DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
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JEREMY HARRIS
MAYOR

ERIC G. CRISPIN, AIA
DIRECTOR

BARBARA KIM STANTON
DEPUTY DIRECTOR

2004/ED-24(sn)

December 6, 2004

RECEIVED
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OFC. OF ENVIRONMENTAL QUALITY CONTROL

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
State Office Tower, Room 702
235 South Beretania Street
Honolulu, Hawaii 96813-2437

Dear Ms. Salmonson:

Chapter 343, Hawaii Revised Statutes
Environmental Assessment (EA) Determination
Finding of No Signficant Impact
Ala Wai Gateway Condominium Development

Applicant	: Irongate Ala Wai Investors, LLC
Agent	: Kusao & Kurahashi, Inc.
Location	: 372 & 376 Hobron Lane (Parcel 1) 362 Hobron Lane (Parcel 2) 352 Hobron Lane (Parcel 4) 386 Hobron Lane (Parcel 40) 1609 Ala Wai Boulevard (Parcel 32) 1819 Lipeepee Street (Parcel 37)
Tax Map Keys	: 2-6-11: 1, 2, 4, 32, 37 and 40
Request	: Waikiki Special District - Major
Proposal	: New 212-unit, 355-foot condominium tower with parking and amenities
Determination	: Finding of No Significant Impact

Attached and incorporated by reference is the Final EA prepared by the applicant for the project. Based on the significance criteria outlined in Title 11, Chapter 200, Hawaii Administrative Rules, we have determined that preparation of an Environmental Impact Statement is not required.

We have enclosed four copies of the Final EA, a completed OEQC publication form and its related project summary on a diskette. If you have any questions, please contact Sharon Nishiura of our staff at 523-4256.

Sincerely yours,

ERIC G. CRISPIN, AIA
for Director of Planning
and Permitting

EGC:nt

Encl.

cc: Kusao & Kurahashi, Inc.

G:\Sharon\ala wai gateway\oeqc FEA transmittal.doc

2004.12-23 FONSI
ALA WAI GATEWAY CONDOMINIUM

DEC 2 3 2004

FINAL
ENVIRONMENTAL ASSESSMENT

ALA WAI GATEWAY
CONDOMINIUM DEVELOPMENT

WAIKIKI, OAHU, HAWAII

TAX MAP KEY 2-6-11: 1, 2, 4, 32, 37, and 40

IRONGATE ALA WAI INVESTORS, LLC
10880 WILSHIRE BOULEVARD, #1460
LOS ANGELES, CALIFORNIA 90024

APPLICANT

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

AGENT

NOVEMBER 2004

FINAL
ENVIRONMENTAL ASSESSMENT

ALA WAI GATEWAY
CONDOMINIUM DEVELOPMENT

WAIKIKI, OAHU, HAWAII

TAX MAP KEY 2-6-11: 1, 2, 4, 32, 37, and 40

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AGENT

NOVEMBER 2004

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APPENDICES

FINAL ENVIRONMENTAL ASSESSMENT

ALA WAI GATEWAY
CONDOMINIUM COMPLEX DEVELOPMENT
Oahu, Hawaii
Tax Map Key 2-6-11: 1, 2, 4, 32, 37, and 40

I. INTRODUCTION

The applicant, Irongate Ala Wai Investors, LLC, proposes to develop the Ala Wai Gateway, a 355-foot condominium tower with a parking structure and recreational amenities, on a 175,352 square foot lot (project site), adjacent to the Ala Wai Canal. The Ala Wai Gateway will provide 212 new condominium units and retain 36 existing apartment units and provide 470 parking stalls via a parking structure and surface parking. A 3-story, 18-unit apartment building at 1609 Ala Wai Boulevard (Tax Map Key 2-6-11: 32) will be demolished. The development will retain two, three-story apartment buildings with 18 units each, located at 1819 Lipeepee Street (Tax Map Key 2-6-11: 37). The new condominium tower developed for the Ala Wai Gateway will have driveway access to both Ala Wai Boulevard and Hobron Lane, as indicated in the Plans provided in Appendix I. The two existing apartment buildings will continue to have access from Lipeepee Street.

The project site formerly included the Ala Wai Terrace apartments, which consisted of 192 apartments located in six, 4-story, 32-unit buildings and a 2-story, 20-unit apartment building located on Hobron Lane across the mauka (east) leg of Kaioo Drive. The proposed development will replace these units that were demolished in anticipation of an earlier proposal to redevelop the greater Hobron Lane area. When added to the 18-unit apartment building that will be demolished,

the net effect of the 212 units at the Ala Wai Gateway will be a loss of 18 units from the total units formerly on the project site.

This Final Environmental Assessment Report for the development of the Ala Wai Gateway condominium complex is prepared pursuant to and in accordance with the requirements of Chapter 343, Hawaii Revised Statutes ("HRS") and Chapter 200 of Title 11, Hawaii Administrative Rules - Environmental Impact Statement Rules and Environmental Assessment (HUD recommended format per 24 CFR 58.36 revised 1/99). The action that triggers this assessment is the proposed development of the Ala Wai Gateway in the Waikiki Special District.

The proposed development of the Ala Wai Gateway condominium complex, located on six parcels of land, is a permitted use in the Apartment Precinct of the Waikiki Special District.

This Final Environmental Assessment will focus on the development of the new condominium tower for Ala Wai Gateway, keeping in mind that the existing two 18-unit apartment buildings will remain on the project site.

