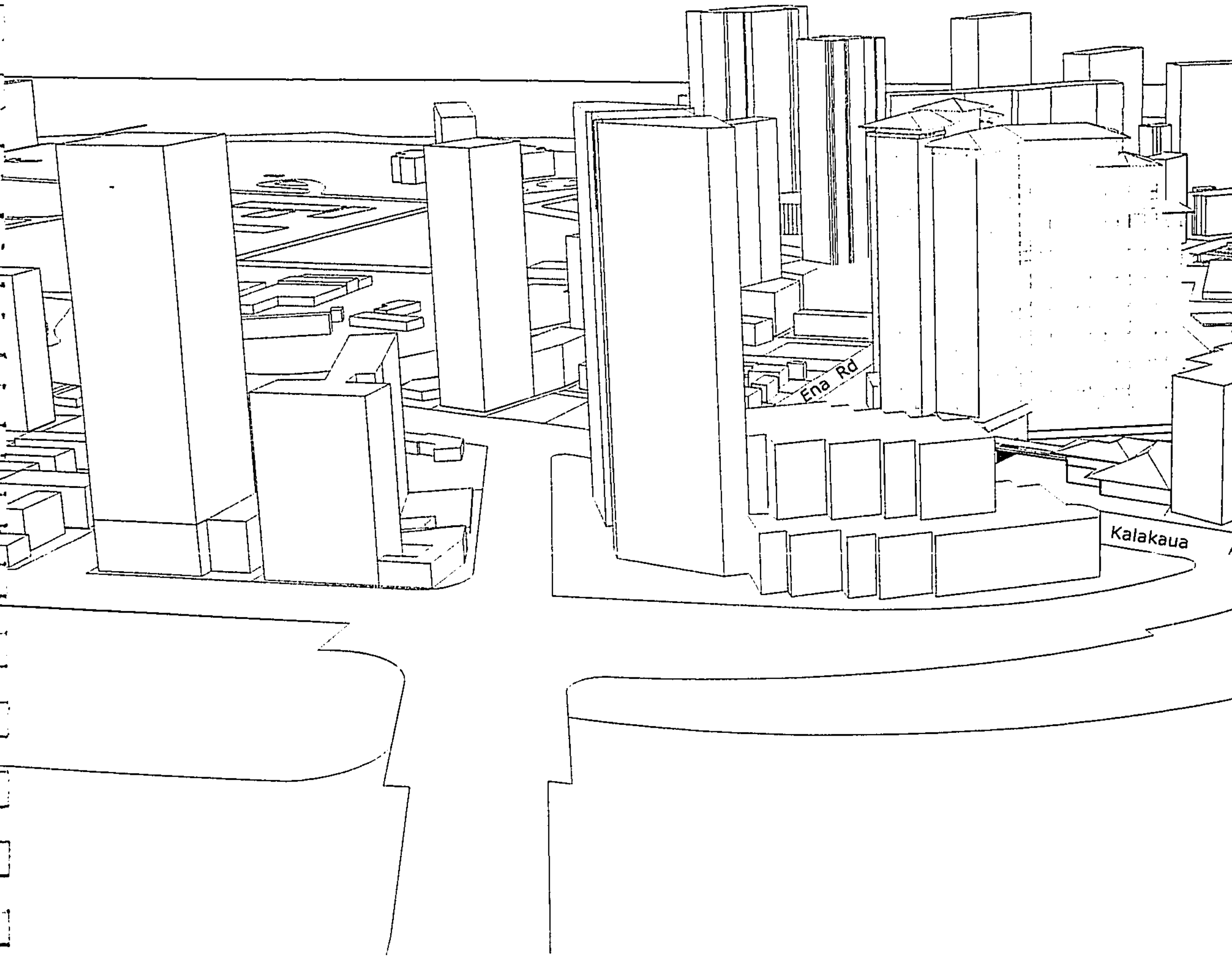
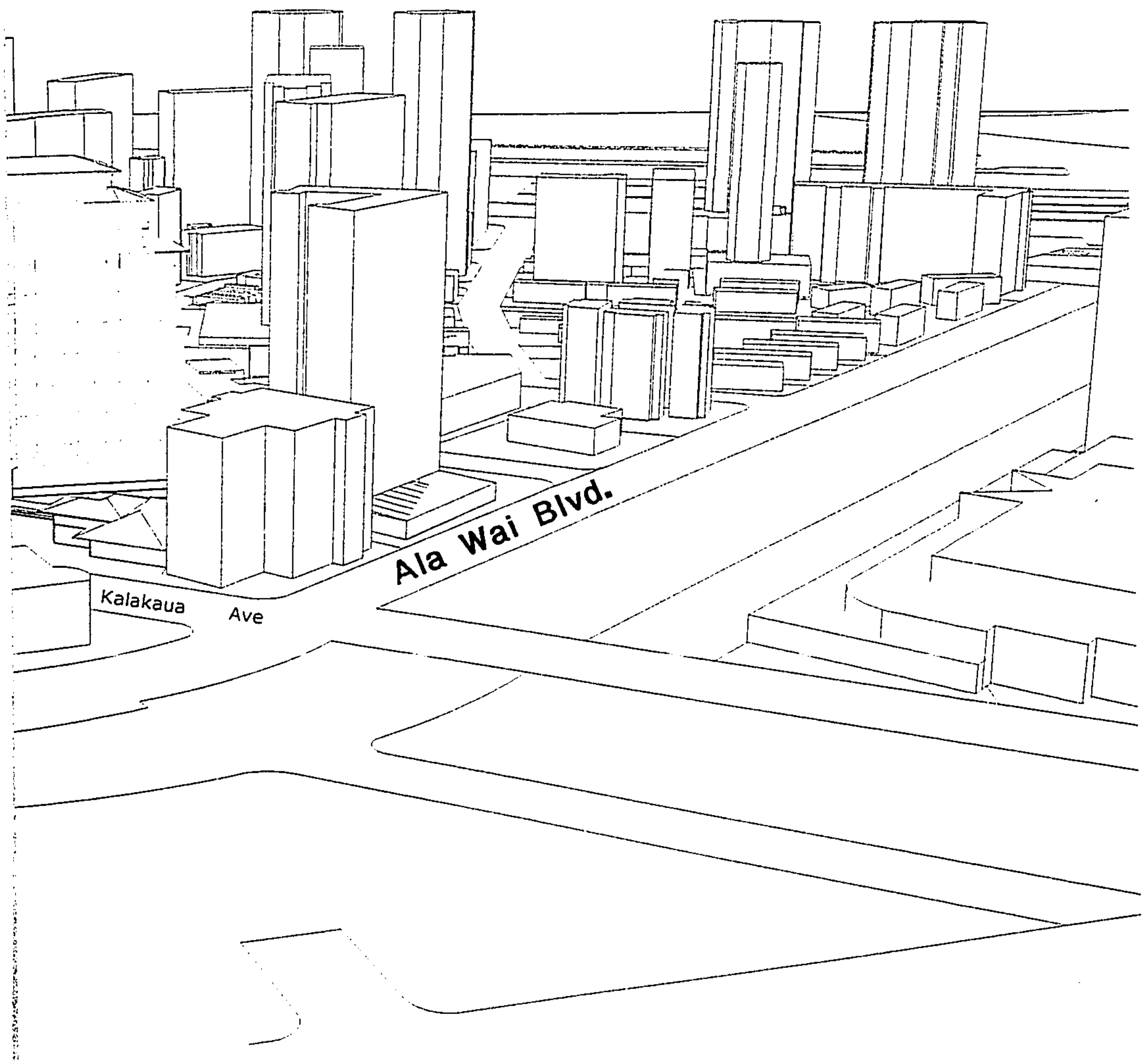
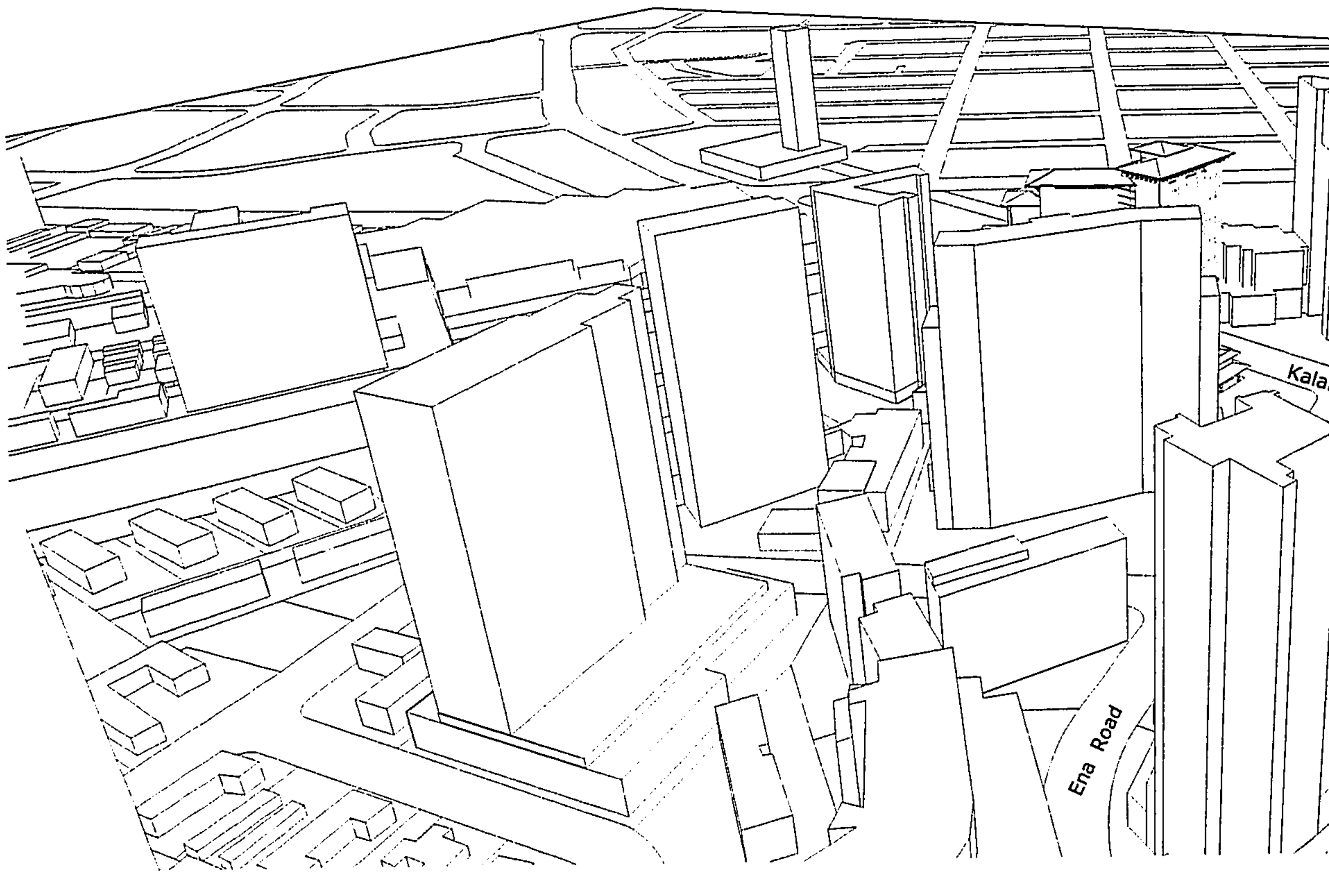
Kalakaua Ave




Ena Rd
Kalakaua


Ala Wai Blvd.
Kalakaua
Ave



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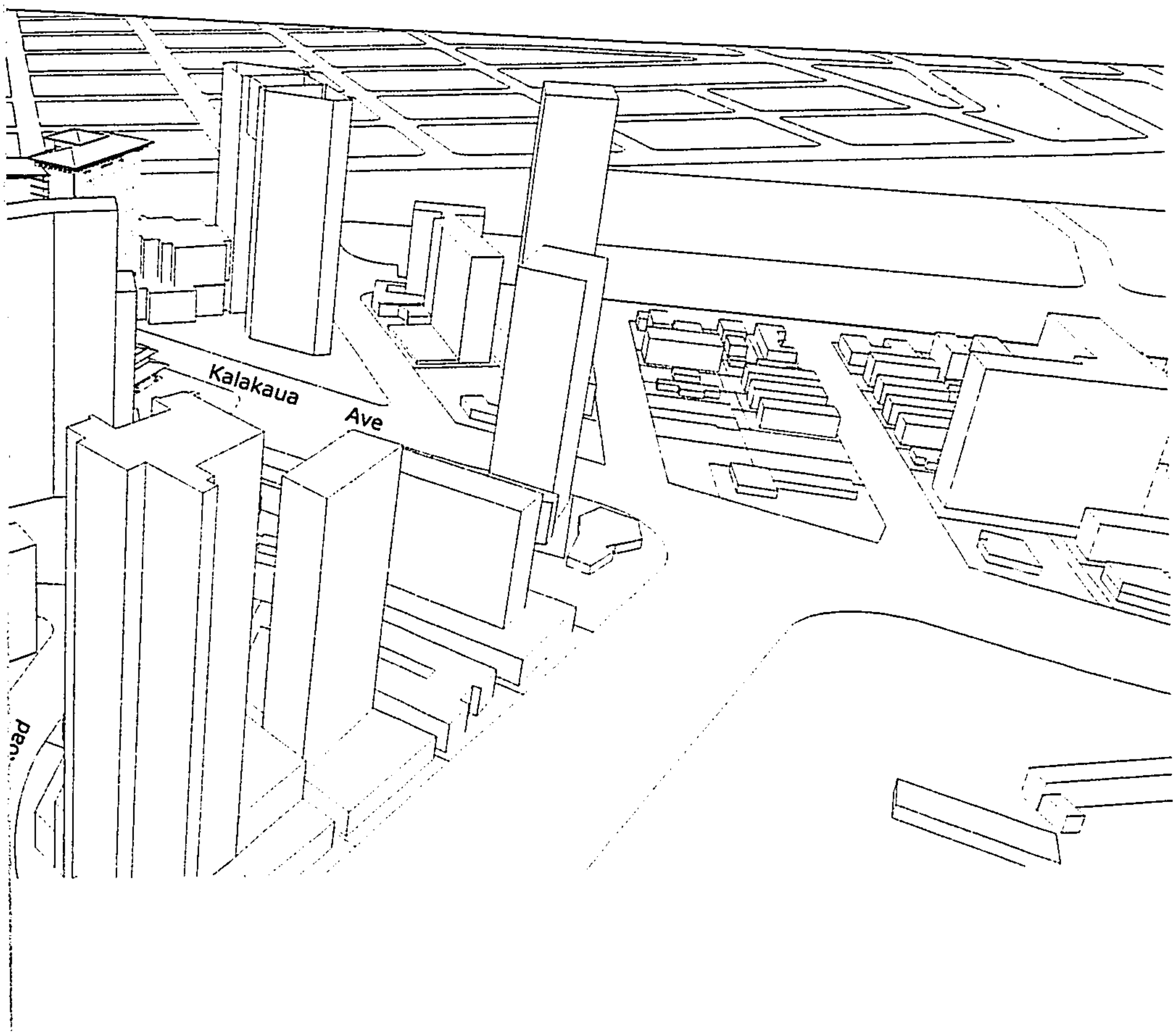
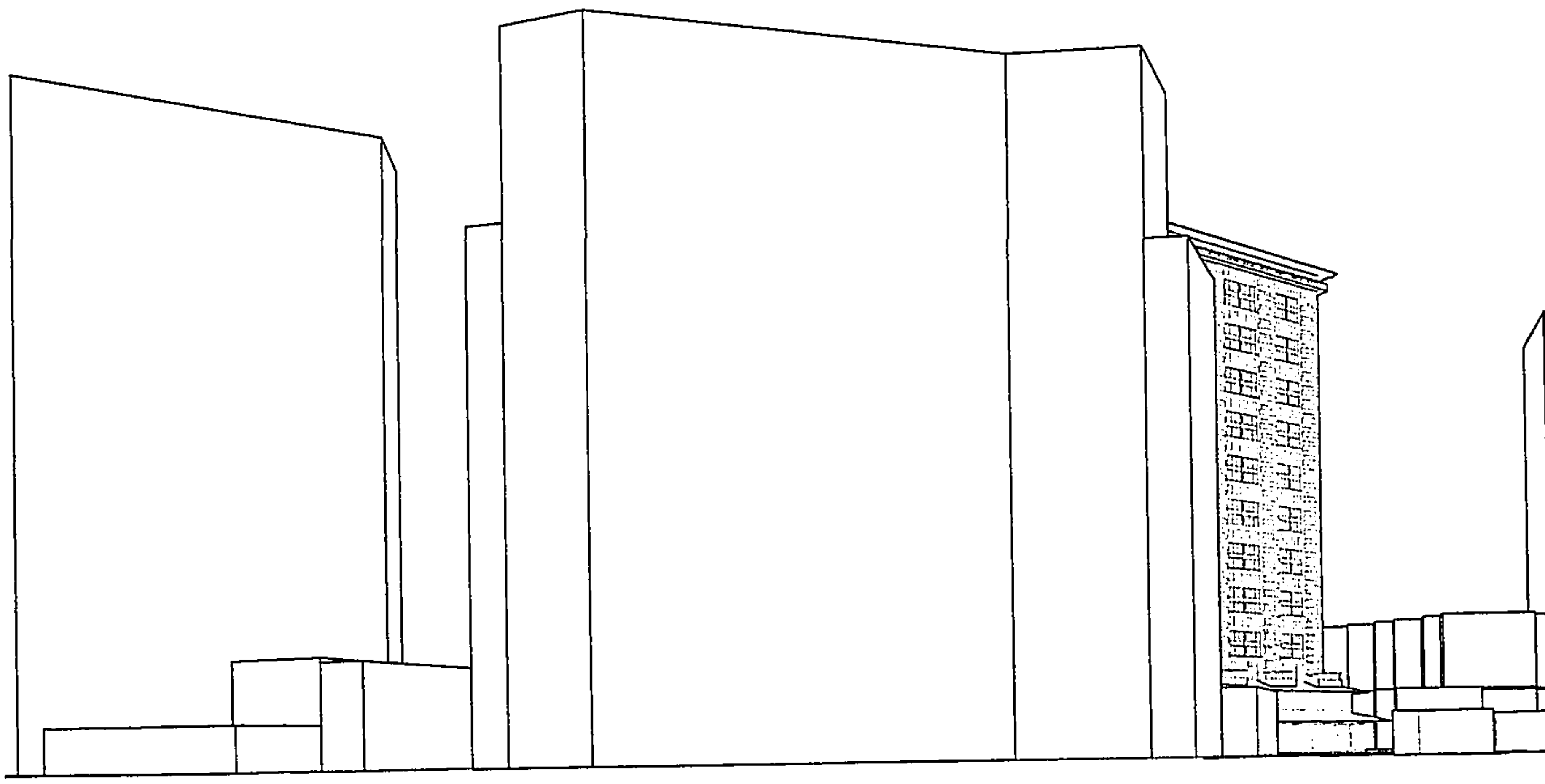
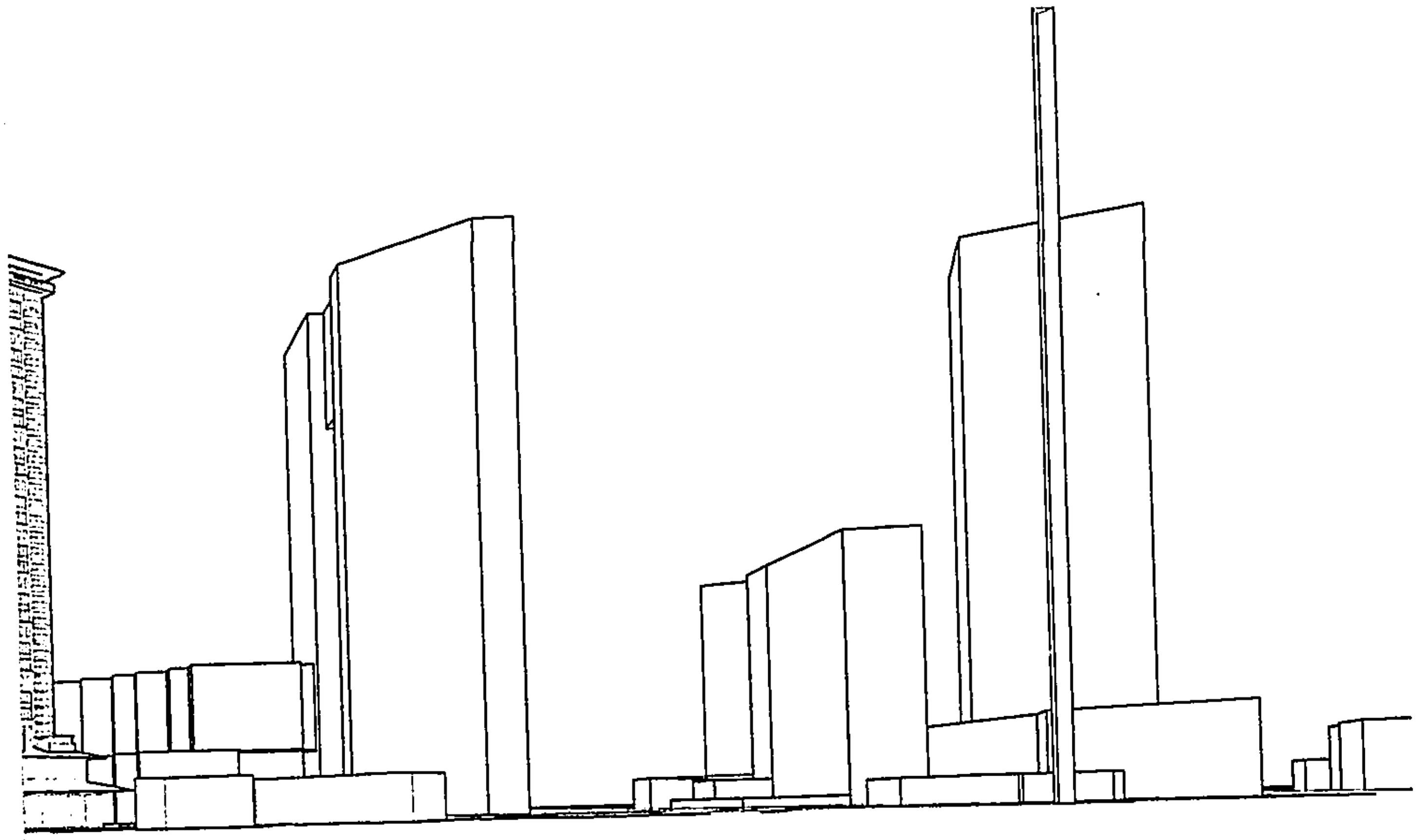
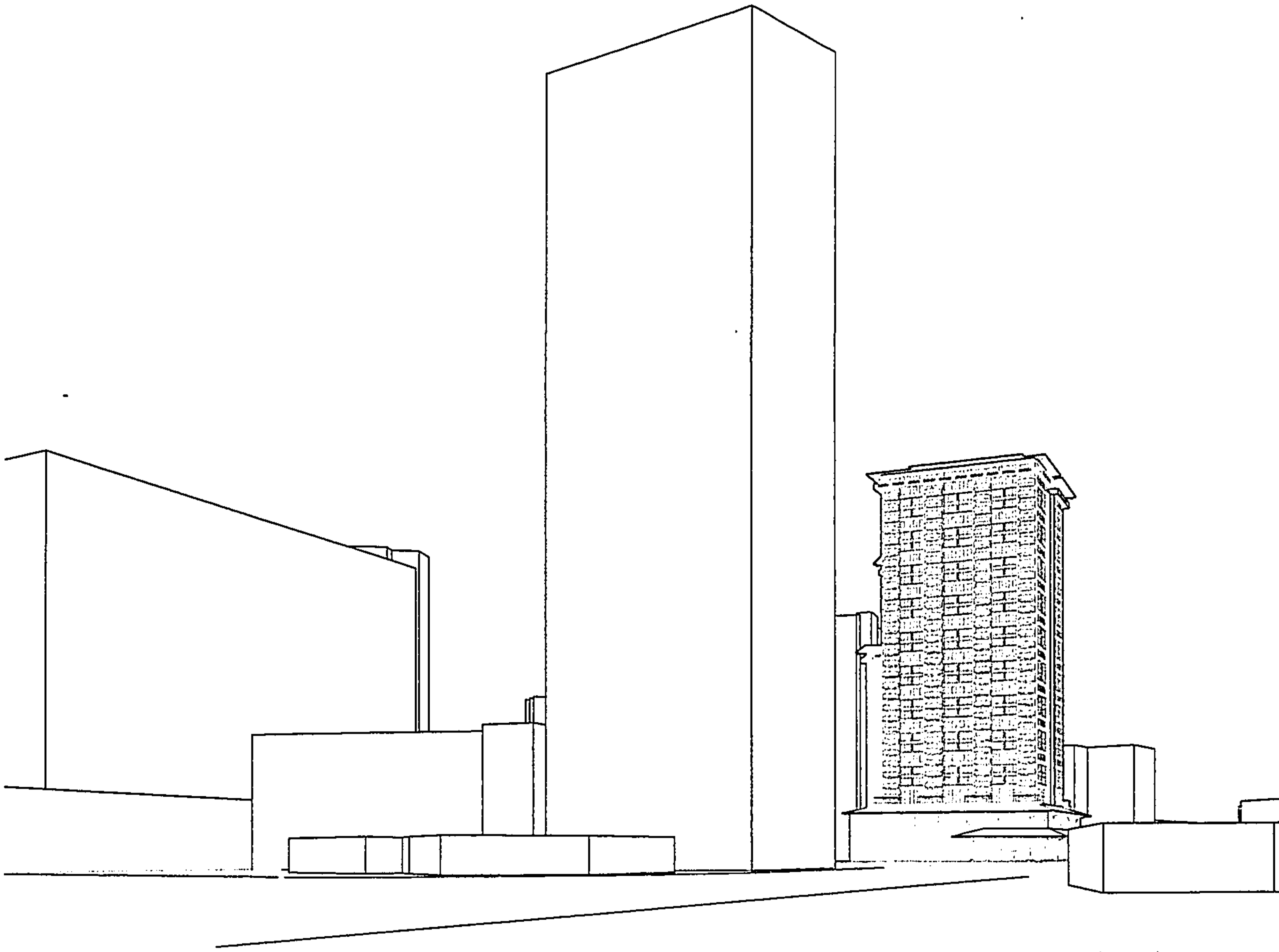