II. GENERAL INFORMATION

A.	Applicant	:	Irongate Ala Wai Investors, LLC 10880 Wilshire Boulevard, #1460 Los Angeles, California 90024
B.	Recorded Fee Owners'	:	1609 Ala Wai LLC 3939 Old Pali Road

Honolulu, HI 96817
Tax Map Key 2-6-11: 32

Irongate Ala Wai Investors, LLC
10880 Wilshire Boulevard, #1460
Los Angeles, California 90024
Tax Map Key 2-6-11: 2 and 4

Microwave LLC
3939 Old Pali Road
Honolulu, HI 96817
Tax Map Key 2-6-11: 1 and 40
Dragon Ventures LLC
3037 Oahu Avenue
Honolulu, HI 96837
Tax Map Key 2-6-11: 37

C. Approving Agency : Department of Planning & Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

D. Tax Map Key : 2-6-011: 1, 2, 4, 32, 37 and 40
(Appendix I - Plans)

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

F. Location : 1609 Ala Wai Boulevard; 352, 362, 372, 376, and 386 Hobron Lane; and 1819

			Lipeepee St. in Honolulu, Hawaii (Exhibit 1)
G.	Lot Area	:	175,352 square feet or 4.03 acres
H.	Zoning	:	Apartment Precinct
I.	State Land Use	:	Urban
J.	Development Plan	:	
	Land Use Map	:	Resort Mixed Use (Exhibit 2)
	Public Facilities Map	:	No improvements affecting the project site (Exhibit 3)
K.	Special District	:	Waikiki Special District (Exhibit 4)
L.	Existing Use	:	2-6-011: 001 - Vacant Parcel 2-6-011: 002 - Vacant Parcel with surface parking 2-6-011: 004 - Vacant Parcel with surface parking 2-6-011: 032 - Apartment Building 2-6-011: 037 - Apartment Buildings 2-6-011: 040 - Vacant Parcel
M.	List of Agencies Responding	:	**City** Department of Planning and Permitting Department of Parks and Recreation Board of Water Supply Honolulu Police Department Honolulu Fire Department

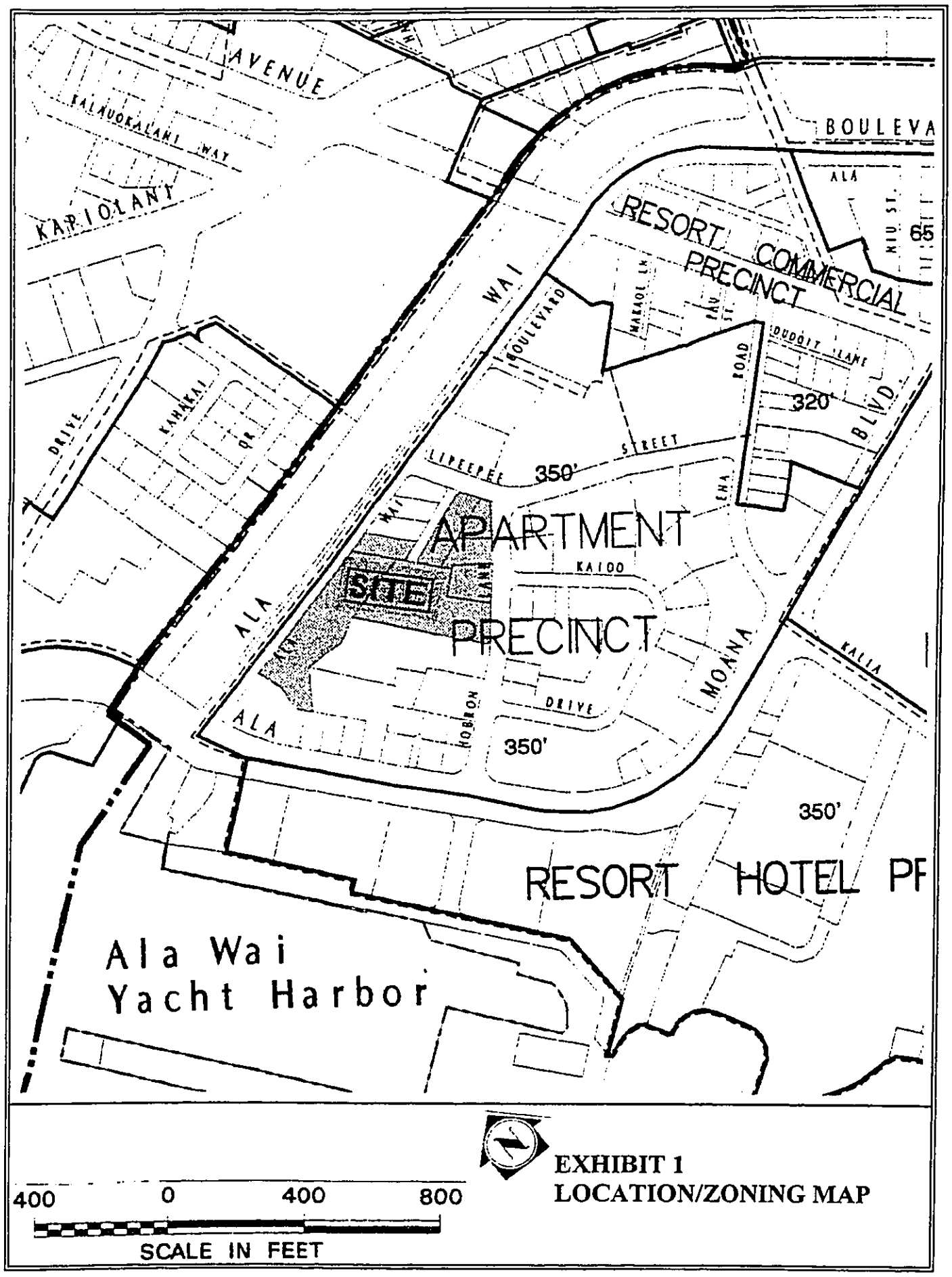


EXHIBIT 1
LOCATION/ZONING MAP

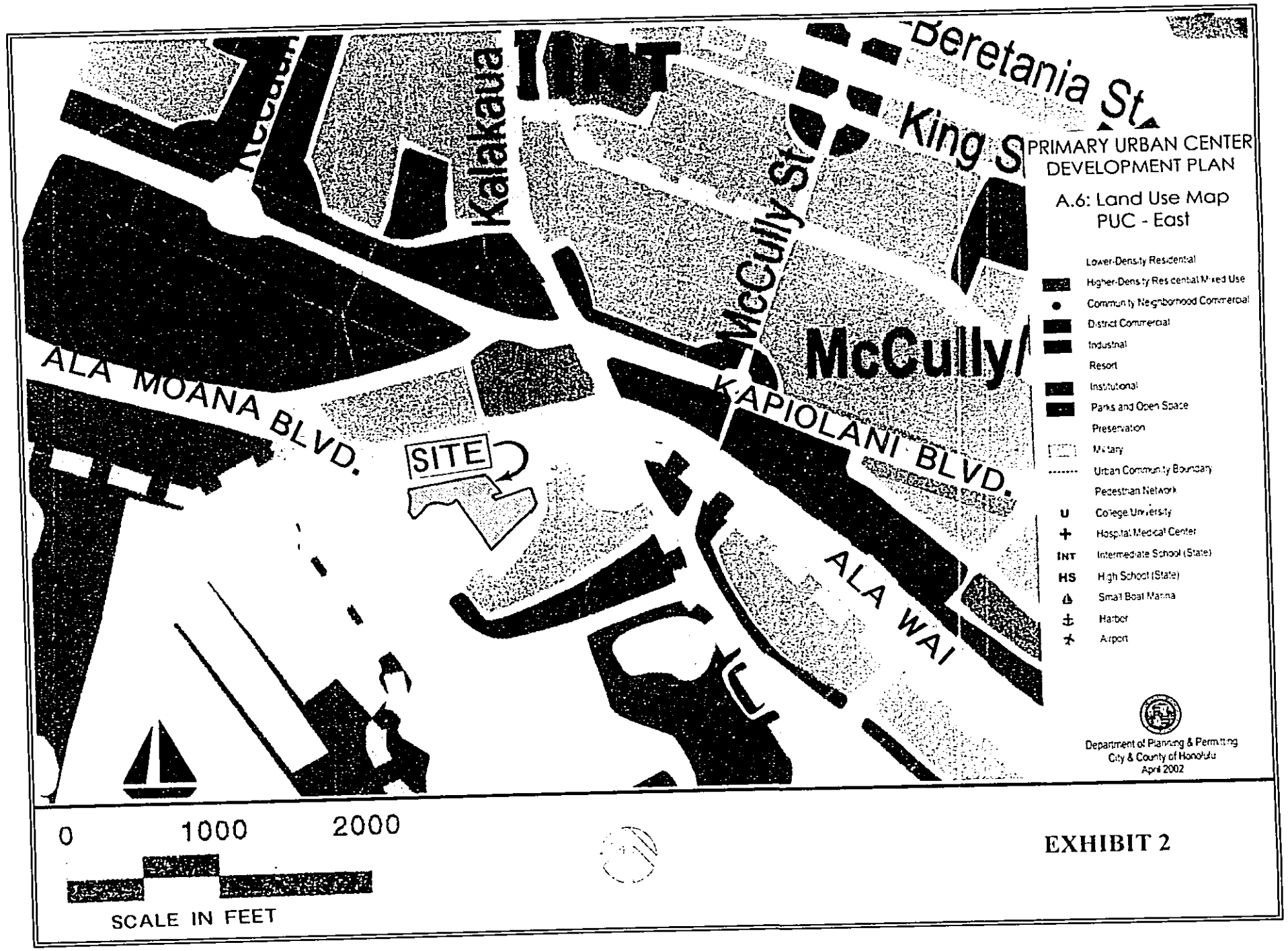

Beretania St.
King St.
Kalakaua
McCully St.
McCully
ALA MOANA BLVD.
SITE
KAPIOLANI BLVD.
ALA WAI
PRIMARY URBAN CENTER DEVELOPMENT PLAN
A.6: Land Use Map
PUC - East
Lower-Density Residential
Higher-Density Residential/Mixed Use
Community/Neighborhood Commercial
District Commercial
Industrial
Resort
Institutional
Parks and Open Space
Preservation
Military
Urban Community Boundary
Pedestrian Network
U College/University
+ Hospital/Medical Center
INT Intermediate School (State)
HS High School (State)
Small Boat Marina
Harbor
Airport
Department of Planning & Permitting
City & County of Honolulu
April 2002
0
1000
2000
SCALE IN FEET