Kalakaua
Ave



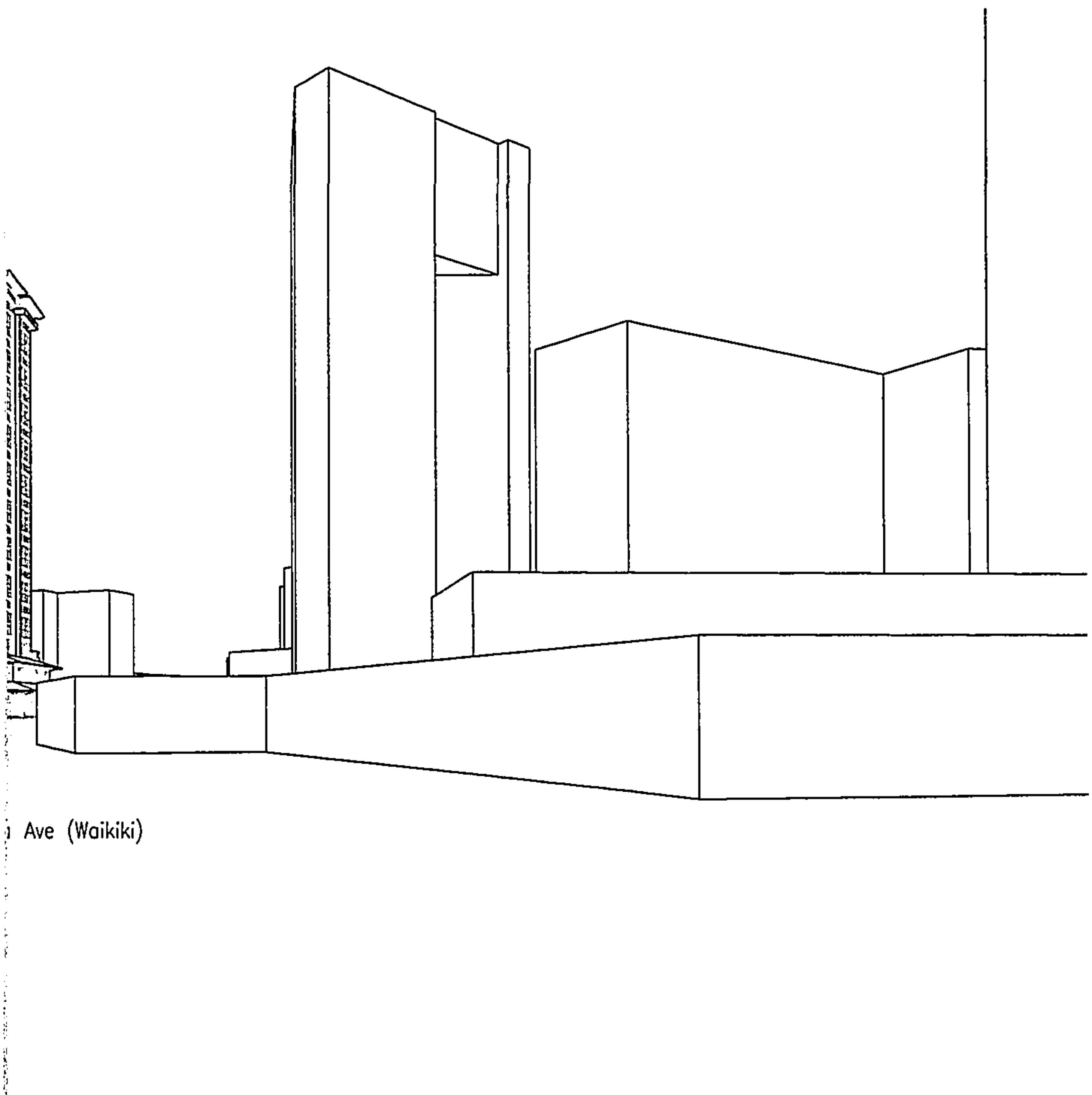
perspective from across B



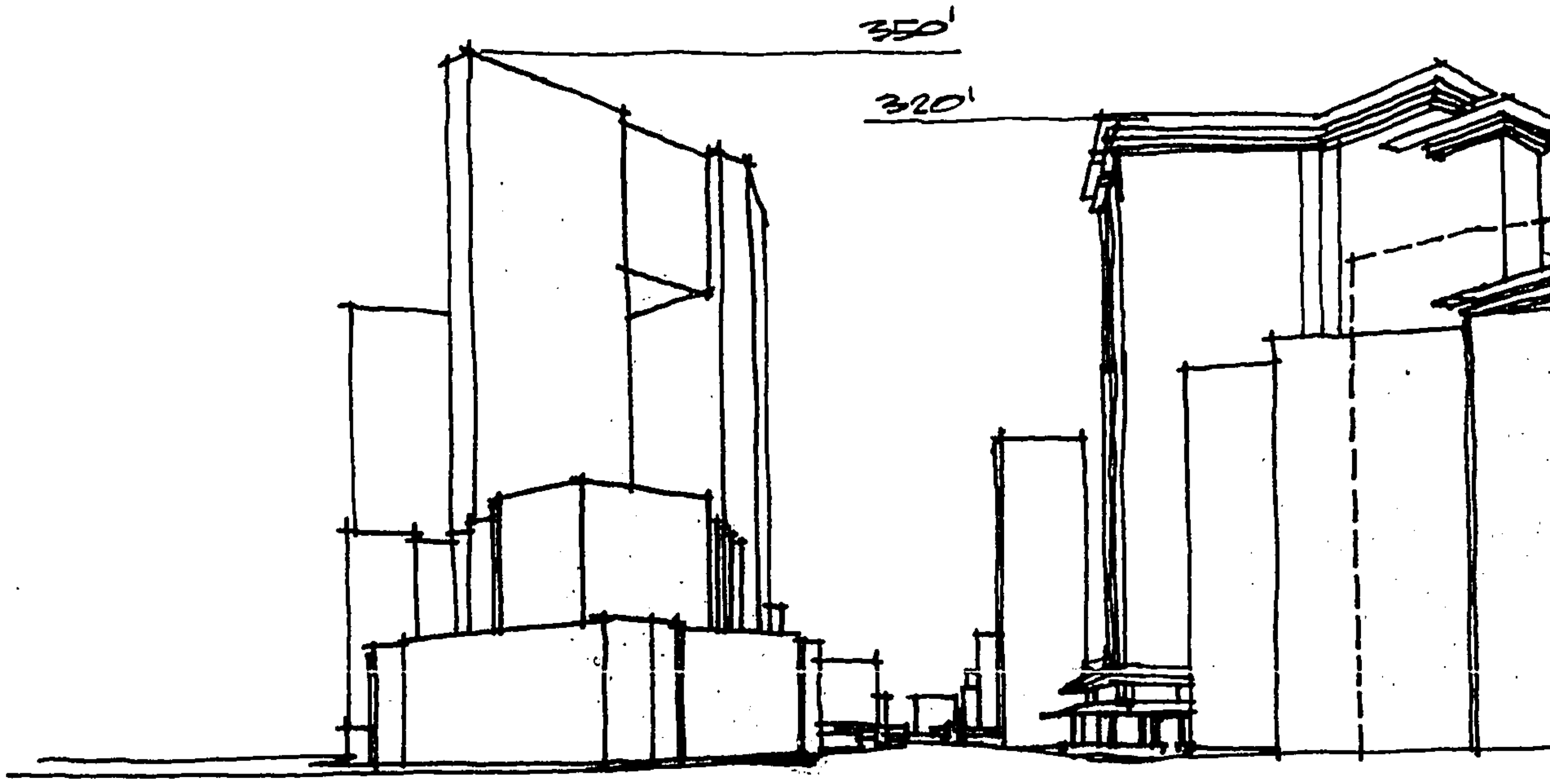
ːctive from across Ena Road



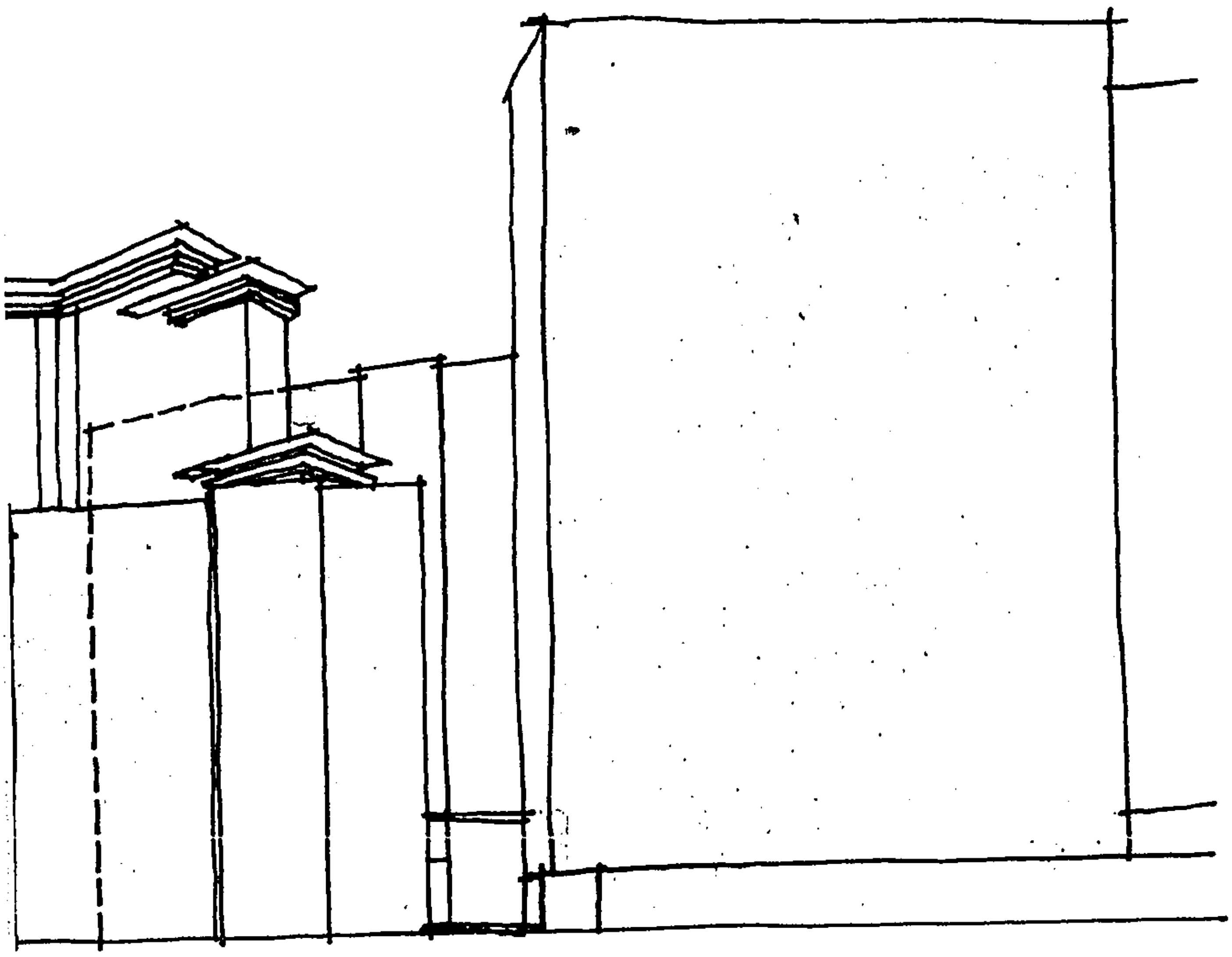
perspective view from Kalakaua Ave (Waikiki)



ı Ave (Waikiki)



perspective view from Ala Wai Bridge



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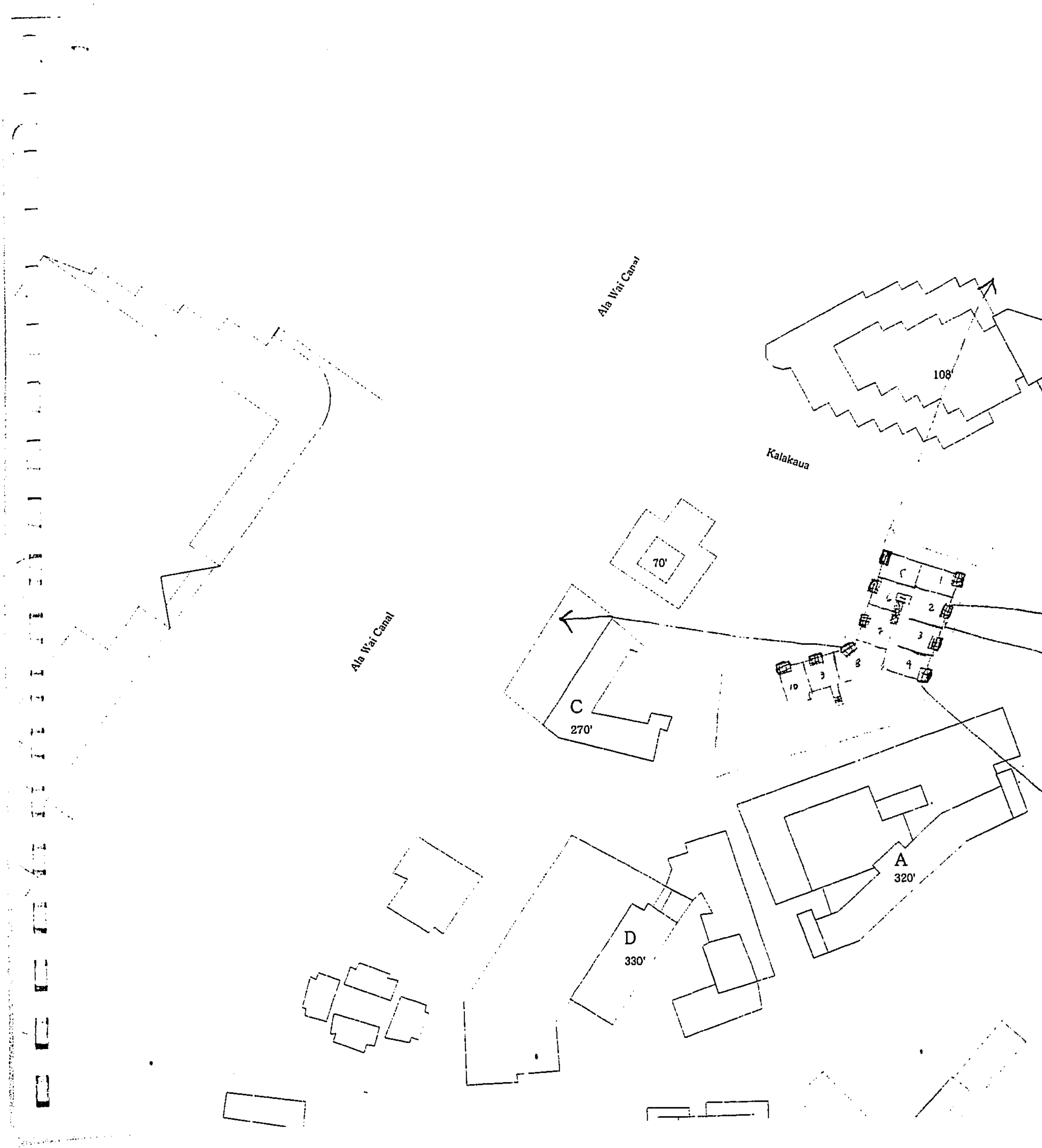
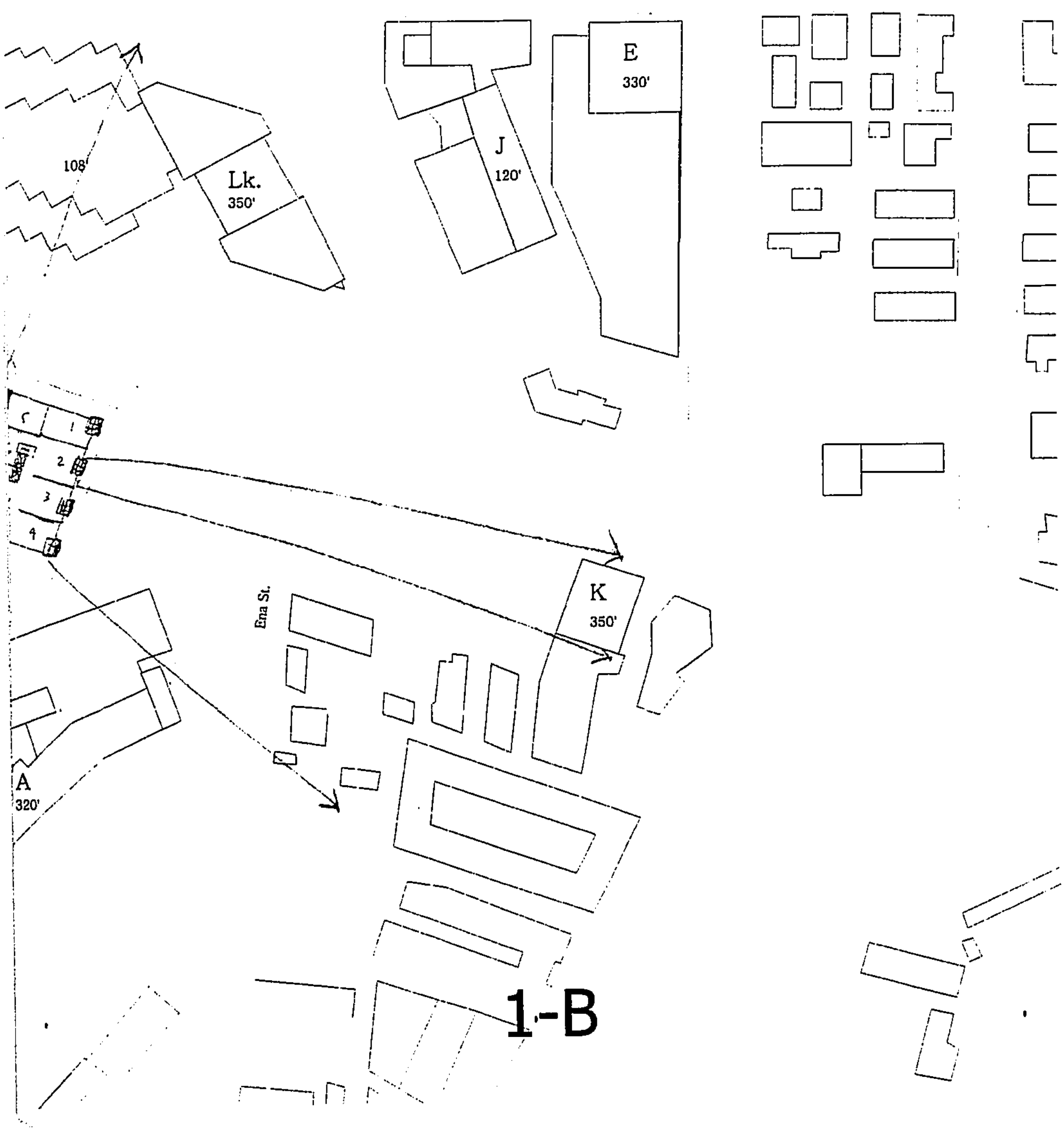
APPENDIX XII

ALTERNATIVE TOWER PLANS



Ala Wai Canal
108'
Kalakaua
70'
Ala Wai Canal
C
270'
A
320'
D
330'