EXHIBIT 2

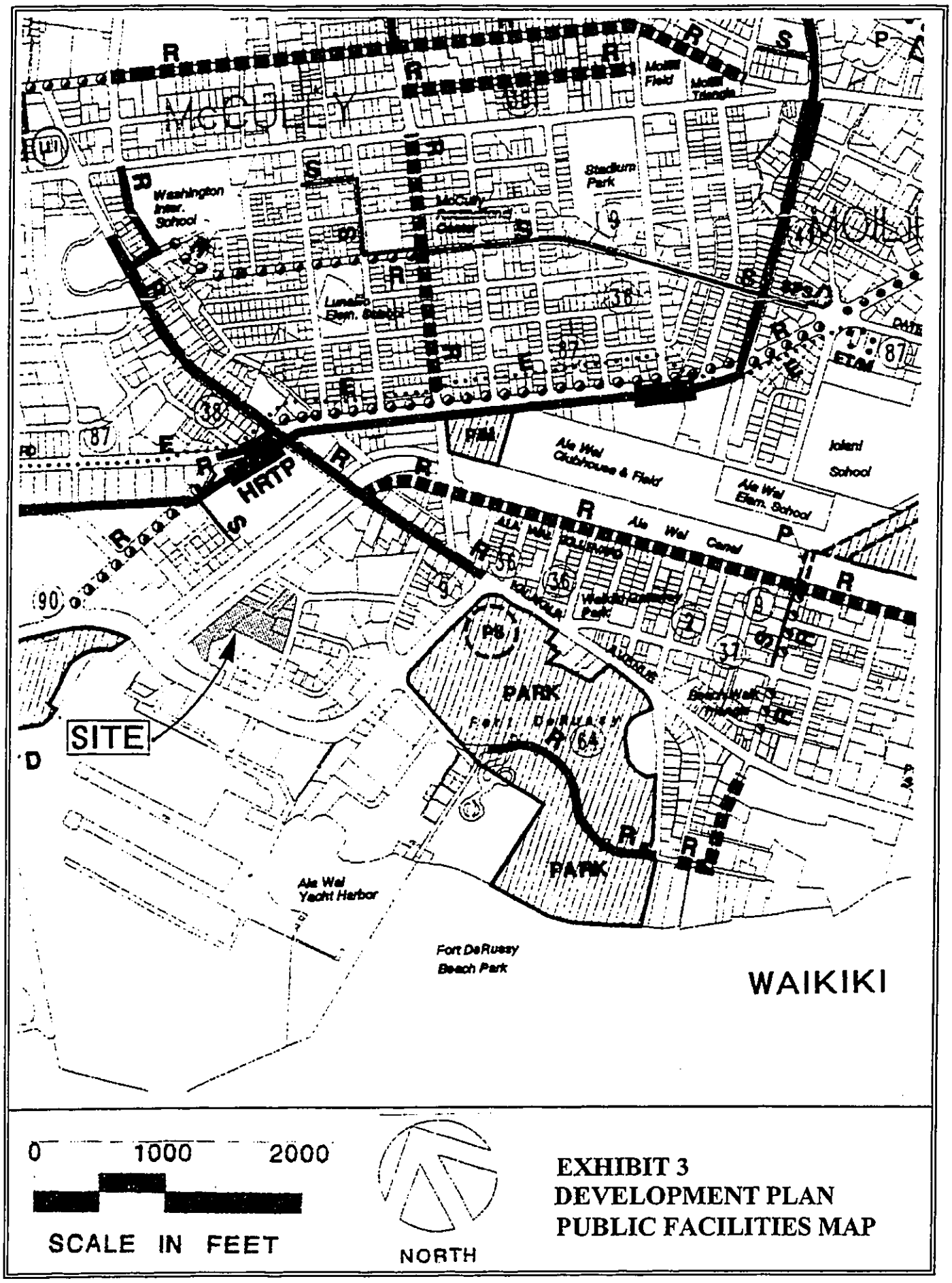


EXHIBIT 3
DEVELOPMENT PLAN
PUBLIC FACILITIES MAP

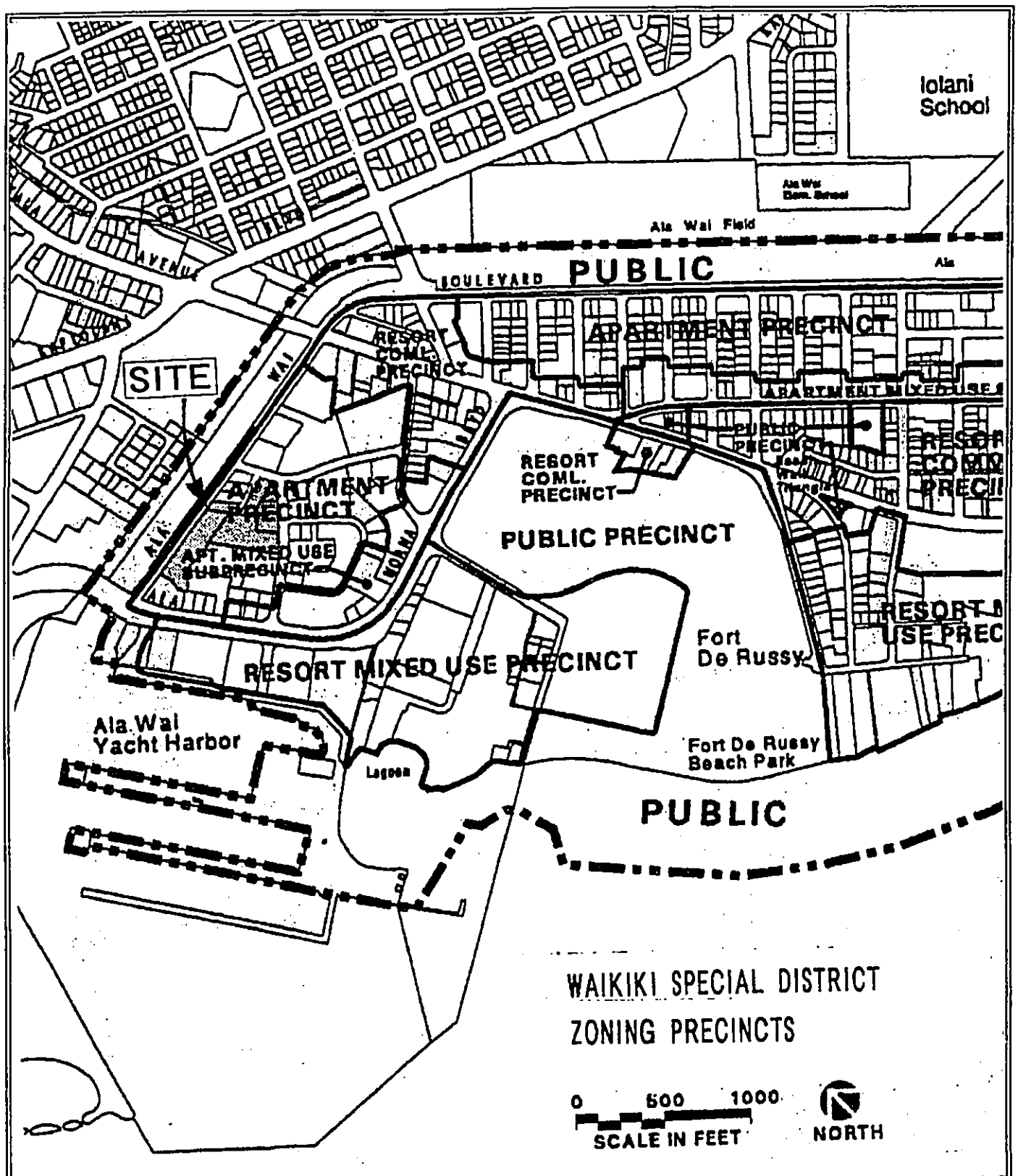


EXHIBIT 4
WAIKIKI SPECIAL DISTRICT MAP

Department of Facility Maintenance
Department of Transportation Services
State
Department of Land and Natural Resources
Department of Health
Office of Environmental Quality Control
Environmental Center, University of Hawaii
State Historic Preservation Division

Federal
Department of the Army, U.S. Army Engineer District

III. DESCRIPTION OF PROPOSED ACTION

A. General Description

1. History

The project site formerly included the Ala Wai Terrace apartments, which consisted of 192 apartments located in six, 4-story, 32-unit buildings and a 2-story, 20-unit apartment building located on Hobron Lane across the mauka (east) leg of Kaioo Drive. The proposed development will replace these units that were demolished in anticipation of an earlier proposal to redevelop the greater Hobron Lane area. When added to the 18-unit apartment building that will be demolished, the net effect of the

212 new units at the Ala Wai Gateway will be a loss of 18 units from the total units formerly on the project site.

2. Existing Conditions

The project site consists of six parcels. The parcels on the east (2-6-011: 037) and northeast (2-6-011: 032) portions of the project site are currently occupied by three, 3-story apartment buildings. The two apartment buildings on parcel 37 will be retained after completion of the proposed development. The apartment building on parcel 32 will be demolished with construction of the proposed development. The remaining four parcels are vacant with either asphalt or sparse ground cover.

3. Proposed Development

The proposed 355-foot Ala Wai Gateway condominium complex will include a parking structure and recreational amenities on a 175,352 square foot lot situated between Hobron Lane and Ala Wai Boulevard. The Ala Wai Gateway will provide 212 new condominium units and retain 36 existing apartment units and provide 470 parking stalls via a parking structure and surface parking. The proposed 212 unit condominium is expected to support a population increase of about 384 residents, based on a discussion with staff at the Department of Planning and Permitting. A 3-story, 18-unit apartment building at 1609 Ala Wai Boulevard (Tax Map Key 2-6-11: 32) will be demolished. The development

will retain two, three-story apartment buildings with 18 units each, located at 1819 Lipeepee Street (Tax Map Key 2-6-11: 37). The new condominium tower at Ala Wai Gateway development will have driveway access to both Ala Wai Boulevard and Hobron Lane. The two existing apartment buildings will continue to have access from Lipeepee Street.

The proposed condominium tower will be developed with 38 floors and rise to 355 feet. The podium/ground floor will have a gross floor area of approximately 8,800 square feet. The condominium development will have a total floor area of approximately 295,600 square feet. The ground floor uses will include a recreation room, other recreational amenities, a lobby area, security, mail, office, maintenance, mechanical, electrical, trash and loading facilities. Site improvements include a swimming pool and deck, as well as a garden area and landscaping, along the Ala Wai Boulevard frontage.

The proposed development will also include a 6-level parking structure with a footprint of approximately 21,400 square feet. The parking structure will contain approximately 426 parking stalls, while surface parking areas will provide an additional 44 parking stalls.

The new condominium tower at Ala Wai Gateway development will have driveway access to both Ala Wai Boulevard and Hobron Lane.

Along Hobron Lane, the applicant has introduced a public park area (13,800 square feet) to serve as a gathering place for the community dedicated to public use, and providing opportunities for a wider sidewalk and more landscaping. The applicant has also provided greater setback at the proposed parking garage which is situated 22'-6" from the property line on one end and 36'-6" on the other end (providing 3,850 square feet of public open space, beyond our fence line)

The applicant has provided for public open space along Ala Wai Boulevard by setting the property fence back about 11 feet from their property line for most of this frontage (providing 4,110 square feet of public open space), which added to the existing 12-foot City pedestrian area provides a 23-foot setback from the curb which provides an opportunity for passive recreational use along Ala Wai Boulevard. Benches are planned within the City right-of-way as an amenity to encourage use of this passive recreational area. The feeling of open space will be enhanced by the large landscaped area beyond the fence line.