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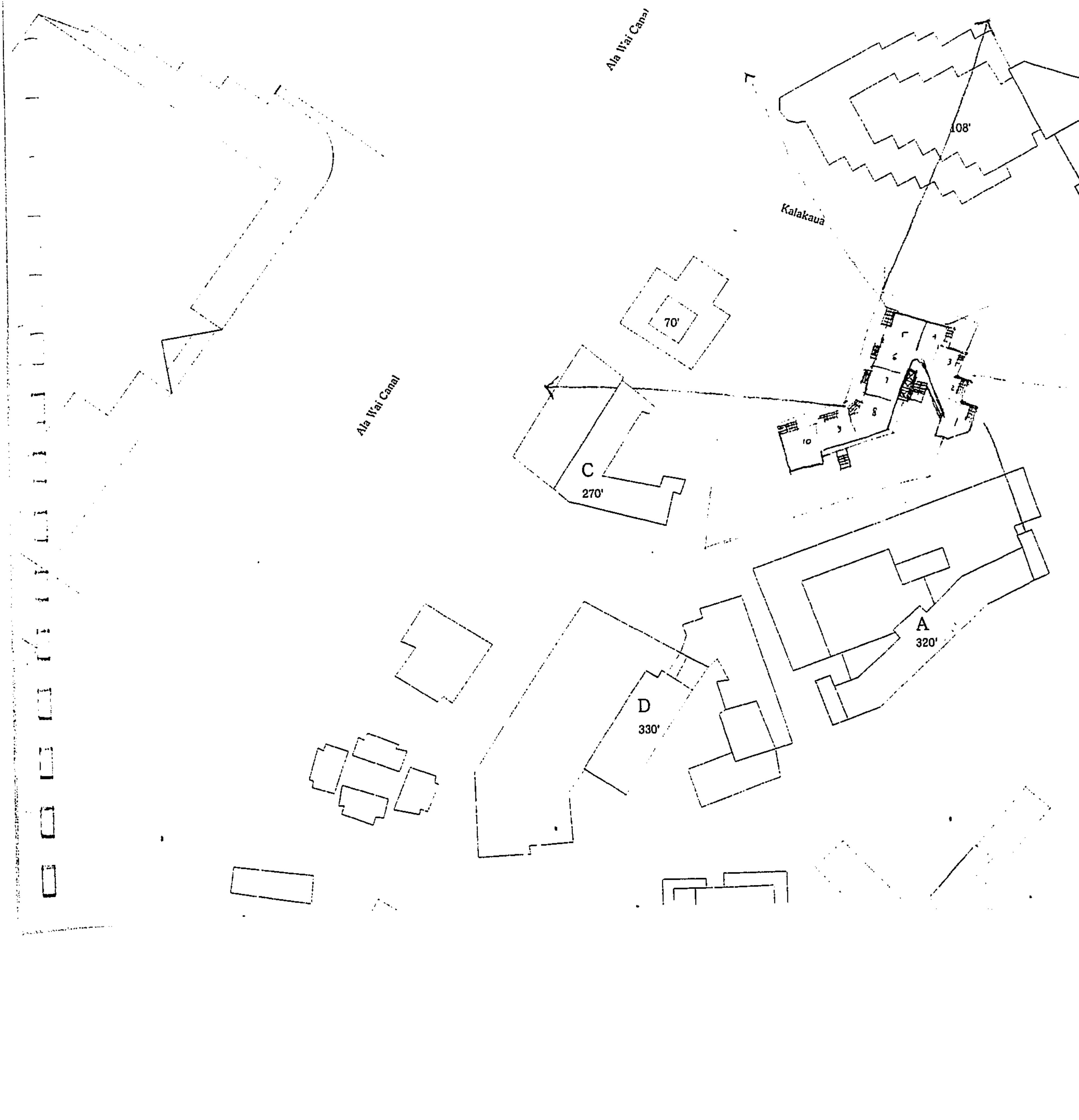
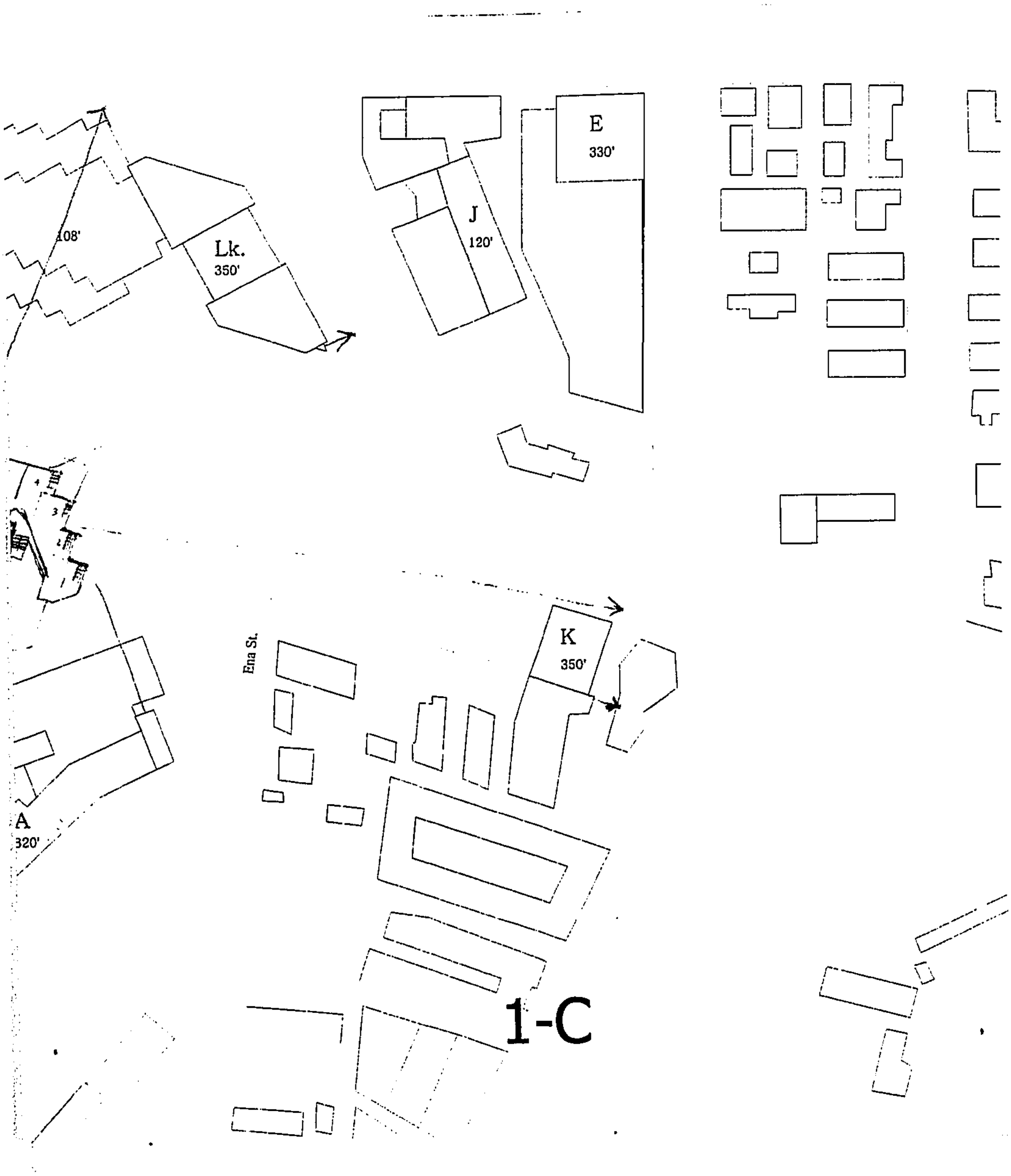

Ala Wai Canal
Kalakaua
108'
70'
Ala Wai Canal
C
270'
A
320'
D
330'



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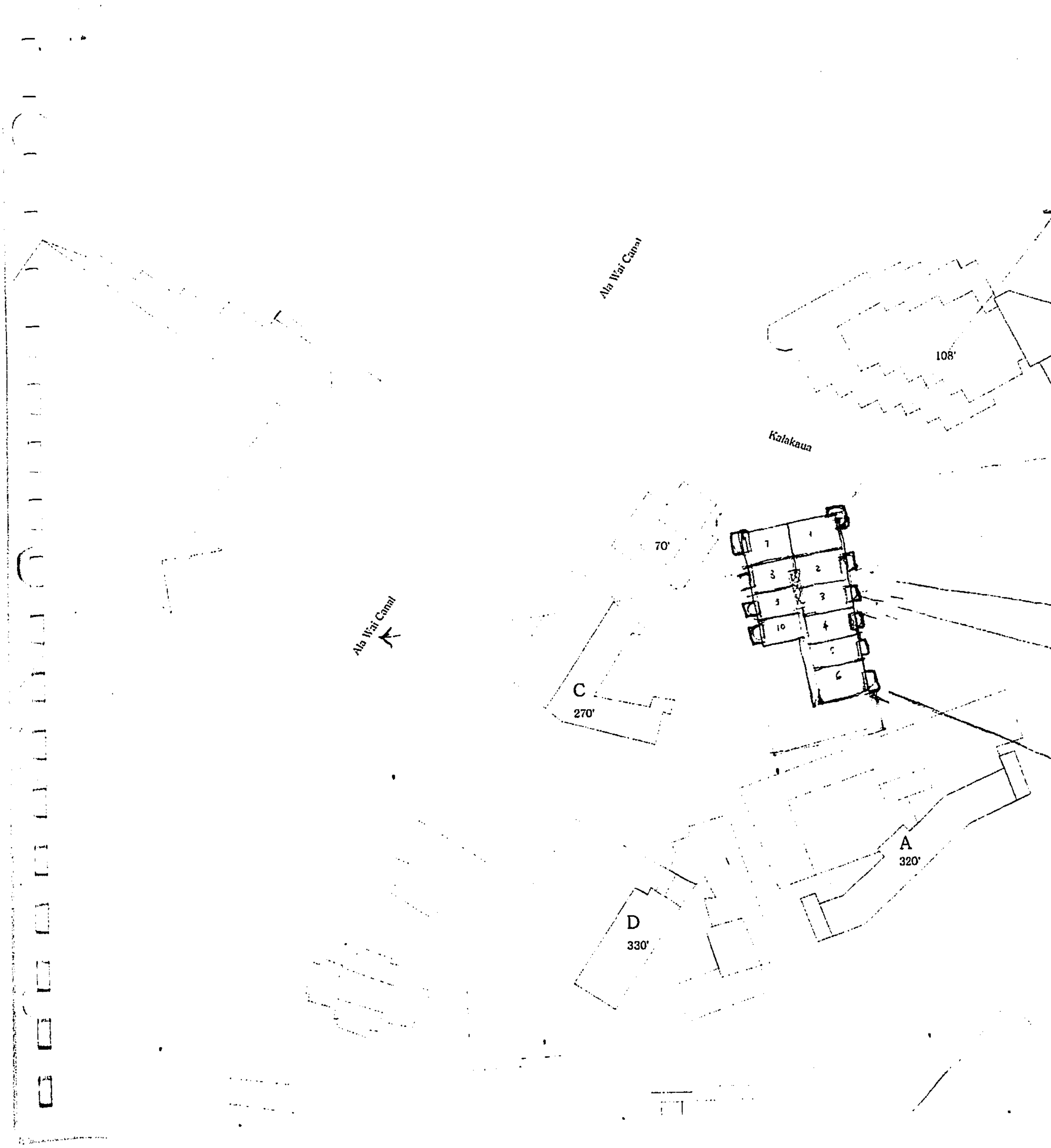
Ala Wai Canal
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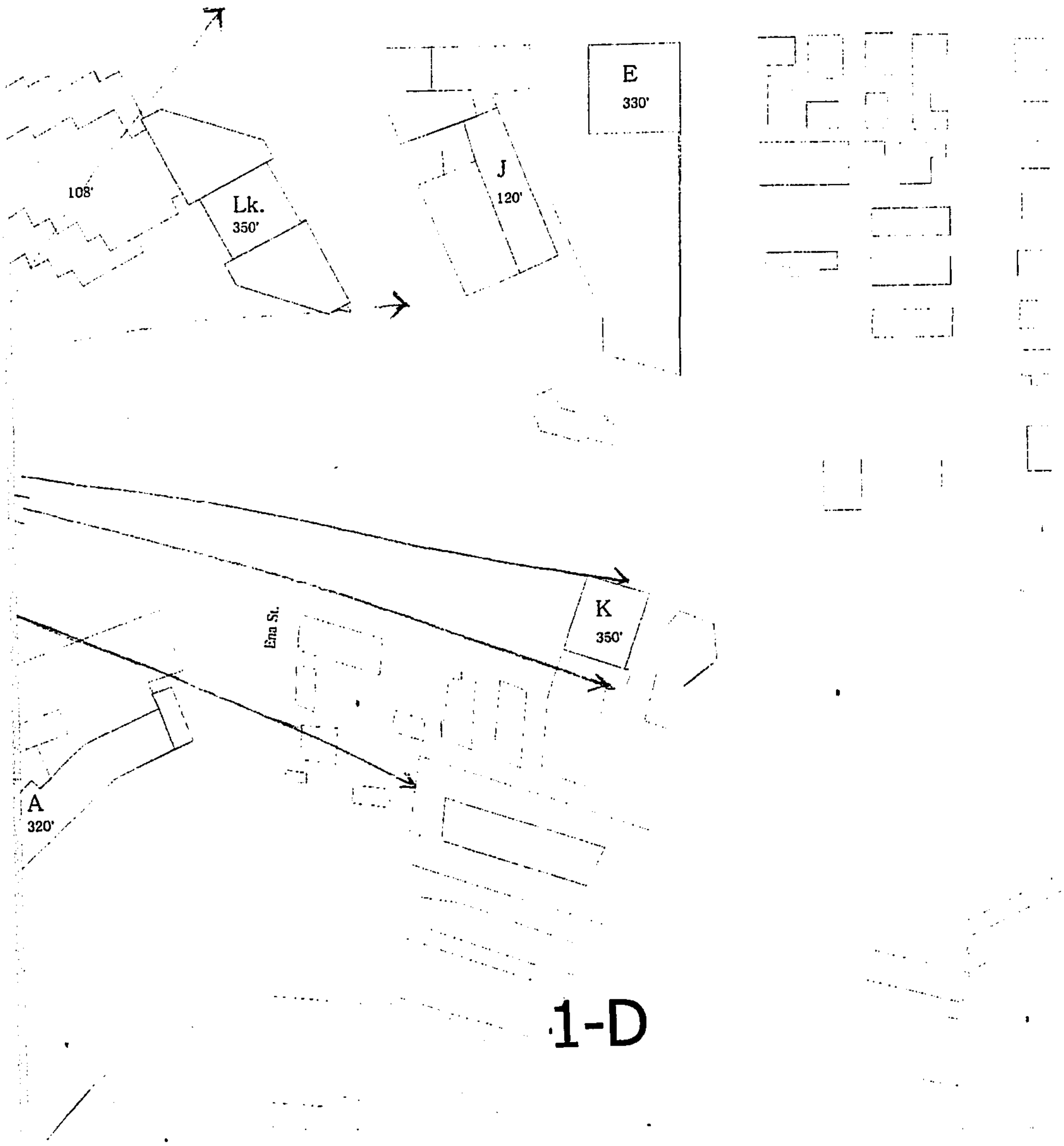
Kalakaua
70'
Ala Wai Canal
C
270'
A
320'
D
330'



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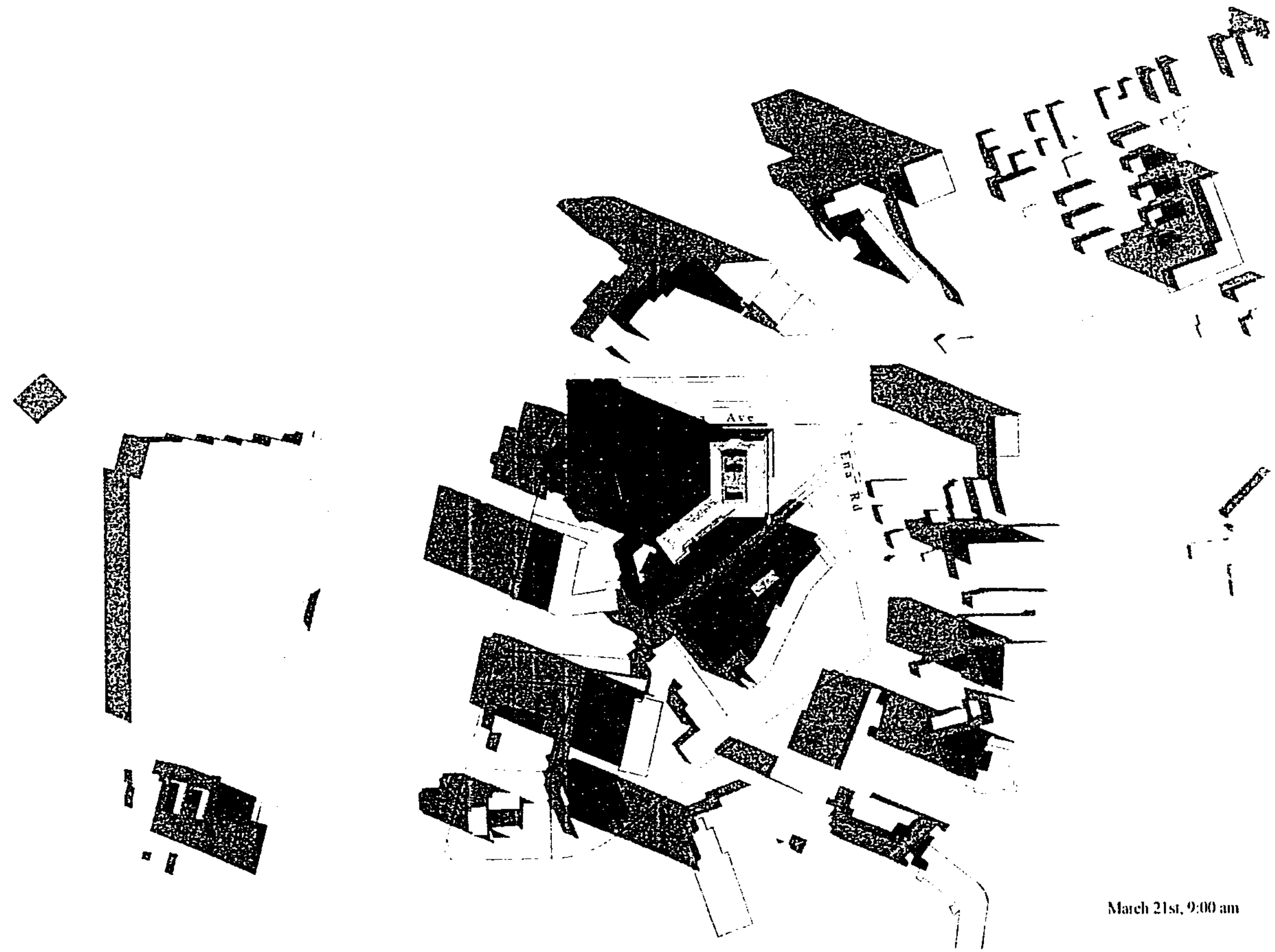
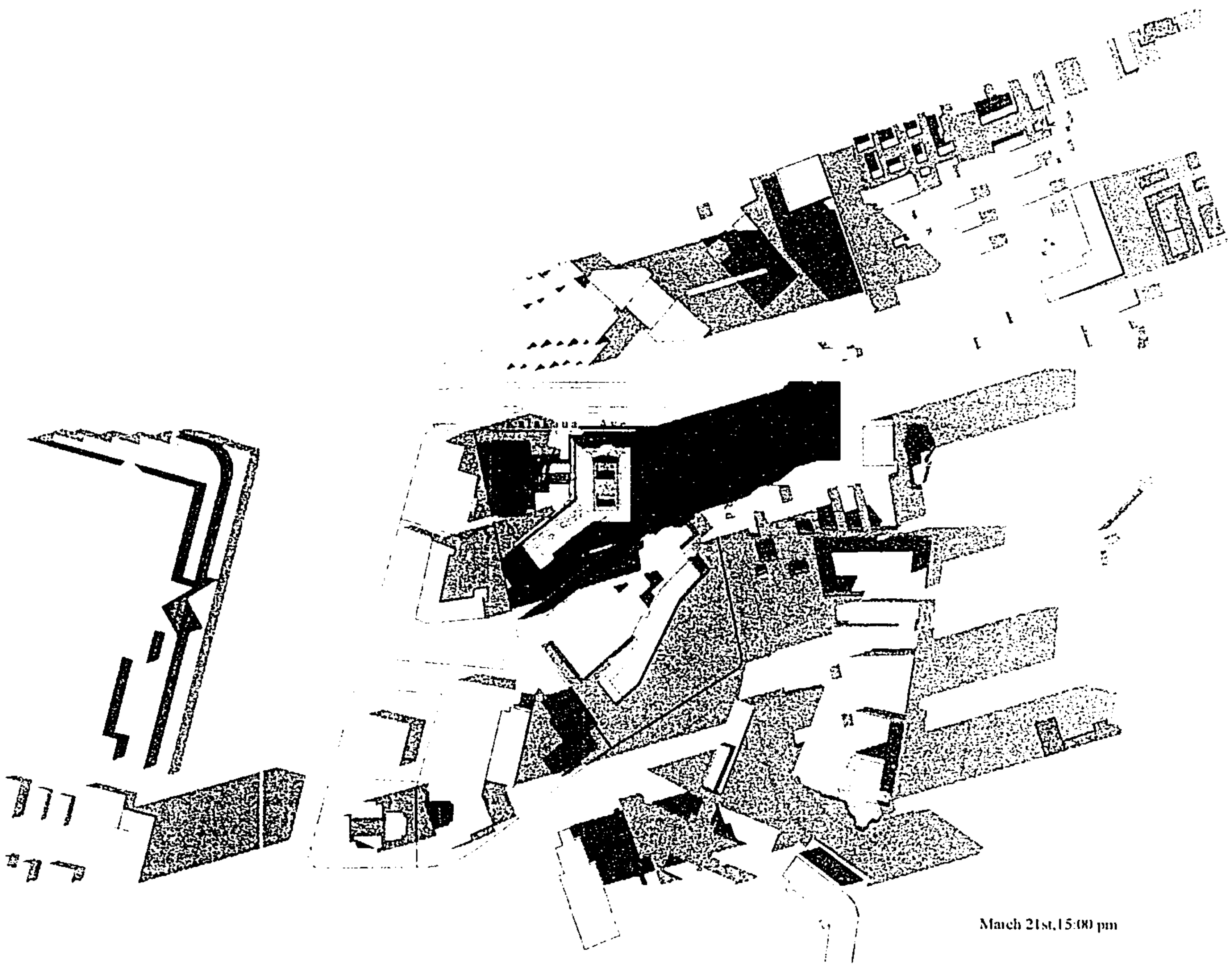
APPENDIX XIII