Altogether, the applicant will be providing 21,760 square feet of new public open space at the public park/gathering place on

Hobron Lane, the landscaped area fronting the parking garage and the public open space provided along Ala Wai Boulevard.

The two 18-unit condominiums that are being retained will continue to operate as separate rental apartments but will be redeveloped to eliminate 13 existing parking stalls and provide additional landscaping within it's own lot (Parcel 37). In addition, 18 additional surface parking stalls will be provided on the adjacent parcel and included in the Ala Wai Gateway development. These two apartment units will also be painted to upgrade the look of the apartments. These improvements will have to be accepted by the owner of Parcel 37. The residents of the rental apartment will utilize the new parking area and the public open space amenities provided on Hobron Lane. The existing rental apartments currently provide 26 parking stalls for their 36 units and the provision of 31 stalls for the rental apartment use will reduce the existing nonconformity by adding 5 stalls.

The access for parcel 37 is over Parcel 36, which serves as a right-of-way lot providing access to the parcels that abut the property (other than Parcel 1, which does not have an interest in Parcel 36). Based on our attorneys review of two other parcels that are part of this application, Parcel 32 (comprised of one lot with a one-sixth ownership of Parcel 36) and Parcel 37 (comprised of two lots with two-sixth ownership in Parcel 36), it appears that each of

the six lots that abut Parcel 36, except for Parcel 1, own a one-sixth interest in Parcel 36 which is a right-of-way that provides ingress and egress for the abutting parcels.

Plans for the Ala Wai Gateway are included in Appendix I.

4. Location

The project site is located in the Primary Urban Center of Honolulu. More specifically, it is located in the Waikiki Special District.

The project site is situated at the intersection of Hobron Lane and Lipeepee Street, with frontage on Ala Wai Boulevard as well.

The project site abuts Ala Wai Boulevard to the north and beyond that is the Ala Wai Canal. To the east are low-rise (3-story) apartment developments and Lipeepee Street. Across Lipeepee Street to the east are the Marina Towers (15-stories, 108 units) and the Villa on Eaton Square (37-stories, 426 units) condominium developments with commercial development on the lower floors of the Villa on Eaton Square. South of the project site is Hobron Lane and beyond that is the Windsor (formerly the Outrigger Hobron), a recent hotel to condominium conversion (45-stories, 179 units). Other low-rise apartment developments are also located to the south, around the Windsor. East of the project site are the Harbor View Plaza (16-stories, 140 units) and Aqua Marina (39-stories, 136 units) condominium developments and the

Tradewinds Hotel-Apartments (17-stories, 127 units and 16-stories, 113 units).

5. Surrounding Area

The project site is located on the western end of Waikiki. The greater surrounding area includes Yacht Harbor Towers, the YMCA, condominium and apartment developments, the Hawaii Convention Center and Ala Moana Center located to the north, across the Ala Wai Canal. To the west, across Ala Moana Boulevard are the Hawaii Prince Hotel, the Ilikai Marina and the Ilikai condominium hotel development, the Ala Wai Yacht Harbor and the Pacific Ocean beyond. Other hotel, condominium and apartment development are located to the south and east.

6. Land Use Approvals

a. State Land Use

The project site is designated Urban under State land use and the proposed condominium development is consistent with this Urban designation..

b. Development Plan

The Primary Urban Center Development Plan Land Use Map designates the site as Resort. The proposed condominium development is consistent with this designation.

The proposed development will not affect public views of Diamond Head or the Koolau Mountain Range. The potential impact of the view of Diamond Head from Punchbowl lookout is provided in the photograph, "Aerial View Toward Diamond Head - With Ala Wai Gateway", located in Appendix X.

Based on Figures and Maps provided in the Primary Urban Center Development Plan (PUC DP), the views of the Koolau mountains will not be affected by the Ala Wai Gateway development, as the predominate views along the Ala Wai Promenade are diagramed between McCully Street and Kapahulu Avenue. In any case, our project's location makai of the Ala Wai Promenade will not affect the mauka views from the promenade.

No improvements affecting the project site are indicated on the Development Plan Public Facilities Map.

c. Zoning

The project site is currently zoned Apartment Precinct with a 350-foot height limit. The proposed condominium development is consistent with this zoning precinct. However, the proposed development will require a zoning adjustment for the planned 355-foot height limit.

B. Technical Characteristics

1. Use Characteristics

The proposed 355-foot Ala Wai Gateway condominium complex will include a parking structure and recreational amenities on a 175,352 square foot lot situated between Hobron Lane and Ala Wai Boulevard. The Ala Wai Gateway will provide 212 condominium units, and 470 parking stalls via a parking structure and surface parking. The ground floor will also include a recreation room, other recreational amenities, a lobby area, security, mail, office, maintenance, mechanical, electrical, trash and loading facilities.

A 3-story, 18 unit apartment building at 1609 Ala Wai Boulevard (Tax Map Key 2-6-11: 32) will be demolished.

The development will retain two, three-story apartment buildings with 18 units each, located at 1819 Lipeepee Street (Tax Map Key 2-6-11: 37).

2. Physical Characteristics

The project site will be cleared, except for the two apartment buildings that will be retained at 1819 Lipeepee Street.

The proposed condominium tower will be developed with 38 floors and rise to 355 feet. The podium/ground floor will have a gross floor area of approximately 11,250 square feet. The condominium development will have a total floor area of

approximately 295,600 square feet. The ground floor uses will include a recreation room, other recreational amenities, a lobby area, security, mail, office, maintenance, mechanical, electrical, trash and loading facilities. Site improvements include a swimming pool and deck, as well as a garden area and landscaping, along the Ala Wai Boulevard frontage.

The proposed development will also include a 6-level parking structure with a footprint of approximately 21,447 square feet. The parking structure will contain approximately 426 parking stalls, while surface parking areas will provide an additional 44 parking stalls.

The new condominium tower at the Ala Wai Gateway development will have driveway access to both Ala Wai Boulevard and Hobron Lane

A site plan and elevations plans for the Ala Wai Gateway are included in Appendix I.

3. Construction Characteristics.

The development will be constructed over an 18 to 24 month period. Construction will begin as soon as the applicant is able to receive approval of the development by the City, including a Waikiki Special District Permit and building permit approvals.

IV. IMPACTS

The proposed development of 212 condominium units in a 355-foot tower, will replace 212 units demolished on the project site by a previous owner and 18 units to be demolished by the applicant. The net result will be a loss of 18 units. In addition to the 212 new condominium units, two existing 18-unit apartment buildings will be retained and improved with new paint and new landscaping in the surface parking area. As a replacement of previously existing multi-family dwelling units, the impacts of the proposed development could be considered minimal and related to the design of the new structure on the project site and the construction of the improvements.

A. Demographic Impacts

1. Residential Population

The proposed Ala Wai Gateway development will provide approximately 212 multi-family dwelling units which will provide for additional residential population in the Waikiki area. Based on Department of Planning and Permitting standards for dwellings in Waikiki, the average household size is estimated at 1.72 which translates to 365 residents living in the 212 unit condominium development. Based on the Department of Planning and Permitting's "Annual Report on the Status of Land Use on Oahu, Fiscal Year 2002", the Year 2000 population for the Primary Urban Center is approximately 419,300 which is approximately 47.9% of the Year

2000 island-wide population. Although the 419,300 population is only a little over the 46% General Plan Benchmark for 2025, and the Department of Planning and Permitting projects that the Primary Urban Center will grow by approximately 37,500 persons by the Year 2010. The proposed 212 multi-family dwelling units will provide for some of this projected population increase to the Year 2010. Due to the transient nature of some of the new condominium buyers in Waikiki, the population increase based on the 212 units will probably be less than a typical 212 unit condominium development, since a certain percentage of buyers are expected to be transient owners and second or vacation home buyers.

2. Visitor Population

The proposed development will have no impact on the visitor population.

3. Character or Culture of the Neighborhood

The proposed condominium development will conform to the character of the existing neighborhood and the surrounding condominium and apartment developments. This development will in fact replace the multi-family dwellings that were formerly on the site.

4. Displacement

The project site is mostly vacant, covered in asphalt or sparse landscaping, except for three 18-unit apartment buildings. Two of

these apartment buildings will be retained after completion of the Ala Wai Gateway. One 18-unit apartment building will be eliminated. Only one tenant remains in this building and the tenant has been given an extension of time to vacate the unit.

B. Economic Impacts

1. Economic Growth

As a condominium development Ala Wai Gateway will impact on economic growth by providing short-term construction jobs. The development will also provide long-term, full time employment for a resident manager and secondary employment for typical condominium services, including landscape maintenance and security.

2. Employment

As mentioned earlier, the development will provide short-term construction jobs and a long-term job in the form of a resident manager and secondary employment for typical condominium services, including landscape maintenance and security.

3. Government Revenues/Taxes

Tax revenues will be generated by the short-term construction work and some revenue will be provided by the projected long-term employment.

In addition, property tax revenues to the City will go up substantially in relation to the improvement value on the project site with the new building versus no improvements.

C. Housing Impacts

1. Increase Supply

As mentioned earlier, the proposed 212-unit condominium development will replace the 230 units formerly on the project site. The proposed condominium development would add to the housing market in Waikiki and provide opportunities to live, work and play in the vibrant Waikiki Resort community. With relatively quick sales recently experienced in Waikiki, it is evident that there is a pent up demand for condominium units in Waikiki.

2. Affordable Units

No affordable units are planned for this development.

D. Public Services

1. Access and Transportation

Ala Wai Boulevard originates at Kapahulu Avenue and is a predominantly one-way (westbound), four-lane City and County Roadway that converts to a two-way, two-lane roadway south of Kalakaua Avenue to its termination at a dead end just north of Ala Moana Boulevard and just west of the project site. Ala Wai Boulevard will provide access to the project site.

Hobron Lane is a predominantly two-lane, two-way City and County roadway that serves as a local connector between Holomoana Street along the Ala Wai Yacht Harbor and Ena Road. Hobron Lane provides another access for the project site.

Ala Moana Boulevard is a predominantly four lane, two-way State of Hawaii roadway which intersects Hobron Lane approximately 500 feet southeast of the project site and provides access to the surrounding Waikiki and Ala Moana communities.

Wilson Okamoto Corporation, has prepared a "Traffic Impact Report Ala Wai Gateway" and dated August 2004. Please refer to Appendix II - Traffic Impact Report.

The Traffic Impact Report "Recommendation" section states as follows:

"Based on the analysis of the traffic data, the following are the recommendations of this study associated with the project implementation:"

"1. Provide sufficient driveway width to accommodate safe vehicle ingress and egress."

"2. Provide adequate turning radii at all project driveways to avoid or minimize vehicle encroachment to oncoming traffic lanes."

"3. Maintain adequate sight distances for motorist to safely enter and exit all project driveways."