SHADOW STUDY



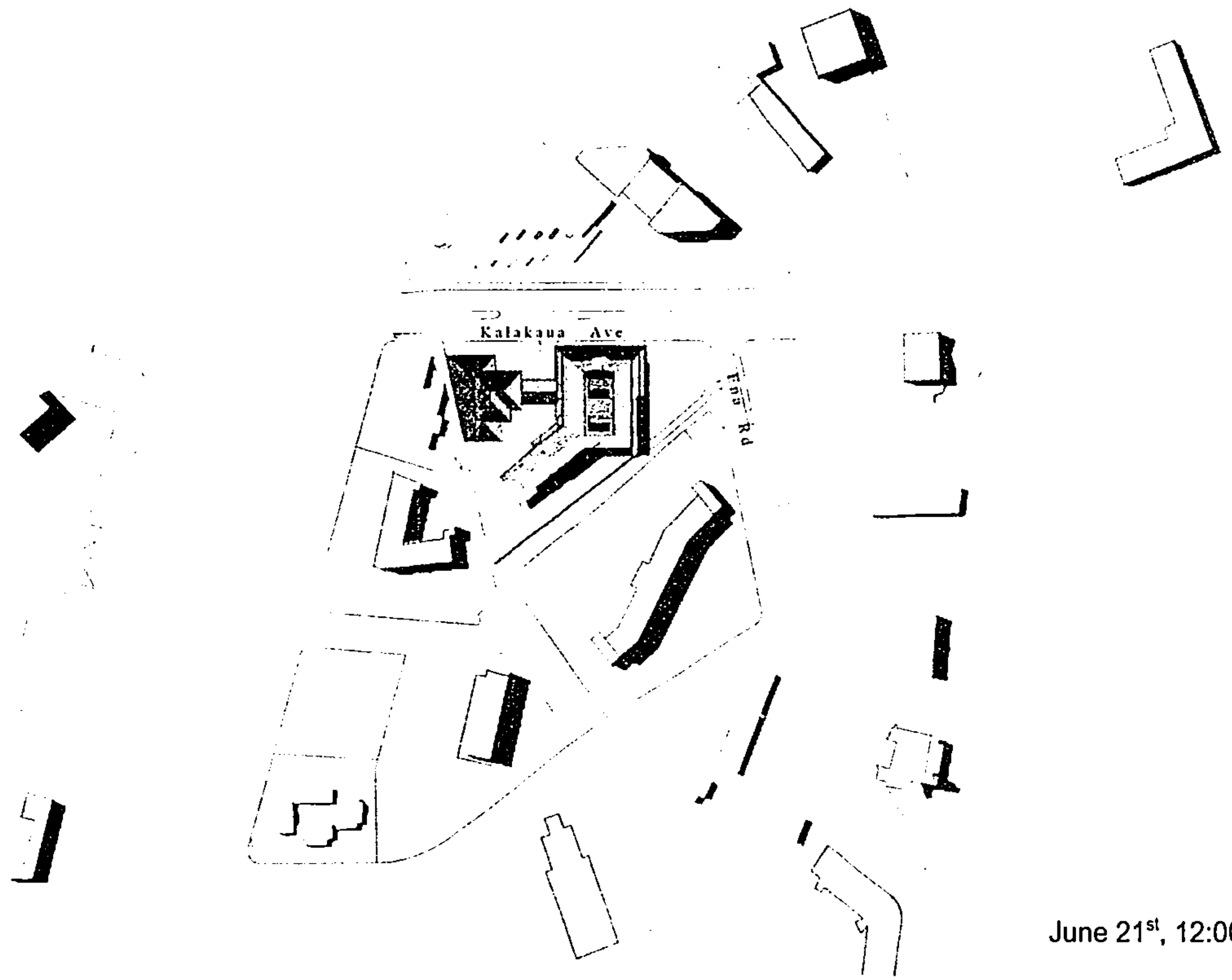
March 21st, 9:00 am

Marcdh 21st, 12:00 pm

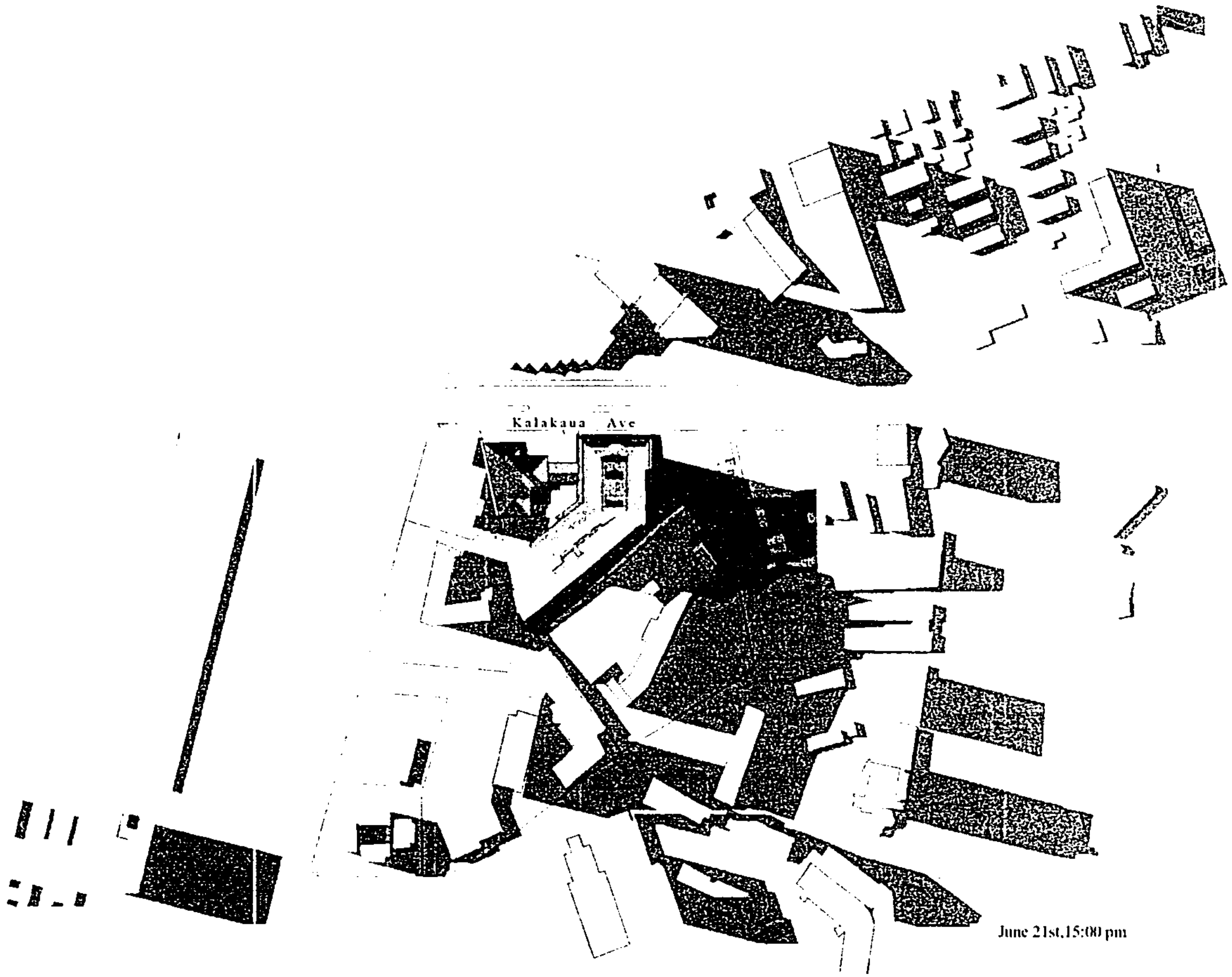


March 21st,15:00 pm

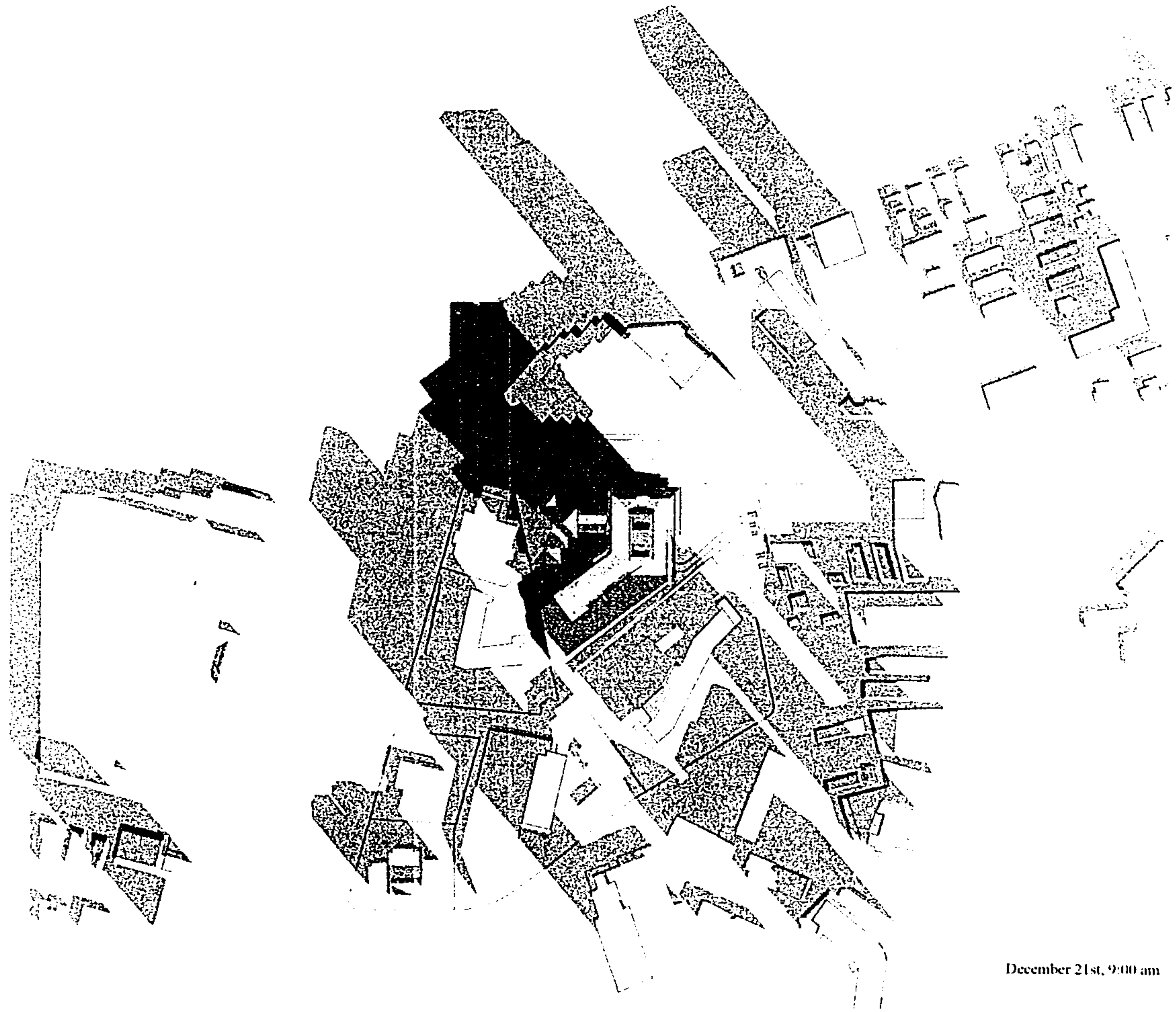
June 21st, 9:00 am



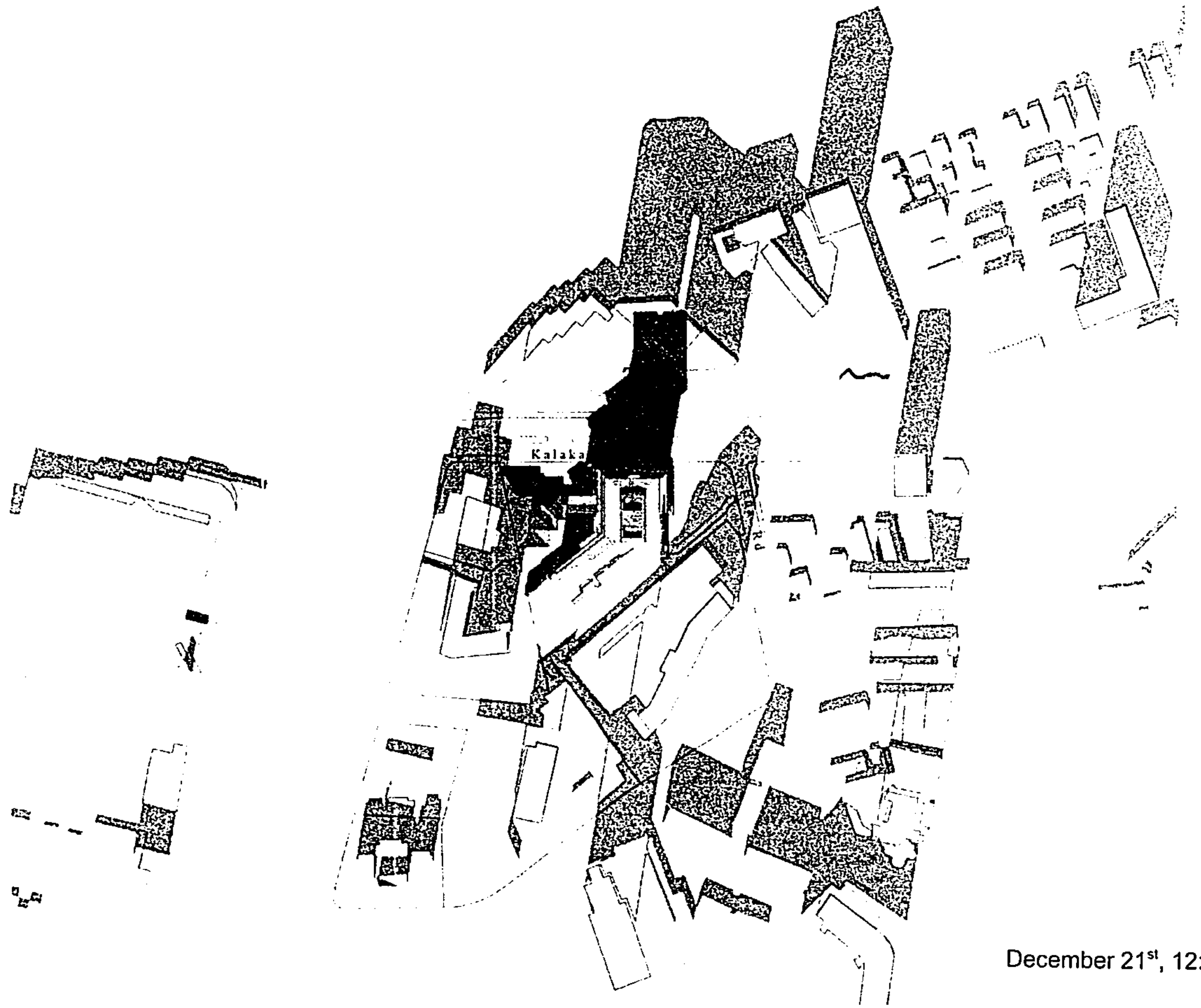
June 21st, 12:00 pm



June 21st,15:00 pm



December 21st, 9:00 am

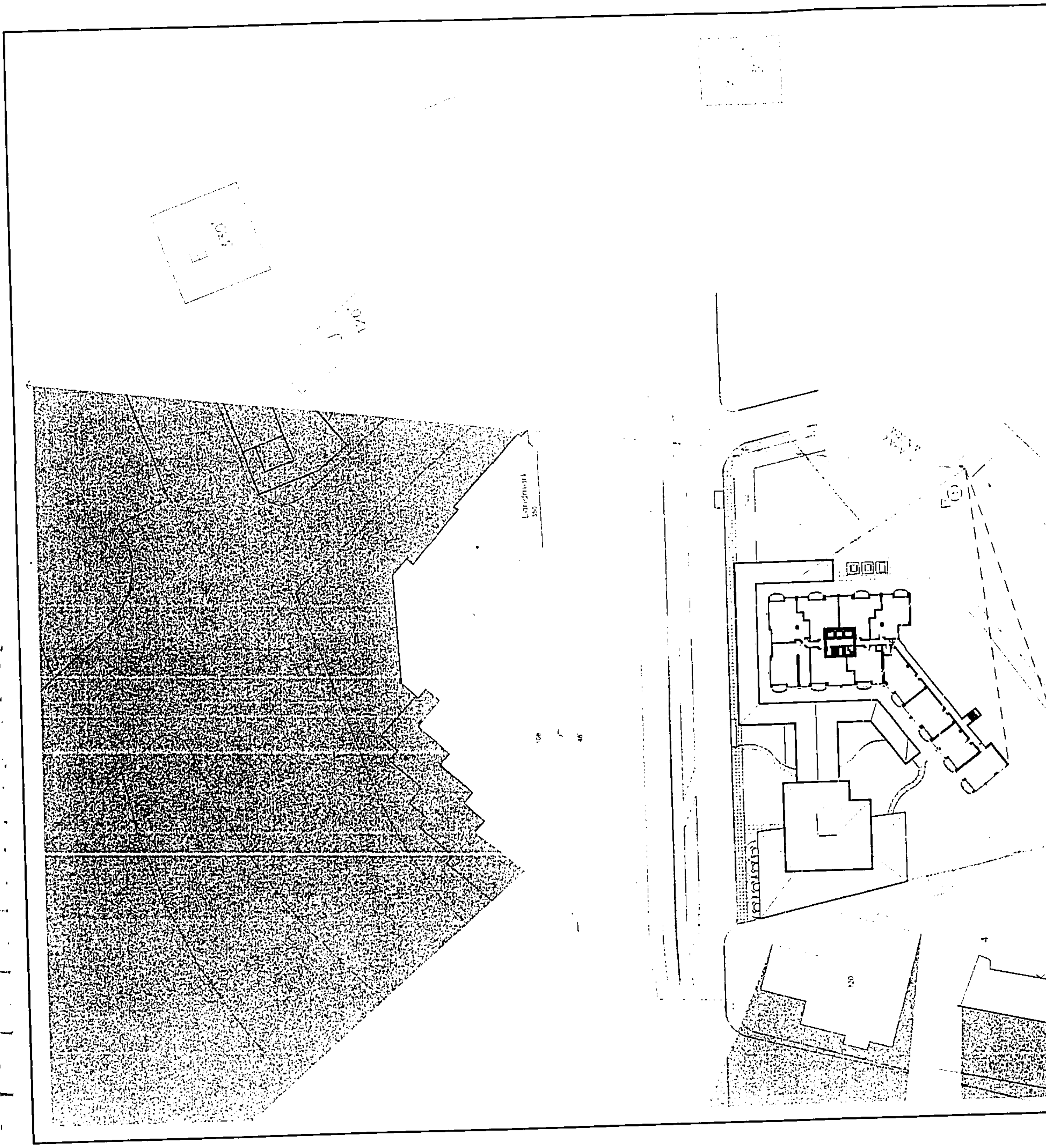


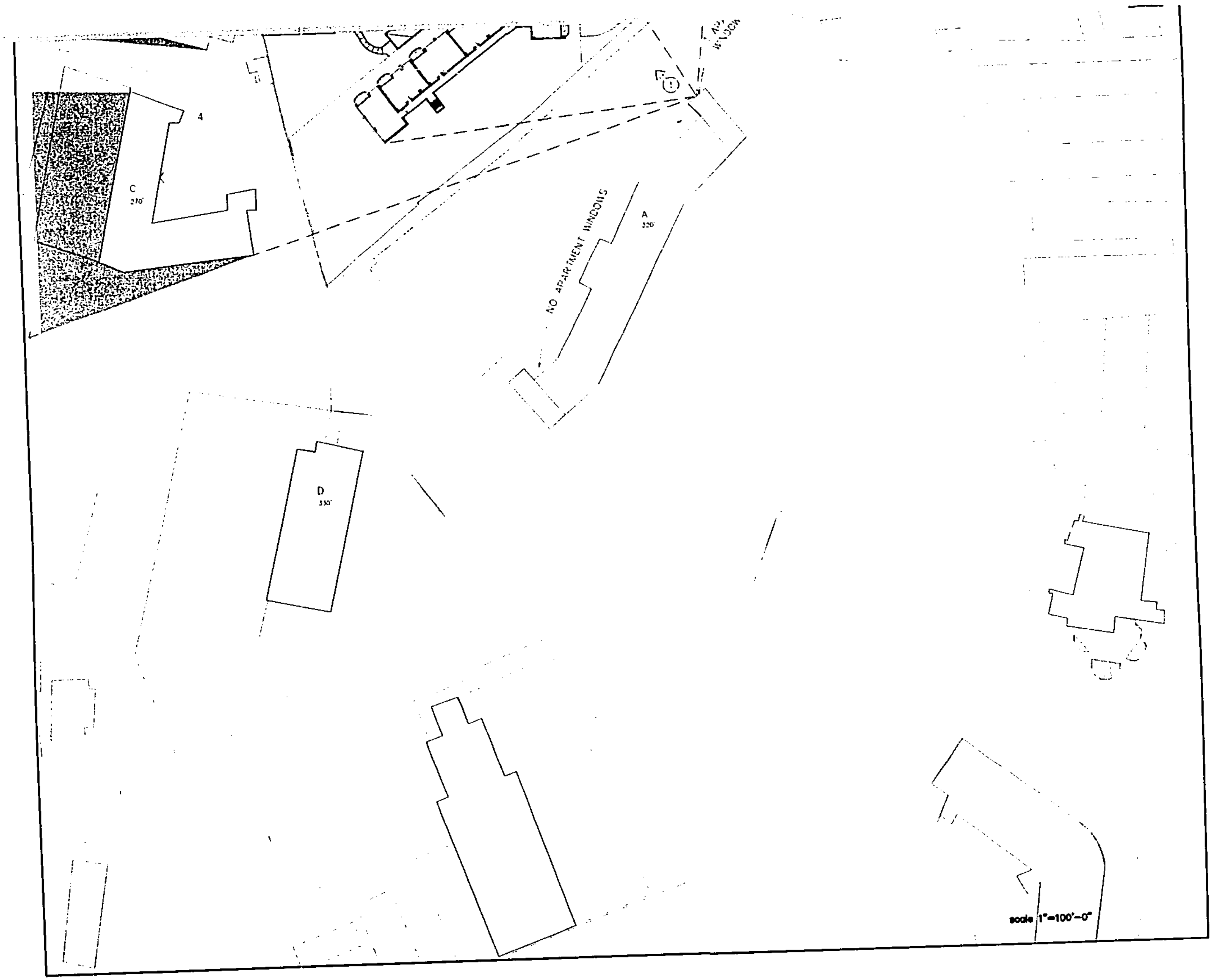
December 21st, 12:00 pm

December 21st,15:00 pm

APPENDIX IXX

VIEW BLOCKAGE STUDY





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C
210'
NO APARTMENT WINDOWS
A
320'
D
330'
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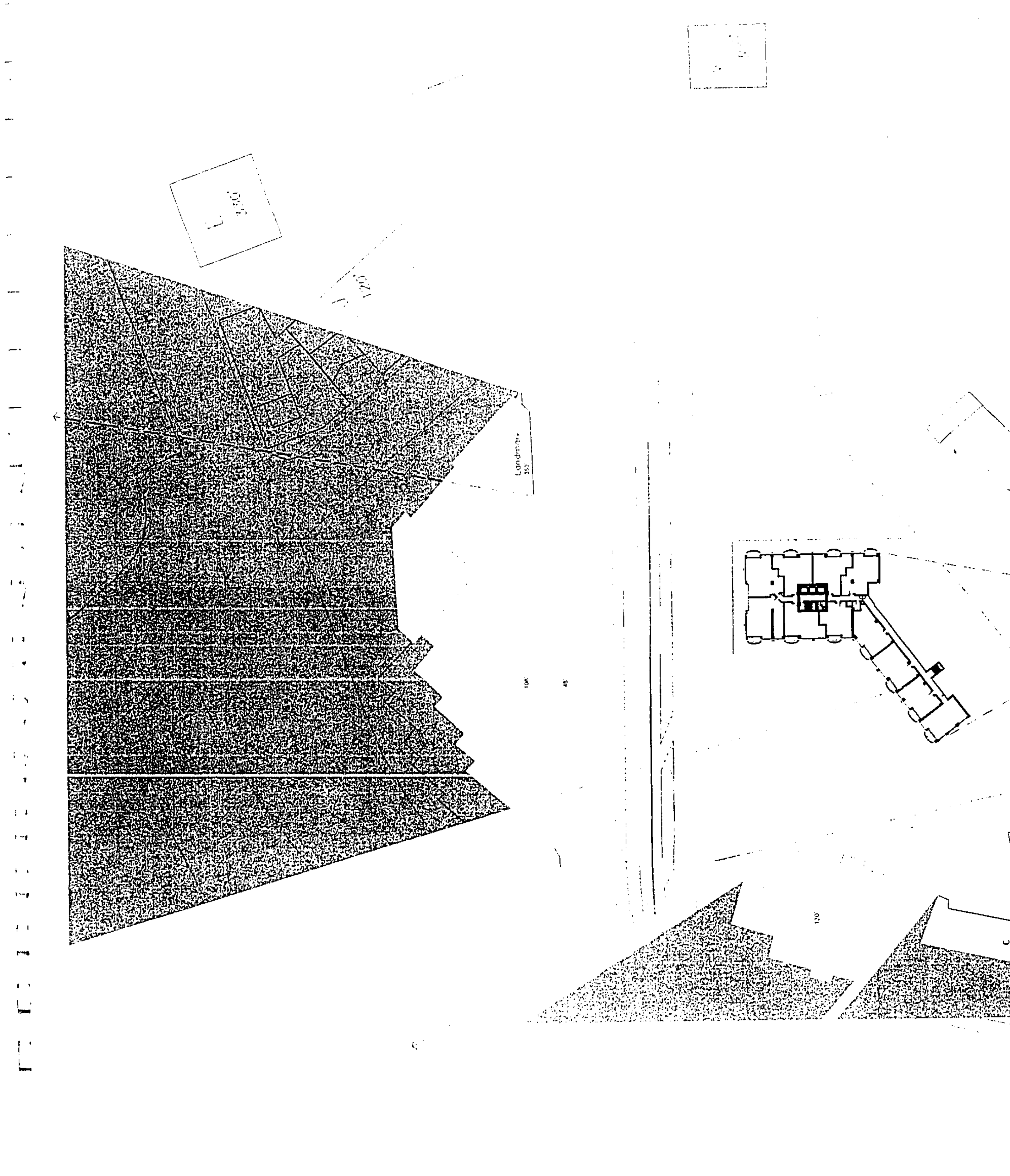

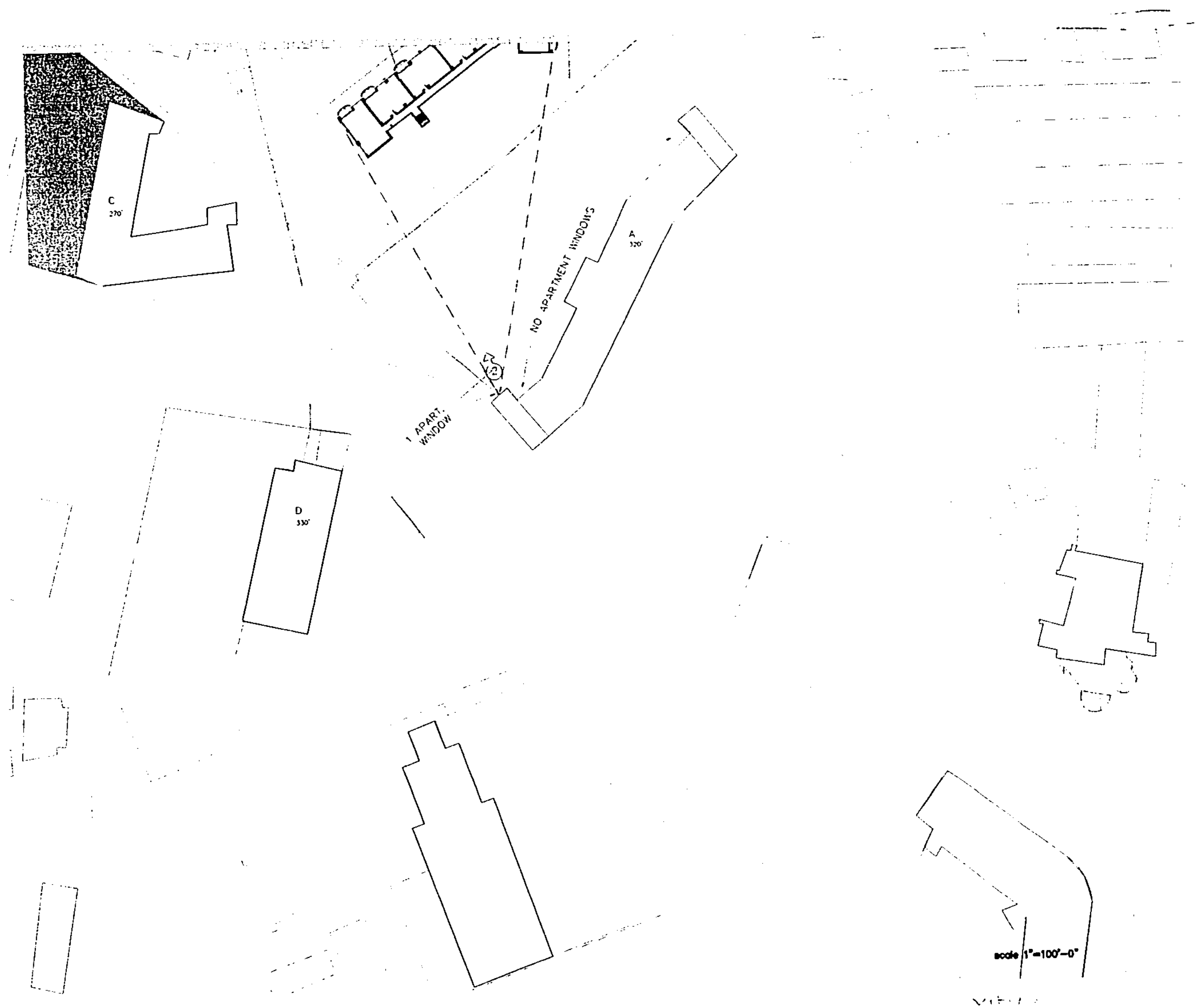
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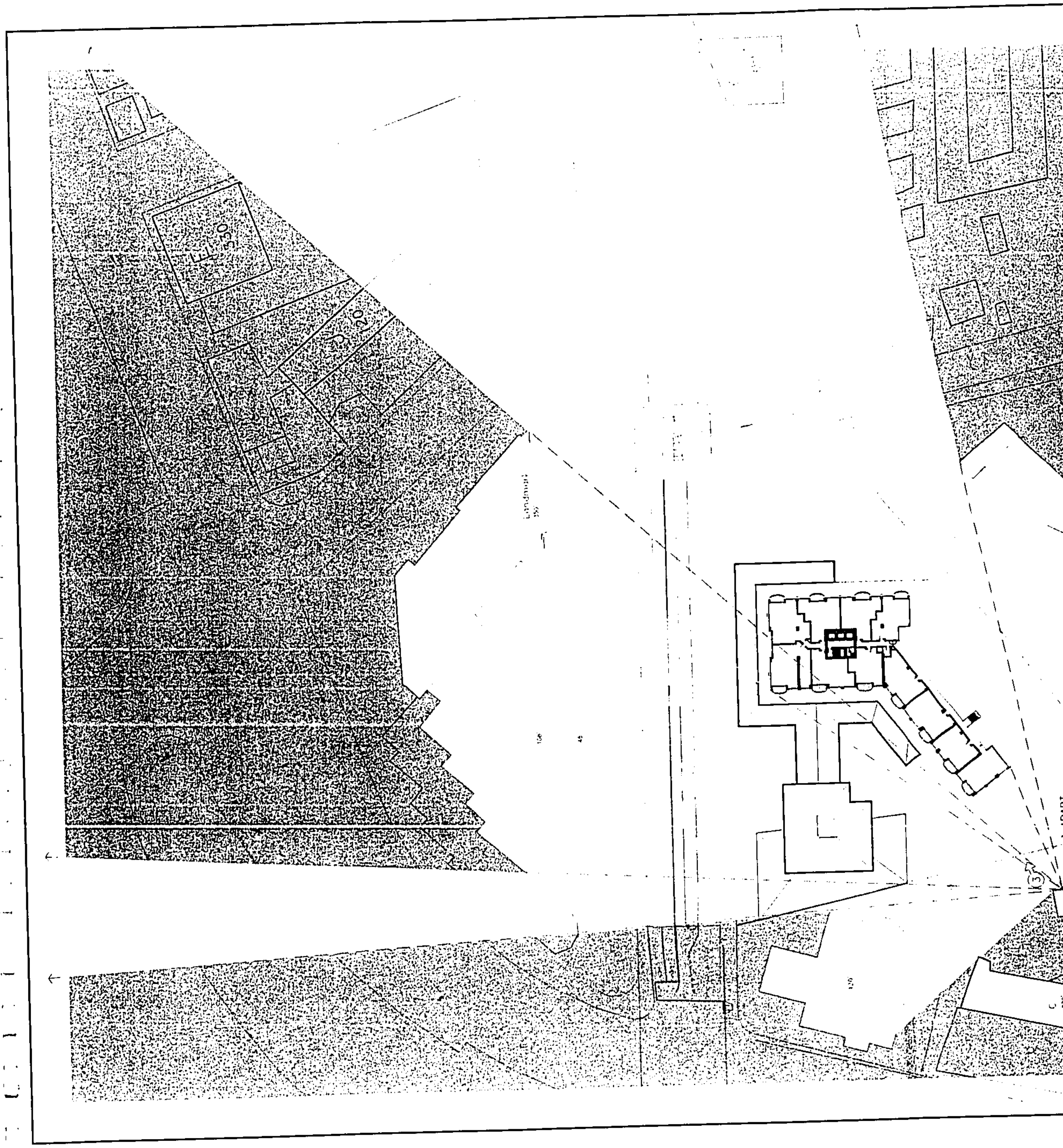

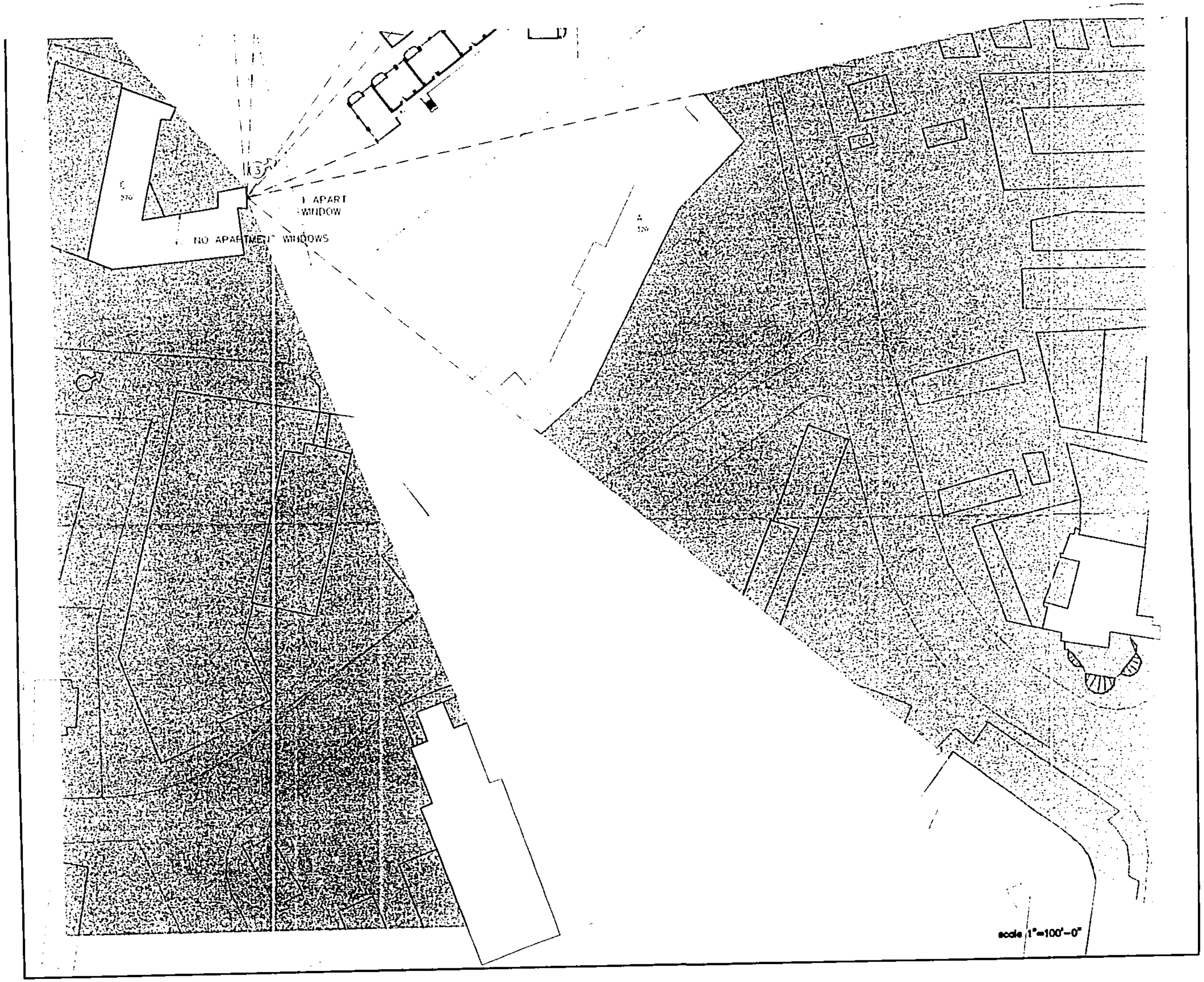

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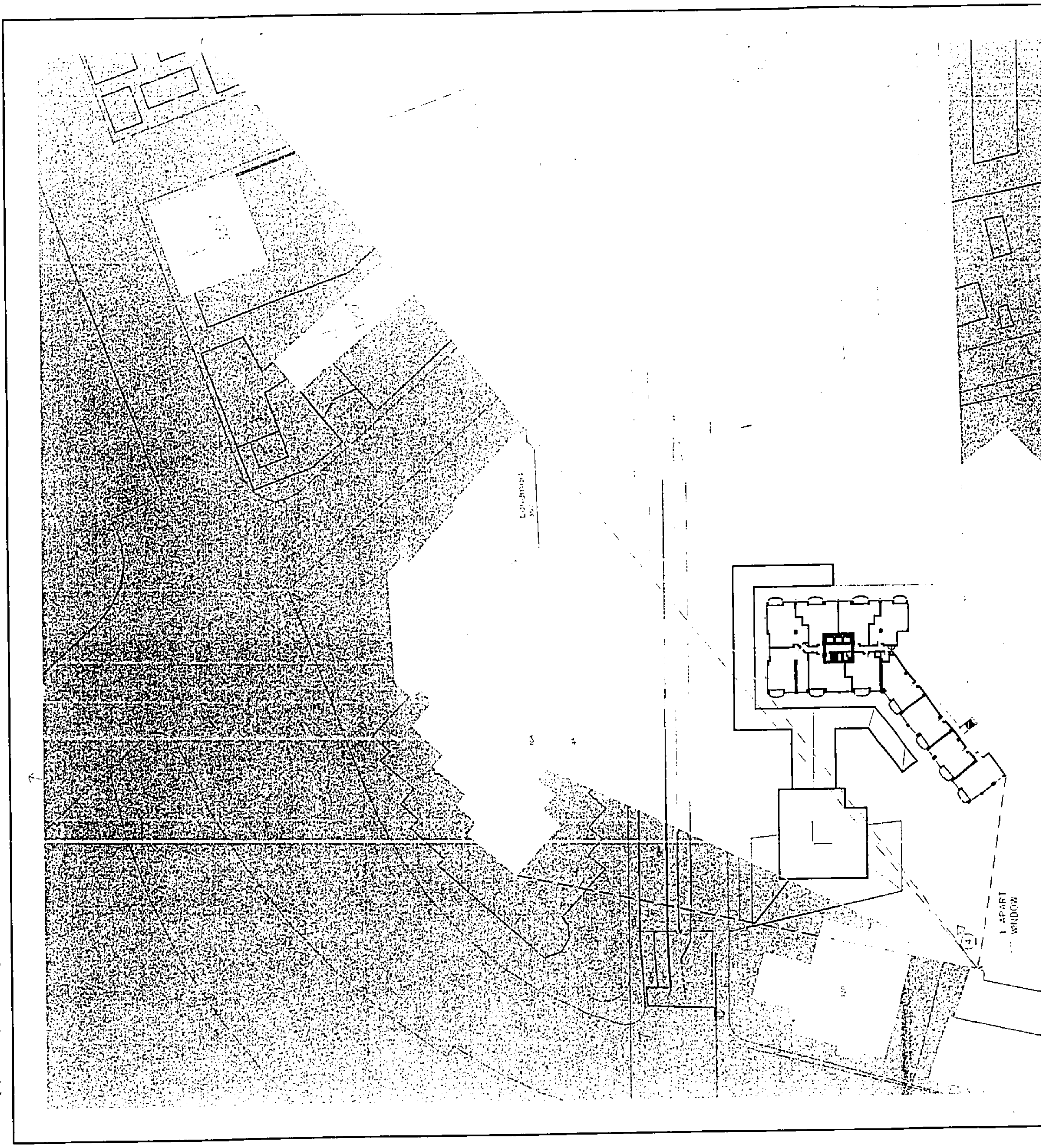

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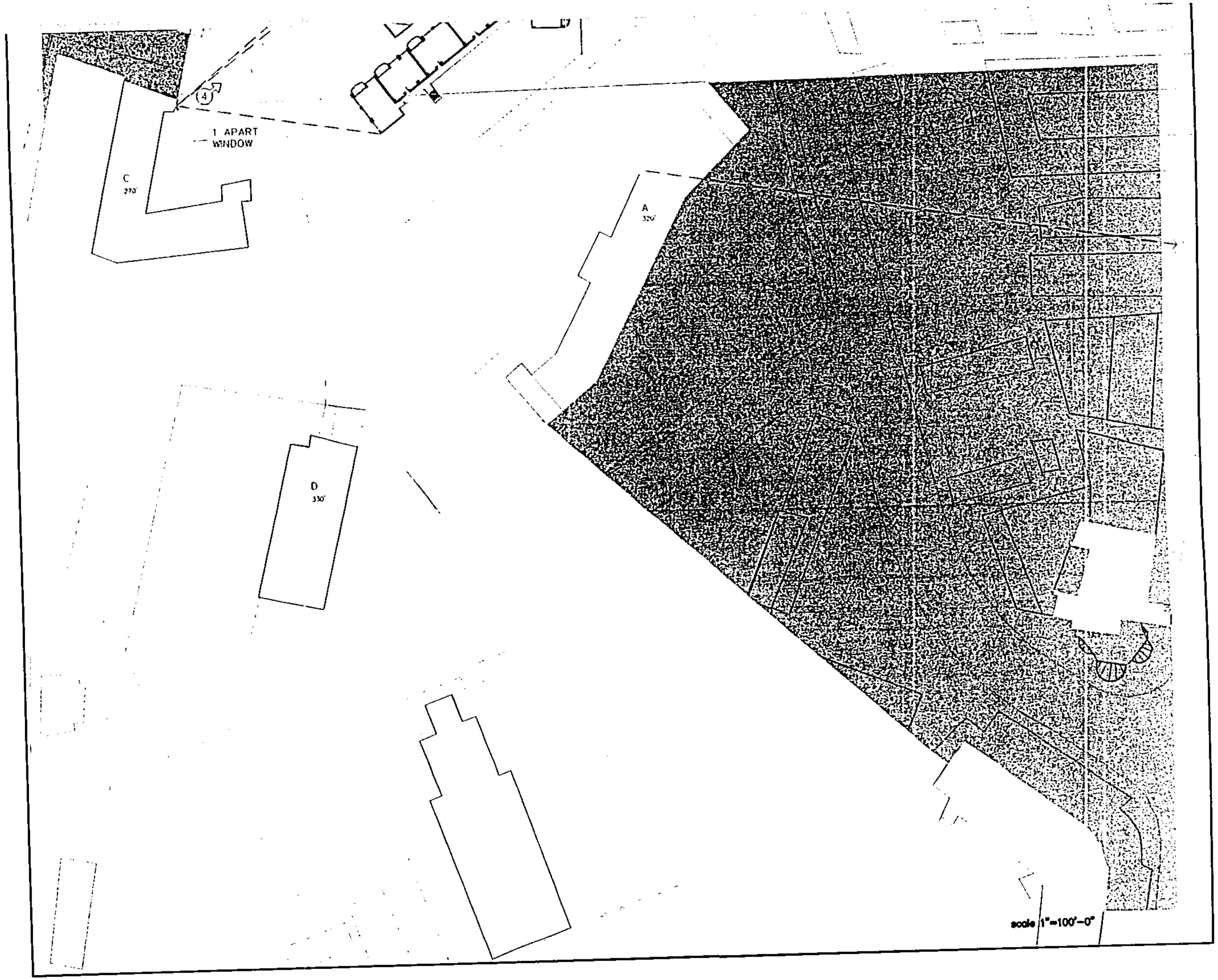
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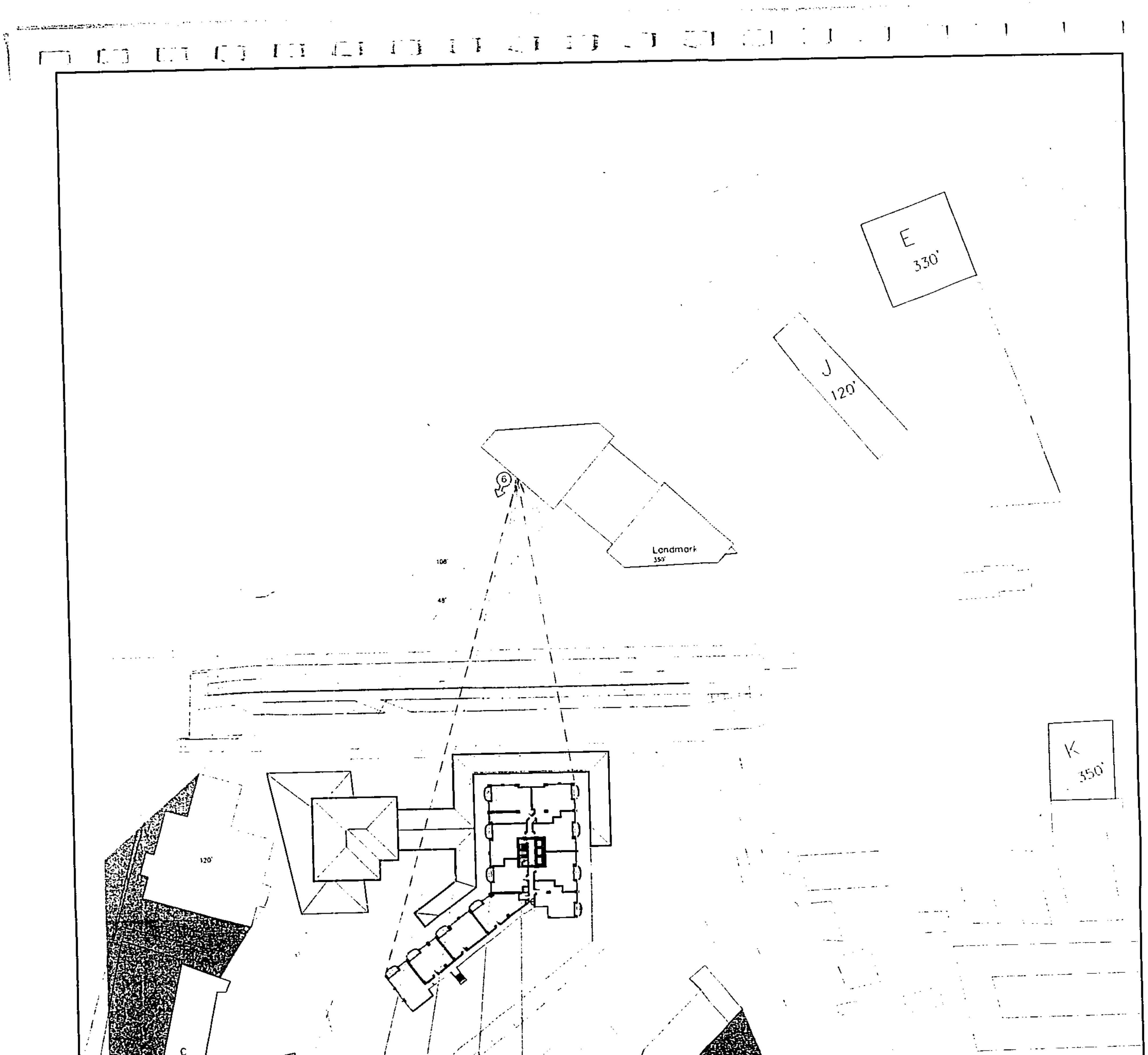
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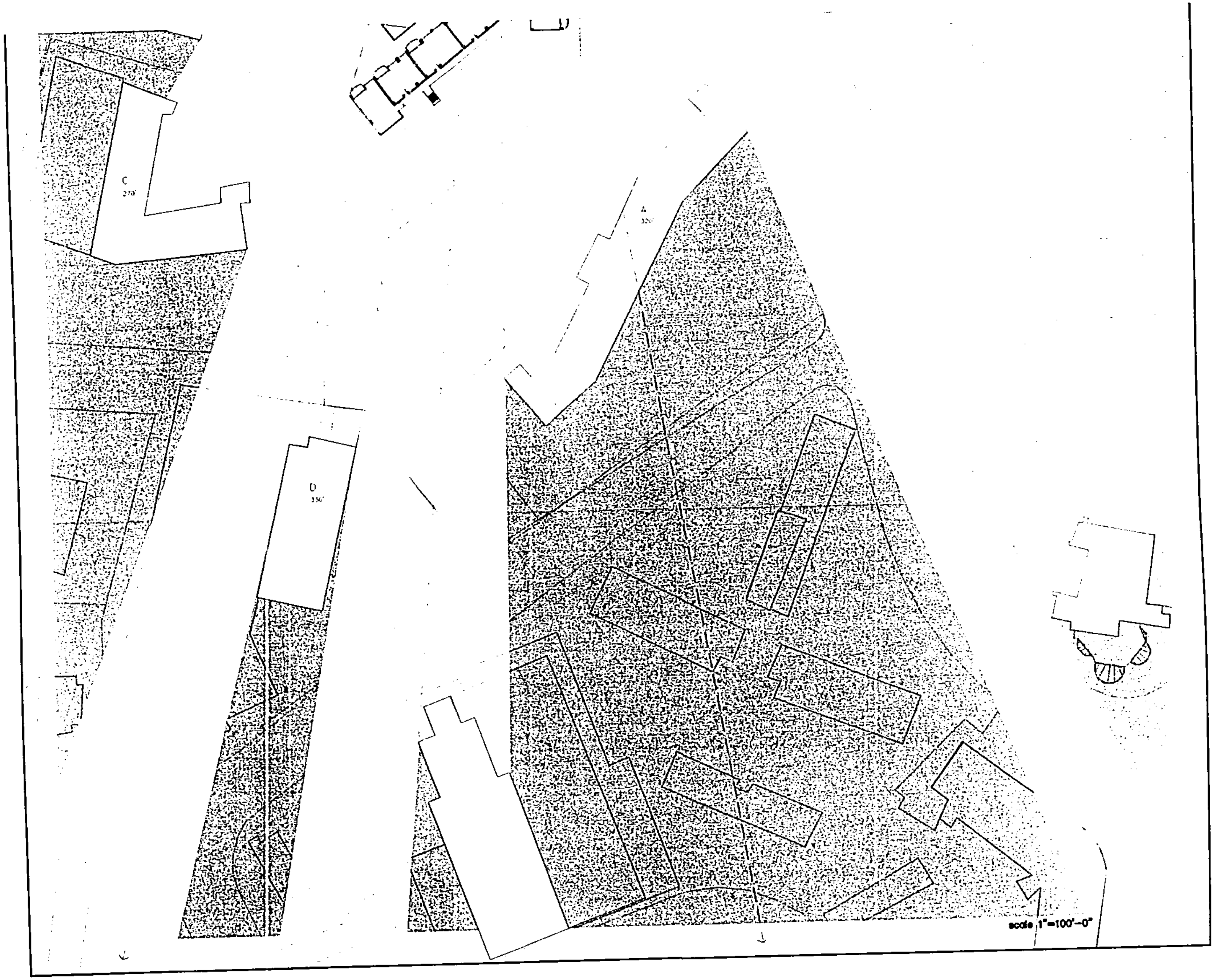
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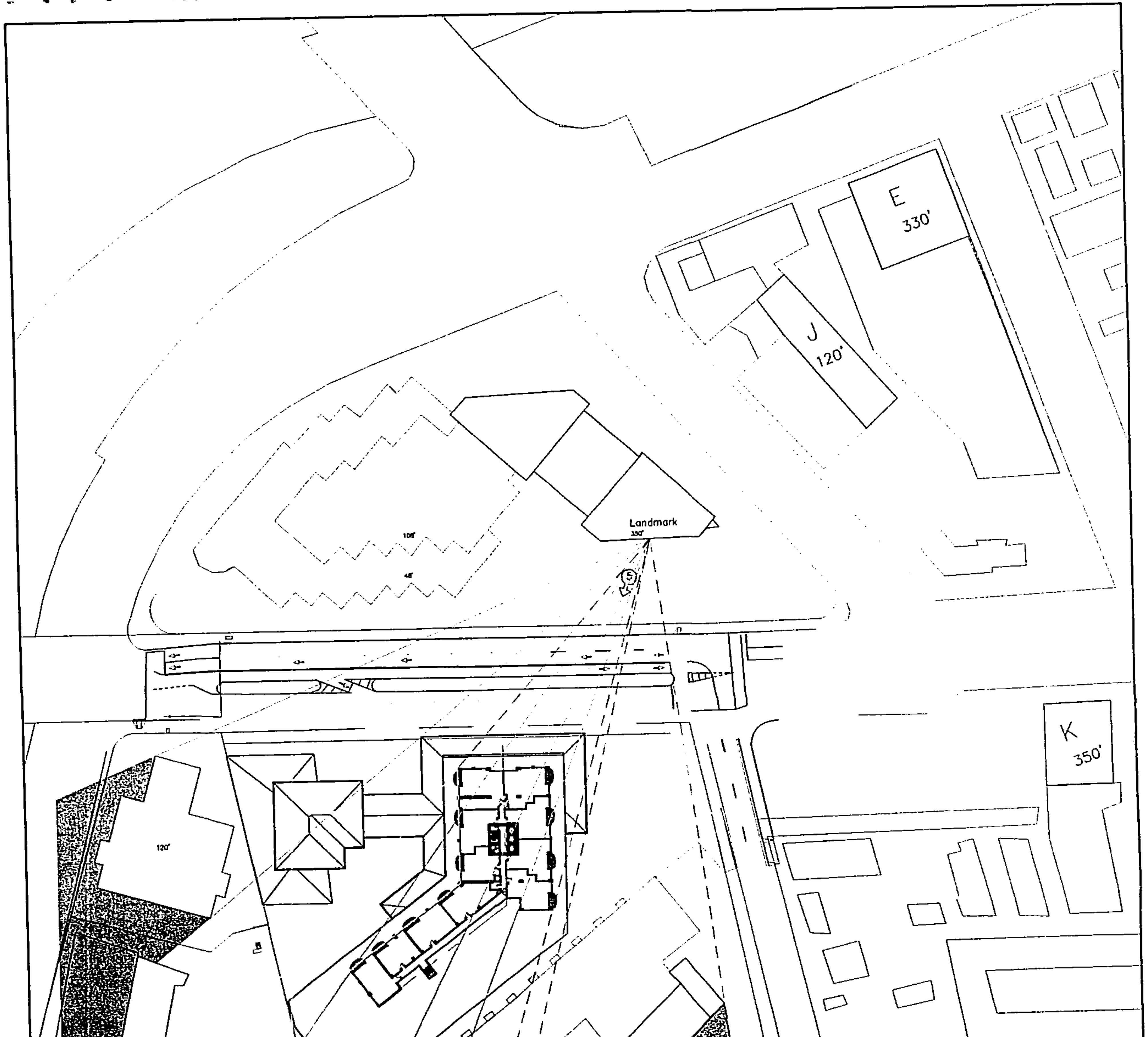

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APPENDIX IXX

NEIGHBORHOOD BOARD MINUTES

AND

NOTICE

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
MANOA MARKET PLACE
2752 WOODLAWN DRIVE, SUITE 5-202
HONOLULU, HAWAII 96822

BUS. (808) 988-2231
FAX. (808) 988-1140
E-Mail: kkurahashi@hawaii.rr.com

October 31, 2006

Dear Adjoining Property Owner:

Planned Development
Proposed Mixed Use Development - Condominium and Retail
Corner of Kalakaua and Ena Road
Tax Map Key: 2-6-13: 1, 3, 7, 8, 9, 11, 12 and Makaoe Lane and Pau Lane

On behalf of the applicant, Fifeild Companies, and in accordance with the policies of the Department of Planning and Permitting (DPP) of the City and County of Honolulu, we are providing you, as an adjoining property owner, notification of our upcoming presentation before the Waikiki Neighborhood Board. On the evening of Tuesday, November 14, 2006 we will be presenting information regarding a proposed mixed use condominium/retail project. A site plan and location map of the proposed Allure Waikiki project are attached. At the meeting we will describe the project including the anticipated permitting process and respond to your questions and/or concerns.

Date:	Tuesday, November 14, 2006
Time:	7:00 P.M.
Location:	Waikiki Community Center 310 Paokalani Avenue

On July 12, 2005, we made a presentation regarding a similar project at that same location to the Waikiki Neighborhood Board. At that time the Board voted to support the project. A comparison between the previously proposed project and the current proposal is inclosed for your information.

If you have any questions, please call me at 988-2231.

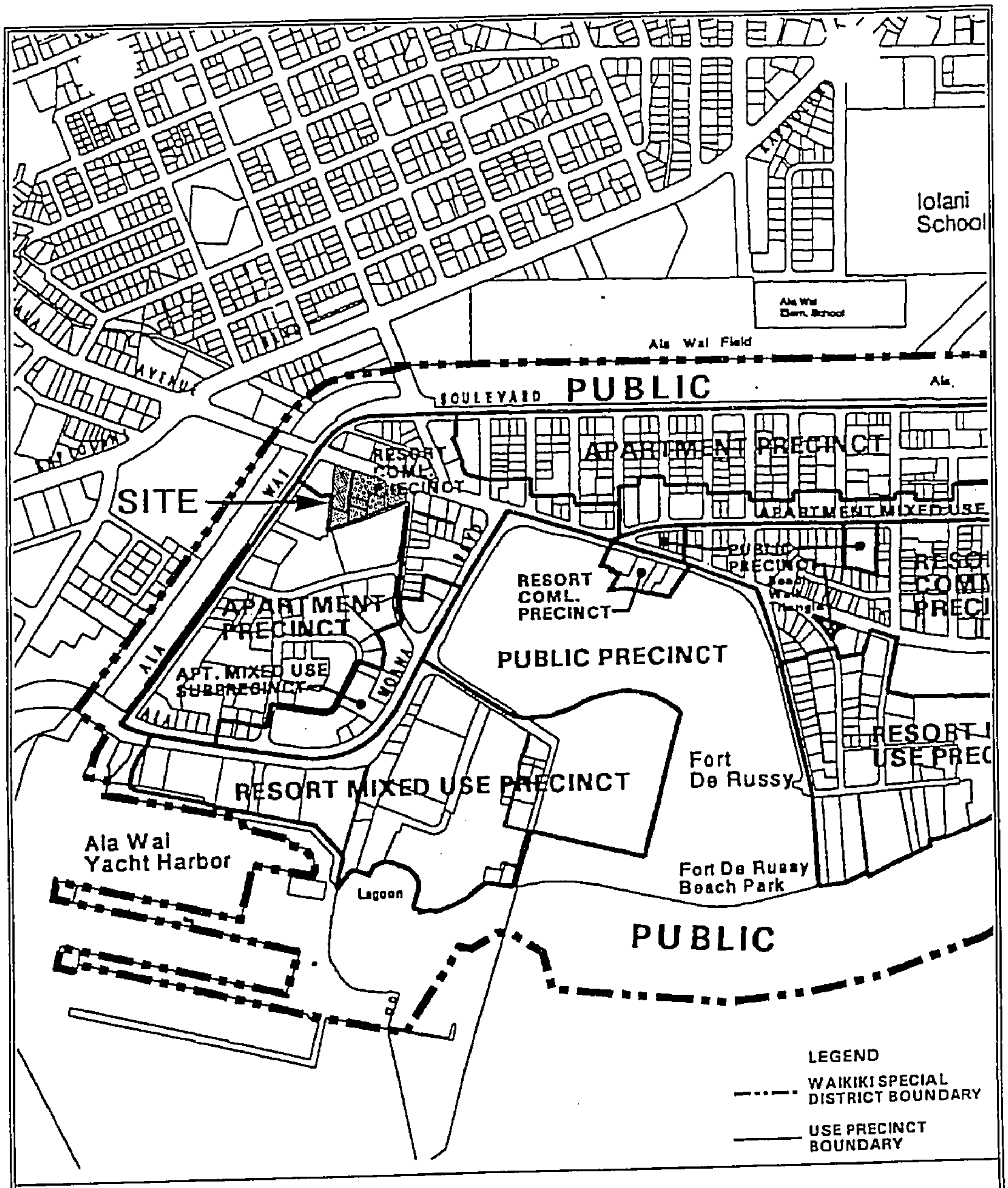
Very truly yours,

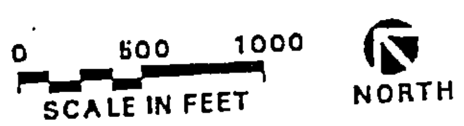
Ardis Shaw[?]

for Keith K. Kurahashi

Preliminary Project Comparison

	Previously Proposed Project Pua'ena Luxury Homes	Current Proposal Allure Condominium
Tax Map Keys	2-6-13:1, 3, 4, 7, 8, 9, 11, 12	2-6-13:1, 3, 4, 7, 8, 9, 11, 12, Pau and Makaoe Lanes
Zoning	Waikiki Special District Resort Commercial Precinct	Waikiki Special District Resort Commercial Precinct
Project Area, in square feet	93,706 s.f. (not including Pau and Makaoe Lanes)	99,741 s.f. (Now including Pau and Makaoe Lanes)
Setbacks	20 feet front yard (no yard averaging) 5 feet rear yards (0 feet if parking on adjacent lot)	20 feet on front yard 10 feet on the side and rear (0 feet if parking on adjacent lot) 0 feet on the side yard adjacent to the Resort-Commercial Precinct
Floor Area in square feet	454,727 s.f. (does not include th parking structure)	428,143 s. f.(Does not include parking structure.)
Building Height	368 feet (350 + 18 feet mechanical equipment)	338 feet (320 + 18 feet mechanical equipment)
Unit Count	280 multi-family dwelling units	Approximately 300 multi-family dwelling units
Parking	445 parking stalls	519 parking stalls approximately (311 required)
Commercial	16,552 s.f. (8,000 @ lobby, 8,552 building pad)	Approximately 9,000 s.f. proposed retail complex





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WAKIKI SPECIAL DISTRICT
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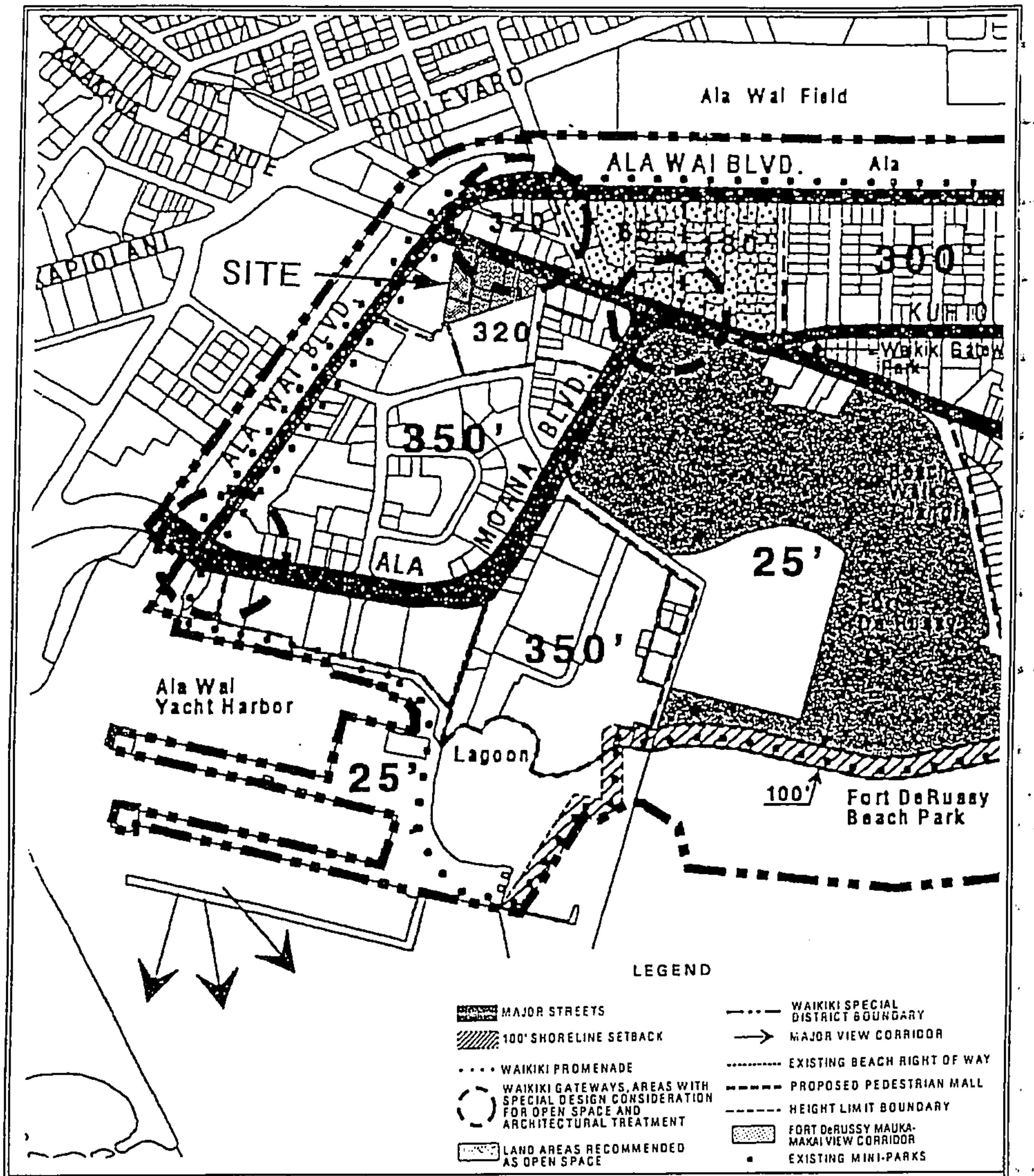

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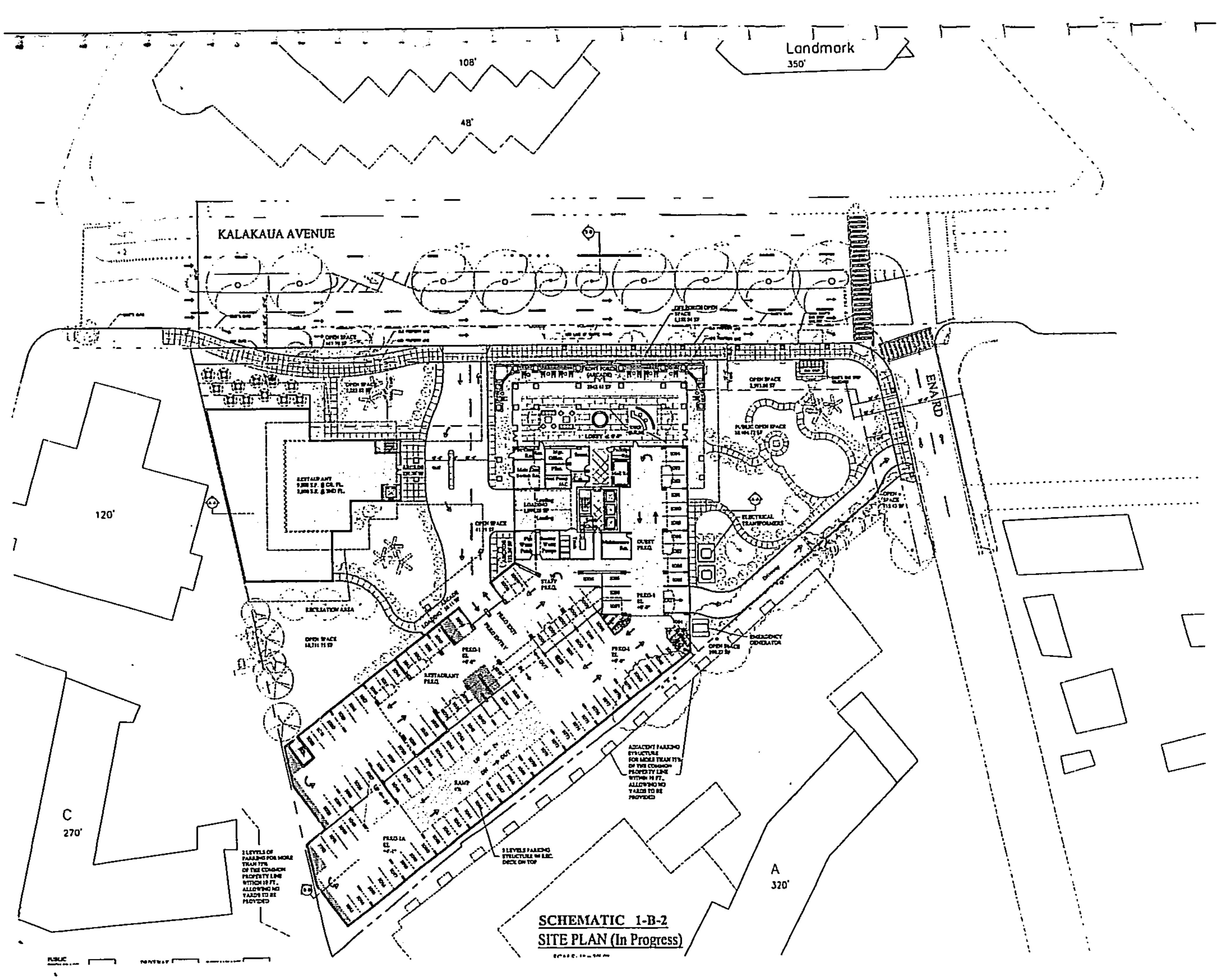
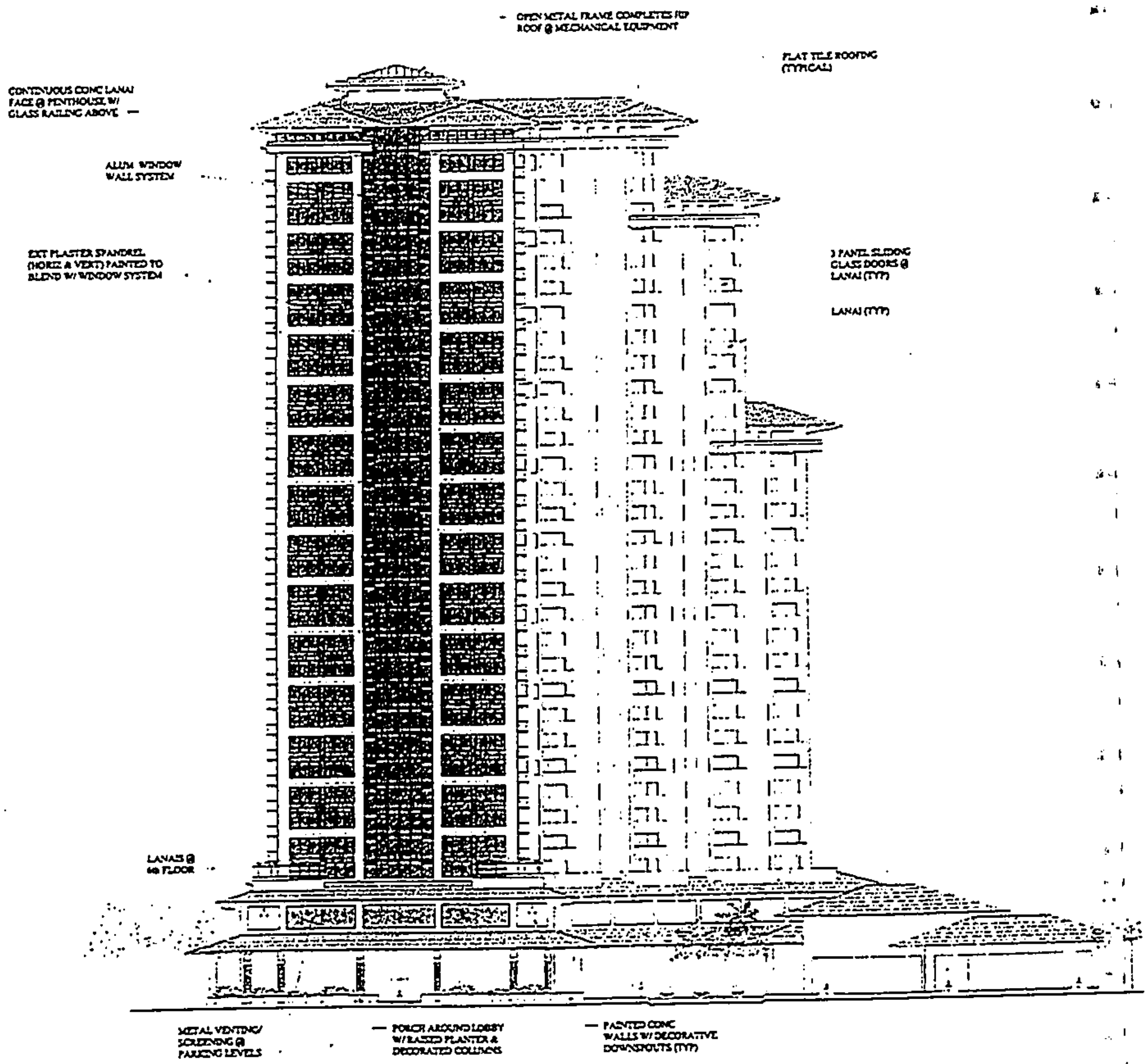
EXHIBIT
WAKIKI SPECIAL DISTRICT
URBAN DESIGN CONTROLS



SCHEMATIC 1-B-2
SITE PLAN (In Progress)



KALAKAUA AVE. ELEVATION (In Progress)

SCALE: 1" = 30'-0"

0' 10' 25' 45'

Printable version (copy and paste into browser):
http://www.honolulu.gov/nco/nb9/06/09_2006_11Ag.PDF

WAIKIKI NEIGHBORHOOD BOARD

REGULAR MEETING AGENDA WEB: www.neighborhoodlink.com/honolulu/nb9

TUESDAY, NOVEMBER 14, 2006
WAIKIKI COMMUNITY CENTER
310 PAOAKALANI AVENUE 7:00PM to 9:00PM

WEEKLY REPLAYS OF THIS MEETING ARE SEEN ON OLELO CHANNEL 54
1ST AND 3RD FRIDAY AT 9:00 PM

I. CALL TO ORDER, ROBERT FINLEY, CHAIR

7:00PM

II. ESTABLISH A QUORUM

III. ELECTION TO FILL VACANCY IN SUB DISTRICT 3

7:01PM

IV. TREASURER'S REPORT

V. CHAIR ANNOUNCEMENTS

7:03PM

VI. CITY AGENCIES
- A. FIRE DEPARTMENT REPORT

  7:05PM
- B. POLICE DEPARTMENT REPORT

  7:10PM
- C. BOARD OF WATER SUPPLY

7:20PM
- D. CITIZENS' ANNOUNCEMENTS

7:25PM

VII. ELECTED OFFICIALS - ELECTED OFFICIALS ARE REQUESTED TO LIMIT REPORTS TO THREE (3) MINUTES PLUS ONE (1) MINUTE BOARD AND AUDIENCE QUESTIONS AND ANSWERS WHEN RECOGNIZED BY THE CHAIR.
- A. MAYOR'S REPRESENTATIVE – KEITH ROLLMAN

  7:30PM

  GOVERNOR'S REPRESENTATIVE- MARSHA WIENERT
  JOINT REPORT ON EMERGENCY RESPONSE ISSUES
- B. COUNCILMEMBER CHARLES DJOU

  7:50PM
- C. SENATOR GORDON TRIMBLE

7:55PM
- D REPRESENTATIVE ANNE STEVENS

8:00PM
E. REPRESENTATIVE SCOTT NISHIMOTO
8:05PM
F. WAIKIKI IMPROVEMENT ASSN – RICK EGGED
8:10PM

VIII. PRESENTATIONS - ALL PRESENTATIONS ARE LIMITED TO TEN (10) MINUTES PLUS ONE (1) MINUTE QUESTIONS AND ANSWERS WHEN RECOGNIZED BY THE CHAIR. PRESENTATIONS MAY REQUIRE VOTING.
A. FAMILY COURT MOVE TO KAPOLEI – ADRIENNE KING
8:15PM
B. ALLURE PROJECT – KEITH KURAHASHI 8:25PM

IX. COMMITTEE REPORTS
8:40PM

X. APPROVAL OF MINUTES – OCTOBER 10, 2006 8:45PM

XI. CHAIR REPORT
8:50PM

XII. ANNOUNCEMENTS
8:55PM

XIII. ADJOURNMENT 9:00PM

TIMES ON THIS AGENDA ARE FOR PLANNING PURPOSES ONLY

NOTICE...NOTICE...NOTICE

The next regular meeting of the Waikiki Neighborhood Board #9 will be held on January 9, 2007 in the auditorium of the Waikiki Community Center, 310 Paoakalani Avenue at 7:00PM.
FOR INFORMATION PERTAINING TO ACCESSIBILITY FOR HANDICAPPED PERSONS, PLEASE CALL THE NEIGHBORHOOD COMMISSION OFFICE AT 527-5749.

Monday, November 06, 2006

DRAFT

MINUTES OF REGULAR MEETING
NOVEMBER 14, 2006
WAIKIKI COMMUNITY CENTER

CALL TO ORDER: The meeting was called to order by Chair Finley at 7:00 p.m. Chair Finley noted refreshments were available for tonight's meeting.

MEMBERS PRESENT: Jo-Ann Adams, Les Among, Ray Gruntz, Jim Poole, Mary Simpson, Jeff Apaka, Louis Erteschik, Bob Finley, Walt Flood, Kevin McDonald, Jack Myers, Bert Benevento, David Chen, Mike Peters, Norman Duncan (appointed at this meeting).

MEMBERS ABSENT: Jeff Merz.

MEMBERS' SEATS VACANT: One seat in subdistrict 1.

GUESTS: Joyce Gretz, Daniel Gretz, Nancy Hall, Carol Ohmura Michiko Gran, Rhoda Coal, Sheila Bangert, Laura Millman, Jim Morris Waikiki Landmard AOAO board of directors, Mary Cowing, Stefan, Nelleke Young, Jim Palmer, Neil Bates (Tradewinds Plaza board of directors), Agnes Telles, Bob Herberger. John McGuire, Richard Linn, Mary McGuire, Adrienne King, Representative Anne Stevens, Mary Kirhoff, Emile Reed; Lt. M. Ross, Lt. K. Schreiner, Sgt. D. Nihei (HPD), Helen Carroll (Waikiki Residents Association), Anthony Kindred, Bobby Buendia (Desert Watch Security), Kaui Yamane (Representative Scott Nishimoto's Office), Capt. N. Pokini (HFD-Waikiki Station), Irene Okuda, JoanNagawa (Waikiki Community Center), Lori Wingard (Councilmember Charles Djou's Office), Don Saaga, Met Tuaileua (Unity House), Jan Bappe, Christinna Kemmer (Communications Pacific), Charlie and Norma Nakama, Carmela Rameos, Senator Gordon Trimble, Kristi Sue Ako (Senator Gordon Trimble's Office), Lisbeth Lotreullutu, L. Olsen, Councimember Charles Djou, Keith Rollman (Mayor's Office), Marsha Weinert (Governor's Office), Dina Schneider, Keith Kurahashi (Kusao and Kurahashi), Ben Ortega (Five Field Companies), John Farrell, Dean Chu (Neighborhood Commission Office staff).

ESTABLISH A QUORUM: A quorum was present.

ELECTION TO FILL VACANCY IN SUBDISTRICT 3: Gruntz nominated Norman Duncan to fill the vacancy. Adams seconded the nomination. Duncan, a former Board member, provided a brief background on himself at this time. **Duncan was elected by a unanimous vote.** Neighborhood Assistant Chu administered the oath-of-office to Duncan.

TREASURER'S REPORT: Chen reported for the month of October the Operating and Publicity Account starting balance was $3764.17, the total expenses to date are $354.76, leaving a balance of $3409.41, the Refreshment Account balance was $120.00. It was noted the balance of the Refreshment Account was expended for tonight's refreshments.

CHAIR'S ANNOUNCEMENTS:

1. Board member Brower has been elected to the State Legislature and has submitted his resignation.
2. Representative Anne Stevens, Tom Brower, and Representative Scott Nishimoto were thanked for running for office to serve this community.

CITY AGENCIES:

HONOLULU FIRE DEPARTMENT – Capt. Pokini reported the following:

1. Last month the station responded to 123 medical emergencies, 5 structure fires. There were no major incidents.

Holiday Safety Tips: The holidays are a time for celebration and that means more cooking, home decorating, and increased risk of fire due to heating equipment; a) unattended cooking is the leading cause of home fires in the United States, b) after a party, check for smoldering cigarettes, c) use caution with holiday decorations and, whenever possible, chose those made with flame-retardant, or noncombustible materials, d) purchase only lights and electrical decorations bearing the name of an independent testing lab, and follow the manufacturer's instructions for installation and maintenance, e) do not overload extension cords, f) try to keep live trees as moist as possible by watering them daily, g) when purchasing an artificial tree, ensure it is made with flame-retardant material.

Questions, answers and comments followed:

Since the trimming of trees along Kuhio Avenue the station has had fewer problems in negotiating the area.

HONOLULU POLICE DEPARTMENT – Sgt. Nihei reported statistics for October and September are available in a written report distributed earlier and include: 4/11 robberies, 51/40 burglaries, 201/212 thefts. Also, citations issued included: 40 for loud music, 37 for loud mufflers, 192 for illegal camping, 26 for skateboarding violations, 89 for bicycle violations.
Questions, answers and comments followed:

1. In response to Among, it is illegal to ride a bicycle at night without a headlight and reflectors, and the statistics include citations issued for this violation.
2. In response to Flood, enforcement is ongoing in dealing with the homeless "camping out" on benches and tables in the Kuhio Beach area by the issuing of illegal camping citations.
3. In response to Myers and McDonald, the department will be issuing a policy on enforcement of the new no smoking law. In some cases the Liquor Commission will be responsible for enforcement; in other cases police can be called.
4. In response to a Lemon Road resident, police can be called to report problems with illegal drug activity, noise, illegal alcohol consumption, etc.
5. A Lemon Road resident expressed thanks for the fire department inspecting the hostels, and noted that some violations were found.
6. A resident noted frustration with not seeing drivers of noisy motorcycles being cited.
7. Among noted there seems to be no point in issuing citations to the homeless for illegal camping, etc., and that the Legislature has to do more to address this problem.
8. In response to a resident, there has been no change to the number of officers patrolling on bicycles.

Sgt. Nihei was thanked for attending meeting.

7:20 p.m.

BOARD OF WATER SUPPLY – No representative was present.

CITIZENS' ANNOUNCEMENTS: None.

ELECTED OFFICIALS:

JOINT MAYOR'S AND GOVERNOR'S OFFICE REPORT ON EMERGENCY RESPONSE ISSUES – Keith Rollman, representing the Mayor's Office, and Marsha Weinert, representing the Governor's Office, reported on responses to last month's earthquake and power outage.

Rollman reported the day of the earthquake and power ourtage City's Emergency Operating Center in the basement of the Fasi Municipal Building was in operation and fully-staffed, the police department had extra shits on duty, the fire department's extra responses included persons stuck in stalled elevators, and emergency medical services responded to calls for service. Emergency power kept water and sewer services in operation.

Rollman acknowledged the need for better communication with the public to report that there was no tsunami. He noted the State has jurisdiction over, and the City is working to have jurisdiction over the emergency alert system that broadcasts over all radio and television stations.

Weinert reported the role of the State is to assist the counties. She noted that the way the civil defense warning system works is that if the sirens do not sound, there is no emergency. Radio and television stations could not operate as most do not have generators, of those that do have them – some did not work, other stations did not have or ran out of fuel.

A Governor's task force made up of civil defense, broadcast media, cell phone providers, Department of Defense, and other agencies are meeting to address the communication problems. Topics discussed included: a) civil defense agencies do not have a direct line to media outlets, b) designated emergency broadcasters with generators need fuel deliveries - at KSSK for instance cars' gas tanks were being siphoned to provide gas for the station's generator, c) work is being done with cell phone companies on making text messaging, which worked during the power outage, part of the emergency alert system.

Questions, answers and comments followed:

1. In response to Poole, the State Public Utilities Commission is working with Hawaiian Electric Company on determining what caused the power outage. Gruntz noted that operators, not automated systems caused the shut down of the system and questioned if the operators handled the situation properly.

2. In response to Adams, the State's emergency preparedness planning does not extend to requirements for private businesses, such as KSSK; and City and State first-responders have emergency generating capability and had no power problems. Also, the EPA regulates the storage of gasoline which affects stations with generators.

3. The City is working on getting is own radio frequency for broadcasting in cases of emergencies.

4. Benevento noted major hotels have emergency generators and, they were for instance, able to keep an elevator in operation.

5. Finley noted that individuals need to be prepared for this type of situation.

6. In response to McDonald, some broadcast stations are designated to be the emergency communications broadcasters and that there is no regulation requiring all stations to have generators.

7. The City was unable to telephone emergency broadcast stations to relay information as even stations' secret emergency numbers were busy.

8. In response to Gruntz, civil defense sirens have generator or solar-powered backups.

9. The Pacific Tsunami Warning Center did not issue a tsunami warning.

10. In response to Adams, there is no all-clear signal, if no civil defense sirens sound, there is no emergency.

Rollman and Weinert were thanked for their reporting on this matter.

MAYOR'S OFFICE – Rollman reported the Honolulu High Capacity Corridor transit project alternative analysis report was provided to the City Council on October 30, ahead of the November 1 deadline. The City Council has until the end of the year to select the locally preferred alternative from the four alternatives studied. Everyone is encouraged to review the report. The increase in the general excise tax to fund a rail system takes effect January 1, 2007, and the State has announced that it will begin collecting the tax at that time. The tax increase is sufficient to fully fund a 20-mile system costing $3.6 billion, and may be able to fund a 28-mile system.

Questions, answers and comments followed:

1. Chair Finley noted Board opposed the Waikiki spur portion of the rail project, not the entire project. Members were encouraged to attend the upcoming City Council meetings on this matter.

2. Rollman reported the City recently commissioned a poll of residents on which of the alternatives they preferred, and rail was the preferred alternative with 45 percent of responders saying they would ride the rail system.

   The City has to do something as traffic congestion will only get worse. The City is competing with 300 other cities for federal funding.

3. Myers suggested alternate ways of awarding contracts be considered.

4. In response to Adams, the poll determined that 45 percent of respondents said they would ride a rail system and 56 percent said a family member would ride it. Adams noted that from her observation, no one rides the rail system in Los Angeles.

5. Among suggested improving TheBus system and roadways instead. Rollman noted these improvements will be made in addition to the preferred alternative selected.

6. Chair Finley noted the City Council will meet on December 7, to hear Bill 79, relating to selection of the transportation mode for the alternative selected.

7. Benevento questioned the survey results and believes that the rail system will bankrupt the City.

8. Regarding previously reported residents' concerns about problems with hostels on Lemon Road, Erteschik noted the City Department of Planning and Permitting is to check for matters under its jurisdiction and if no laws exist to address concerns, that is a separate matter.

   Lemon Road residents requested a response to their letter to the Mayor outlining their concerns. Bates noted problems include: possible violations of occupancy limits, fire and noise regulations, underage drinking, and illegal drug use and sales. Frustration was expressed by residents about their concerns as they have contacted the Mayor, Department of Planning and Permitting, Councilmember Djou.

   Rollman noted that noise regulations and are under the jurisdiction of the State Department of Health, ADA regulations are under the jurisdiction of the federal government; and not under the City's jurisdiction. The police department can respond to complaints about criminal activity. Follow up will be done on the status of the Mayor's Office response to the letter.

   Gruntz noted he believes occupancy regulations for hostel units are being violated.

   Among wanted to hear from the other side, having heard from the residents.

   In response to a resident, Rollman reported the ownership of Lemon Road is still be researched.

   Regarding possible ADA violations, Erteschik reported the Hawaii Disabled Rights Center, where he works, checked the hostels per Lemon Road residents and the Waikiki Residents Association request and did find some violations. He noted, in response to a comment, that he saw no conflict-of-interest in his being a Board member and working for the Center and taking the action that he did.

Rollman was thanked for attending the meeting.

8:17 p.m.

GOVERNOR'S OFFICE – Weinert reported the following:

1. The Kuhio Beach sand replenishment project has been delayed due to unsuitable weather; five days of perfect weather are needed to pump the sand from offshore to the beach.

2. The new no smoking law takes effect on November 16, banning smoking enclosed or partially enclosed areas, City and State facilities, airports, within 20 feet of doors or windows or vents, indoor and outdoor sports arenas, etc. Hotels are exempted and they can provide up to 20 percent of contiguous rooms for smoking if they desire to do so. More information is available at: www.hawaiismokefree.com.

3. Problems with bed bugs in the hostels could be checked by the State Department of Health, but only in response to complaints being filed.

Questions, answers and comments followed:

1. In response to McDonald, hotels have not expressed opposition to the new no smoking law, and work has been done with travel sellers about the new law prior to it taking effect. Hearings were held by the State Legislature on the new smoking law and the hotel industry did not express a need to have more rooms allocated for smokers. It was also noted that there are laws restricting smoking in other countries, including Japan.

   In response to Adams, it is believed correctional institutions are exempt from this law.

   Additional information can be sought from the State Department of Health, such as clarifying whether the law applies to common areas of condominiums, such as an individual unit's open lanai, if so identified in a condominium's by-laws.

   The restriction applies to enclosed or covered parking lots.

2. Chair Finley noted the entire Waikiki Community Center property is smoke-free; anyone wanting to smoke must go out to the sidewalk.

Weinert was thanked for attending the meeting.

COUNCILMEMBER CHARLES DJOU – Councilmember Djou reported the following:

1. He met with Lemon Road residents and they discussed the concerns about problems with the hostels. The City Department of Planning and Permitting (DPP), fire department, Liquor Commission, State Departments of Health and Taxation, have been contacted to check into the residents' concerns.

2. In response to a concern expressed at past Board meetings, DPP has been requested to check into a complaint about too early in the morning construction site jack hammering noise at a Seaside Avenue location.

Questions, answers and comments followed:

1. In response to Adams, the estimated cost of the rail project does include 'crude estimates' of costs for land acquisition.

2. He also took issue with City officials taking numerous trips around the world to look at transit systems, and noted that he paid his own way to Washington D.C. and Tampa, Florida. In Washington D.C. he saw the rail system and met with federal officials and discussed federal funding for Honolulu's system. He noted no

city, except New York City has received more than $750 million in federal funds, and Honolulu is seeking $1 billion. In Tampa he saw the HOT lane project that's praised by supporters of this option.

3. Follow up will be done with Among who reported possible problems with Liquor Commission inspectors.

4. Gruntz noted the alternatives analysis report distorts cost figures and other information of all the alternatives in favor of the rail system.

5. Benevento thanked Councilmember Djou for his work on the transit project.

Djou was thanked for attending the meeting.

SENATOR GORDON TRIMBLE – Senator Trimble encouraged those who want to change the laws to testify at City Council and the Legislature's hearings on bills.

Questions, answers and comments followed:

It was suggested that the City Council and Legislature not hold hearings on bills during the day when people cannot take time off from work to attend the hearings, but to hold them in the evenings instead.

Senator Trimble was thanked for attending the meeting.

REPRESENTATIVE ANNE STEVENS – Representative Stevens reported the following:

1. Expressed thanks to the community for giving her the opportunity to serve them in the legislature.

2. Her written report distributed earlier includes information on the new no smoking law.

3. This Friday, Waikiki Community Center, 11:30 a.m., there will be a Fall Prevention Seminar. The seminar will provide useful information on the prevention of falls.

Questions, answers and comments followed:

Erteschik thanked Stevens for her work.

8:45 p.m.

At this time Chair Finley deferred the agenda to take a Presentation item. There were no objections.

PRESENTATIONS:

FAMILY COURT MOVE TO KAPOLEI – Adrienne King, a family practice attorney, addressed the Board. King reported the Judiciary plans to move the entire Family Court to Kapolei. She and others opposed to this move believe there will be adverse impacts to the community if this is done, including it not being cost-effective or efficient. For instance, most attorneys and persons needing Family Court services do not work or live in the Kapolei area. The plan also includes moving the youth detention facility presently on Alder Street to Kapolei. An alternative would be to create a new 4th Circuit Court in Kapolei. The plan has run into problems, including unanticipated costs for land acquisition and downsizing of the facility.

Erteschik moved and Flood seconded that the Board supports the creation of a new 4th Circuit Court in Kapolei with a proportionate number of judges to Honolulu. Discussion followed where it was noted the Judiciary currently has to rent space in Restaurant Row and may have to rent space in Kapolei, problems with land acquisition including the appraisal and ongoing negotiations with the landowner, and the Judiciary is seeking additional funding from the Legislature. The question was called to end discussion. By a show of hands, four members supported ending discussion. Discussion continued where Gruntz and Erteschik noted City and State agencies have been forced to move to Kapolei, forcing the public to go to Kapolei.

Gruntz moved and Myers seconded that this matter be tabled. The motion carried, 12-3. Finley, Flood and Poole opposed.

This item will be placed on the next agenda.

The order of the agenda resumed.

ELECTED OFFICIALS, CONTINUED:

REPRESENTATIVE SCOTT NISHIMOTO – Representative Nishimoto was unable to attend the meeting. A written report was distributed for interested persons to review.

WAIKIKI IMPROVEMENT ASSOCIATION – No representative was present.

PRESENTATIONS, CONTINUED:

ALLURE PROJECT – Keith Kurahashi, from Kusao and Kurahashi, a consultant on the project, reported this project replaces a previous proposal for the site that includes the former Wave nightclub. The current project includes a 35-story building, 300 units, a one or two story retail building, primary access via Ena Road, and secondary access via Kalakaua Avenue. The current project reduces the total floor area from 455,000 sq. ft. to 428,000 sq. ft., reduced the building height from 368 ft. to 338 ft., increases the total number of units from 280 to 300, increases the number of parking spaces from 450 to 519, reduces the amount of commercial space from 16,000 sq. ft. to 9,000 sq. ft. No variances are required, no impacts to area traffic are anticipated, the Environmental Assessment and Waikiki Special District permit are in progress.

Ben Ortega, from Five Field companies, developers of this project, reported a meeting with neighbors and elected officials on the project has been held. John Farrell, architect, reported the building height will be 368 feet high, with five levels of parking, 30 floors of residential units, an open-air lobby facing Kalakaua Avenue, and a soft modern design. Ena Road will be widened at the existing bus stop moving it into the property, and to provide a turn lane. The residential units will start at the sixth floor which includes a recreational deck.

Questions, answers and comments followed:

1. In response to Gruntz, the location of the bus stop will be moved approximately 10 feet into the property, and there will be no turn lane added on Kalakaua Avenue.
2. In response to Among, the cost of the units will be less than those in Trump Tower, comparable to the Waikiki Landmark, approximately $850.00 a sq. ft. The project is anticipated to open in two years.
3. In response to Flood, there will be no timeshare units and no details were available on possible commercial tenants.
4. In response to Poole, the traffic pattern will be only right-turn in and right-turn out at Ena Road.
5. In response to Duncan, the units will be sold fee simple.
6. In response to Among, one-bedroom units will be 837 sq. ft. in size, two-bedrooms will be 1100 sq. ft., and three-bedrooms will be 1500 sq. ft.
7. Adams expressed concern that the architecture does not fit into the area, it does not convey a Hawaiian sense of place.

   The project site will be one-third open space, the lobby is open air, the roof is of Hawaiian style, and new street trees will be added.

Adams questioned the open-air lobby, noting that the noise and vehicle exhaust fumes from Kalakaua Avenue would not be conducive to anyone using the lobby. Other comments were made that the lobby would only attract the homeless.

8. Residents noted a preference for the previous project, opposed the current project, noted the new design does not fit in, supported the previous project for its affordable units, addressing the homeless problem is not the responsibility of the developer, this project blocks the makai and ewa view planes for Waikiki Landmark residents, the Waikiki Landmark blocked view planes for residents of another building, and there is no law protecting view planes.

9. Waikiki Landmark manager and residents oppose the project. Ortega noted the presentation seemed to be well accepted.

10. Gruntz noted the Board previously supported the concept of the previous project.

11. Peters thanked those present for providing comments.

12. Erteschik stated his opposition to the new project.

13. Ortega reviewed previous features of the project and noted that there will be 24-hour security on site.

Kurahashi thanked the Board and community for, and will follow up on their comments.

APPROVAL OF MINUTES FOR THE OCTOBER 10, 2006 REGULAR MEETING – The following corrections were made:

Page 1, under Members Present, delete Adams.

Page 1, under Members Absent, delete the 'excused' notation.

Flood moved and it was seconded that the minutes be approved as corrected. The motion carried unanimously.

ANNOUNCEMENTS:

The Board will recess in December.

The remainder of the agenda was deferred.

ADJOURNMENT: The meeting was adjourned at 9:52 p.m.

Submitted by,

Dean Chu
Neighborhood Assistant

DRAFT

MINUTES OF REGULAR MEETING
NOVEMBER 14, 2006
WAIKIKI COMMUNITY CENTER

CALL TO ORDER: The meeting was called to order by Chair Finley at 7:00 p.m. Chair Finley noted refreshments were available for tonight's meeting.

MEMBERS PRESENT: Jo-Ann Adams, Les Among, Ray Gruntz, Jim Poole, Mary Simpson, Jeff Apaka, Louis Erteschik, Bob Finley, Walt Flood, Kevin McDonald, Jack Myers, Bert Benevento, David Chen, Mike Peters, Norman Duncan (appointed at this meeting).

MEMBERS ABSENT: Jeff Merz.

MEMBERS' SEATS VACANT: *One seat in subdistrict 1.*

GUESTS: Joyce Gretz, Daniel Gretz, Nancy Hall, Carol Ohmura Michiko Gran, Rhoda Coal, Sheila Bangert, Laura Millman, Jim Morris Waikiiki Landmard AOAO board of directors, Mary Cowing, Stefan, Nelleke Young, Jim Palmer, Neil Bates (Tradewinds Plaza board of directors), Agnes Telles, Bob Herberger. John McGuire, Richard Linn, Mary McGuire, Adrienne King, Representative Anne Stevens, Mary Kirhoff, Emile Reed; Lt. M. Ross, Lt. K. Schreiner, Sgt. D. Nihei (HPD), Helen Carroll (Waikiki Residents Association), Anthony Kindred, Bobby Buendia (Desert Watch Security), Kaui Yamane (Representative Scott Nishimoto's Office), Capt. N. Pokini (HFD-Waikiki Station), Irene Okuda, JoanNagawa (Waikiki Community Center), Lori Wingard (Councilmember Charles Djou's Office), Don Saaga, Met Tuaileua (Unity House), Jan Bappe, Christinna Kemmer (Communications Pacific), Charlie and Norma Nakama, Carmela Rameos, Senator Gordon Trimble, Kristi Sue Ako (Senator Gordon Trimble's Office), Lisbeth Lotreullutu, L. Olsen, Councimember Charles Djou, Keith Rollman (Mayor's Office), Marsha Weinert (Governor's Office), Dina Schneider, Keith Kurahashi (Kusao and Kurahashi), Ben Ortega (Five Field Companies), John Farrell, Dean Chu (Neighborhood Commission Office staff).

ESTABLISH A QUORUM: A quorum was present.

ELECTION TO FILL VACANCY IN SUBDISTRICT 3: **Gruntz nominated Norman Duncan to fill the vacancy. Adams seconded the nomination.** Duncan, a former Board member, provided a brief background on himself at this time. **Duncan was elected by a unanimous vote.** Neighborhood Assistant Chu administered the oath-of-office to Duncan.

TREASURER'S REPORT: Chen reported for the month of October the Operating and Publicity Account starting balance was $3764.17, the total expenses to date are $354.76, leaving a balance of $3409.41, the Refreshment Account balance was $120.00. It was noted the balance of the Refreshment Account was expended for tonight's refreshments.

CHAIR'S ANNOUNCEMENTS:

1. Board member Brower has been elected to the State Legislature and has submitted his resignation.
2. Representative Anne Stevens, Tom Brower, and Representative Scott Nishimoto were thanked for running for office to serve this community.

CITY AGENCIES:

HONOLULU FIRE DEPARTMENT – Capt. Pokini reported the following:

1. Last month the station responded to 123 medical emergencies, 5 structure fires. There were no major incidents.

Holiday Safety Tips: The holidays are a time for celebration and that means more cooking, home decorating, and increased risk of fire due to heating equipment; a) unattended cooking is the leading cause of home fires in the United States, b) after a party, check for smoldering cigarettes, c) use caution with holiday decorations and, whenever possible, chose those made with flame-retardant, or noncombustible materials, d) purchase only lights and electrical decorations bearing the name of an independent testing lab, and follow the manufacturer's instructions for installation and maintenance, e) do not overload extension cords, f) try to keep live trees as moist as possible by watering them daily, g) when purchasing an artificial tree, ensure it is made with flame-retardant material.

Questions, answers and comments followed:

Since the trimming of trees along Kuhio Avenue the station has had fewer problems in negotiating the area.

HONOLULU POLICE DEPARTMENT – Sgt. Nihei reported statistics for October and September are available in a written report distributed earlier and include: 4/11 robberies, 51/40 burglaries, 201/212 thefts. Also, citations issued included: 40 for loud music, 37 for loud mufflers, 192 for illegal camping, 26 for skateboarding violations, 89 for bicycle violations.
Questions, answers and comments followed:

1. In response to Among, it is illegal to ride a bicycle at night without a headlight and reflectors, and the statistics include citations issued for this violation.
2. In response to Flood, enforcement is ongoing in dealing with the homeless "camping out" on benches and tables in the Kuhio Beach area by the issuing of illegal camping citations.
3. In response to Myers and McDonald, the department will be issuing a policy on enforcement of the new no smoking law. In some cases the Liquor Commission will be responsible for enforcement; in other cases police can be called.
4. In response to a Lemon Road resident, police can be called to report problems with illegal drug activity, noise, illegal alcohol consumption, etc.
5. A Lemon Road resident expressed thanks for the fire department inspecting the hostels, and noted that some violations were found.
6. A resident noted frustration with not seeing drivers of noisy motorcycles being cited.
7. Among noted there seems to be no point in issuing citations to the homeless for illegal camping, etc., and that the Legislature has to do more to address this problem.
8. In response to a resident, there has been no change to the number of officers patrolling on bicycles.

Sgt. Nihei was thanked for attending meeting.

7:20 p.m.

BOARD OF WATER SUPPLY – No representative was present.

CITIZENS' ANNOUNCEMENTS: None.

ELECTED OFFICIALS:

JOINT MAYOR'S AND GOVERNOR'S OFFICE REPORT ON EMERGENCY RESPONSE ISSUES – Keith Rollman, representing the Mayor's Office, and Marsha Weinert, representing the Governor's Office, reported on responses to last month's earthquake and power outage.

Rollman reported the day of the earthquake and power ourtage City's Emergency Operating Center in the basement of the Fasi Municipal Building was in operation and fully-staffed, the police department had extra shits on duty, the fire department's extra responses included persons stuck in stalled elevators, and emergency medical services responded to calls for service. Emergency power kept water and sewer services in operation.

Rollman acknowledged the need for better communication with the public to report that there was no tsunami. He noted the State has jurisdiction over, and the City is working to have jurisdiction over the emergency alert system that broadcasts over all radio and television stations.

Weinert reported the role of the State is to assist the counties. She noted that the way the civil defense warning system works is that if the sirens do not sound, there is no emergency. Radio and television stations could not operate as most do not have generators, of those that do have them – some did not work, other stations did not have or ran out of fuel.

A Governor's task force made up of civil defense, broadcast media, cell phone providers, Department of Defense, and other agencies are meeting to address the communication problems. Topics discussed included: a) civil defense agencies do not have a direct line to media outlets, b) designated emergency broadcasters with generators need fuel deliveries - at KSSK for instance cars' gas tanks were being siphoned to provide gas for the station's generator, c) work is being done with cell phone companies on making text messaging, which worked during the power outage, part of the emergency alert system.

Questions, answers and comments followed:

1. In response to Poole, the State Public Utilities Commission is working with Hawaiian Electric Company on determining what caused the power outage. Gruntz noted that operators, not automated systems caused the shut down of the system and questioned if the operators handled the situation properly.

2. In response to Adams, the State's emergency preparedness planning does not extend to requirements for private businesses, such as KSSK; and City and State first-responders have emergency generating capability and had no power problems. Also, the EPA regulates the storage of gasoline which affects stations with generators.

3. The City is working on getting is own radio frequency for broadcasting in cases of emergencies.

4. Benevento noted major hotels have emergency generators and, they were for instance, able to keep an elevator in operation.

5. Finley noted that individuals need to be prepared for this type of situation.

6. In response to McDonald, some broadcast stations are designated to be the emergency communications broadcasters and that there is no regulation requiring all stations to have generators.

7. The City was unable to telephone emergency broadcast stations to relay information as even stations' secret emergency numbers were busy.

8. In response to Gruntz, civil defense sirens have generator or solar-powered backups.

9. The Pacific Tsunami Warning Center did not issue a tsunami warning.

10. In response to Adams, there is no all-clear signal, if no civil defense sirens sound, there is no emergency.

Rollman and Weinert were thanked for their reporting on this matter.

MAYOR'S OFFICE – Rollman reported the Honolulu High Capacity Corridor transit project alternative analysis report was provided to the City Council on October 30, ahead of the November 1 deadline. The City Council has until the end of the year to select the locally preferred alternative from the four alternatives studied. Everyone is encouraged to review the report. The increase in the general excise tax to fund a rail system takes effect January 1, 2007, and the State has announced that it will begin collecting the tax at that time. The tax increase is sufficient to fully fund a 20-mile system costing $3.6 billion, and may be able to fund a 28-mile system.

Questions, answers and comments followed:

1. Chair Finley noted Board opposed the Waikiki spur portion of the rail project, not the entire project. Members were encouraged to attend the upcoming City Council meetings on this matter.

2. Rollman reported the City recently commissioned a poll of residents on which of the alternatives they preferred, and rail was the preferred alternative with 45 percent of responders saying they would ride the rail system.

   The City has to do something as traffic congestion will only get worse. The City is competing with 300 other cities for federal funding.

3. Myers suggested alternate ways of awarding contracts be considered.

4. In response to Adams, the poll determined that 45 percent of respondents said they would ride a rail system and 56 percent said a family member would ride it. Adams noted that from her observation, no one rides the rail system in Los Angeles.

5. Among suggested improving TheBus system and roadways instead. Rollman noted these improvements will be made in addition to the preferred alternative selected.

6. Chair Finley noted the City Council will meet on December 7, to hear Bill 79, relating to selection of the transportation mode for the alternative selected.

7. Benevento questioned the survey results and believes that the rail system will bankrupt the City.

8. Regarding previously reported residents' concerns about problems with hostels on Lemon Road, Erteschik noted the City Department of Planning and Permitting is to check for matters under its jurisdiction and if no laws exist to address concerns, that is a separate matter.

   Lemon Road residents requested a response to their letter to the Mayor outlining their concerns. Bates noted problems include: possible violations of occupancy limits, fire and noise regulations, underage drinking, and illegal drug use and sales. Frustration was expressed by residents about their concerns as they have contacted the Mayor, Department of Planning and Permitting, Councilmember Djou.

   Rollman noted that noise regulations and are under the jurisdiction of the State Department of Health, ADA regulations are under the jurisdiction of the federal government; and not under the City's jurisdiction. The police department can respond to complaints about criminal activity. Follow up will be done on the status of the Mayor's Office response to the letter.

   Gruntz noted he believes occupancy regulations for hostel units are being violated.

   Among wanted to hear from the other side, having heard from the residents.

   In response to a resident, Rollman reported the ownership of Lemon Road is still be researched.

   Regarding possible ADA violations, Erteschik reported the Hawaii Disabled Rights Center, where he works, checked the hostels per Lemon Road residents and the Waikiki Residents Association request and did find some violations. He noted, in response to a comment, that he saw no conflict-of-interest in his being a Board member and working for the Center and taking the action that he did.

Rollman was thanked for attending the meeting.

8:17 p.m.

GOVERNOR'S OFFICE – Weinert reported the following:

1. The Kuhio Beach sand replenishment project has been delayed due to unsuitable weather; five days of perfect weather are needed to pump the sand from offshore to the beach.

2. The new no smoking law takes effect on November 16, banning smoking enclosed or partially enclosed areas, City and State facilities, airports, within 20 feet of doors or windows or vents, indoor and outdoor sports arenas, etc. Hotels are exempted and they can provide up to 20 percent of contiguous rooms for smoking if they desire to do so. More information is available at: www.hawaiismokefree.com.

3. Problems with bed bugs in the hostels could be checked by the State Department of Health, but only in response to complaints being filed.

Questions, answers and comments followed:

1. In response to McDonald, hotels have not expressed opposition to the new no smoking law, and work has been done with travel sellers about the new law prior to it taking effect. Hearings were held by the State Legislature on the new smoking law and the hotel industry did not express a need to have more rooms allocated for smokers. It was also noted that there are laws restricting smoking in other countries, including Japan.

   In response to Adams, it is believed correctional institutions are exempt from this law.

   Additional information can be sought from the State Department of Health, such as clarifying whether the law applies to common areas of condominiums, such as an individual unit's open lanai, if so identified in a condominium's by-laws.

   The restriction applies to enclosed or covered parking lots.

2. Chair Finley noted the entire Waikiki Community Center property is smoke-free; anyone wanting to smoke must go out to the sidewalk.

Weinert was thanked for attending the meeting.

COUNCILMEMBER CHARLES DJOU – Councilmember Djou reported the following:

1. He met with Lemon Road residents and they discussed the concerns about problems with the hostels. The City Department of Planning and Permitting (DPP), fire department, Liquor Commission, State Departments of Health and Taxation, have been contacted to check into the residents' concerns.

2. In response to a concern expressed at past Board meetings, DPP has been requested to check into a complaint about too early in the morning construction site jack hammering noise at a Seaside Avenue location.

Questions, answers and comments followed:

1. In response to Adams, the estimated cost of the rail project does include 'crude estimates' of costs for land acquisition.

2. He also took issue with City officials taking numerous trips around the world to look at transit systems, and noted that he paid his own way to Washington D.C. and Tampa, Florida. In Washington D.C. he saw the rail system and met with federal officials and discussed federal funding for Honolulu's system. He noted no

city, except New York City has received more than $750 million in federal funds, and Honolulu is seeking $1 billion. In Tampa he saw the HOT lane project that's praised by supporters of this option.

3. Follow up will be done with Among who reported possible problems with Liquor Commission inspectors.

4. Gruntz noted the alternatives analysis report distorts cost figures and other information of all the alternatives in favor of the rail system.

5. Benevento thanked Councilmember Djou for his work on the transit project.

Djou was thanked for attending the meeting.

SENATOR GORDON TRIMBLE – Senator Trimble encouraged those who want to change the laws to testify at City Council and the Legislature's hearings on bills.

Questions, answers and comments followed:

It was suggested that the City Council and Legislature not hold hearings on bills during the day when people cannot take time off from work to attend the hearings, but to hold them in the evenings instead.

Senator Trimble was thanked for attending the meeting.

REPRESENTATIVE ANNE STEVENS – Representative Stevens reported the following:

1. Expressed thanks to the community for giving her the opportunity to serve them in the legislature.

2. Her written report distributed earlier includes information on the new no smoking law.

3. This Friday, Waikiki Community Center, 11:30 a.m., there will be a Fall Prevention Seminar. The seminar will provide useful information on the prevention of falls.

Questions, answers and comments followed:

Erteschik thanked Stevens for her work.

8:45 p.m.

At this time Chair Finley deferred the agenda to take a Presentation item. There were no objections.

PRESENTATIONS:

FAMILY COURT MOVE TO KAPOLEI – Adrienne King, a family practice attorney, addressed the Board. King reported the Judiciary plans to move the entire Family Court to Kapolei. She and others opposed to this move believe there will be adverse impacts to the community if this is done, including it not being cost-effective or efficient. For instance, most attorneys and persons needing Family Court services do not work or live in the Kapolei area. The plan also includes moving the youth detention facility presently on Alder Street to Kapolei. An alternative would be to create a new 4th Circuit Court in Kapolei. The plan has run into problems, including unanticipated costs for land acquisition and downsizing of the facility.

Erteschik moved and Flood seconded that the Board supports the creation of a new 4th Circuit Court in Kapolei with a proportionate number of judges to Honolulu. Discussion followed where it was noted the Judiciary currently has to rent space in Restaurant Row and may have to rent space in Kapolei, problems with land acquisition including the appraisal and ongoing negotiations with the landowner, and the Judiciary is seeking additional funding from the Legislature. The question was called to end discussion. By a show of hands, four members supported ending discussion. Discussion continued where Gruntz and Erteschik noted City and State agencies have been forced to move to Kapolei, forcing the public to go to Kapolei.

Gruntz moved and Myers seconded that this matter be tabled. The motion carried, 12-3. Finley, Flood and Poole opposed.

This item will be placed on the next agenda.

The order of the agenda resumed.

ELECTED OFFICIALS, CONTINUED:

REPRESENTATIVE SCOTT NISHIMOTO – Representative Nishimoto was unable to attend the meeting. A written report was distributed for interested persons to review.

WAIKIKI IMPROVEMENT ASSOCIATION – No representative was present.

PRESENTATIONS, CONTINUED:

ALLURE PROJECT – *Keith Kurahashi, from* Kusao and Kurahashi, a consultant on the project, reported this project replaces a previous proposal for the site that includes the former Wave nightclub. The current project includes a 35-story building, 300 units, a one or two story retail building, primary access via Ena Road, and secondary access via Kalakaua Avenue. The current project reduces the total floor area from 455,000 sq. ft. to 428,000 sq. ft., reduced the building height from 368 ft. to 338 ft., increases the total number of units from 280 to 300, increases the number of parking spaces from 450 to 519, reduces the amount of commercial space from 16,000 sq. ft. to 9,000 sq. ft. No variances are required, no impacts to area traffic are anticipated, the Environmental Assessment and Waikiki Special District permit are in progress.

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Flood moved and it was seconded that the minutes be approved as corrected. The motion carried unanimously.

ANNOUNCEMENTS:

The Board will recess in December.

The remainder of the agenda was deferred.

ADJOURNMENT: The meeting was adjourned at 9:52 p.m.

Submitted by,

Dean Chu
Neighborhood Assistant