"4. Provide adequate on-site loading and off-loading service areas and prohibit off-site loading operations."

"5. Provide a dedicated right-turn lane on the eastbound approach of the intersection of Hobron Lane and Lipeepee Street."

"6. Convert the intersection of Hobron Lane and Lipeepee Street from an all-way stop controlled intersection to a two-way stop controlled intersection with eastbound and westbound traffic traveling through the intersection unimpeded."

"7. Ensure that parking area gates are located an adequate distance from the adjacent City streets to ensure that vehicular queues to not encroach onto these streets."

The Traffic Impact Report "Conclusion" section states as follows:

"With the modifications to the intersection control and configuration at the intersection of Hobron Lane and Lipeepee Street and the implementation of the remainder of the aforementioned recommendations, the proposed Ala Wai Gateway development is not expected to have a significant impact on traffic operations in the project vicinity. The total traffic volumes entering the study intersections along Kalakaua Avenue and Hobron Lane are expected to increase less than 2% during both peak hours of traffic with the development of the proposed project. These increases in the total traffic volumes

are in the range of daily volume fluctuations along those roadways and represent a minimal increase in the overall traffic volumes. The increases in the total traffic volumes entering the study intersection of Ala Wai Boulevard and Lipeepee Street during the AM and PM peak hours of traffic are higher, approximately 3-4%. However, the critical movements at this intersection are expected to continue operating at acceptable levels of service despite the anticipated increases in traffic."

The need for the dedicated right-turn lane on the eastbound approach of the Lipeepee Street/Hobron Lane intersection is evidenced by the existing Level of Service F (PM peak hour) for the single eastbound lane at this intersection and the projected continued Level of Service F (PM peak hour) without the project. The provision of the second lane dedicated to right turns, along with a modification of the stop control to allow unimpeded travel eastbound and westbound at the intersection, will improve the eastbound approach to Level of Service A (PM peak hour) with the project, with all other approaches remaining at the same Level of Service or improving.

The need for the change in the stop control is founded in the significantly heavier traffic, totaling 740 vehicles during the PM peak hour, on the east bound and westbound approaches to the Lipeepee Street/Hobron Lane intersection versus the northbound approach and

the driveway southbound approach, totaling 406 vehicles during the PM peak hour. This coupled with the high percentage (76% of vehicles) of right turns on the northbound approach justify the change in stop control. Level of Service at this intersection will remain the same or improve for each movement at the intersection with the proposed change in stop control.

Subject to approval from the Department of Transportation Services and the Traffic Review Branch of the Department of Planning and Permitting, the applicant plans to implement all recommendations of the traffic study. As noted in the traffic impact report, with these improvements, the proposed Ala Wai Gateway development is not expected to have a significant impact on traffic operations in the project vicinity. These improvements will in fact have a positive impact on the Level of Service of two movements in the PM peak hour and one movement in the AM peak hour while all other movements remain at the same Level of Service.

Other travel mode opportunities, including pedestrian, bus, the Handi-Van (which is a curb-to-curb transit service) and bicycle are available to residents of the Ala Wai Gateway development. The applicant will consider development of bicycle racks within the parking garage to provide the opportunity for residents to us this mode of transportation for travel. The proposed development is situated in an area that is close to restaurants, nightclubs, shopping

(including the Ala Moana Shopping Center - about a 1/4 mile away), recreation (Ala Moana Beach Park - about 1/5 of a mile away, Hilton Hawaiian Village Lagoon and Beach about a 1/4 of a mile away, and the Ala Wai Yacht Harbor - about a 1/5 of a mile away) and employment, being situated within one of the major employment centers on the island (Waikiki). The Waikiki location also provides opportunity for convenient entertainment through connection with visitor tour packages that may pick up at the nearby Ilikai and Prince Hotels. There are major bus lines on Kalakaua Avenue located about 1,200 feet away and on Ala Moana Boulevard located about 500 feet away. This close proximity will make bus travel a very viable option for residents of the proposed condominium.

The proposed Ala Wai Gateway is being developed in an area where on-street parking is heavily parked, due to the significant amount of apartment and condominium developments in the surrounding area and the surrounding resort and commercial developments whose employees park on surrounding streets. In recognition of the scarcity of on-street parking, the applicant is providing more than twice the number of required stalls for the property. With 212 new multi-family dwelling units and 36 existing apartment units, the LUO would require 248 parking stalls. The applicant is providing a total of 470 stalls.

In accordance with recommendations from the Traffic Review Branch of the Department of Planning and Permitting, the applicant will:

a. Construct a separate right turn lane along the project frontage on the diamond head bound approach at the intersection of Lipeepee Street and Hobron Lane, subject to approval by the Department of Transportation Services (DTS) and DPP. The applicant will complete this improvement, if permitted by DTS and DPP, prior to the issuance of the Certificate of Occupancy.

b. Interconnect internal driveways such that vehicles can ingress and egress from either Ala Wai Boulevard or Hobron Lane.

c. Set back entry gates to provide adequate storage to avoid vehicular queuing on any public street.

d. Design and install landscaping and structures in the vicinity of all driveways in order to provide adequate sight distance to pedestrians and other vehicles. Driveway grades will not exceed five percent for a minimum distance of twenty feet from the project's property line.

e. Submit construction plans for all work within and affecting the City's right-of-way to the City for review. Traffic control plans during construction will be submitted to the City for review and approval.

2. Water

The Board of Water Supply (BWS) was consulted in July of 2004 to determine appropriate connections based on existing facility capacities and development plans. The BWS system in the vicinity of the project site consists of a loop system of transmission mains and fire hydrants. There is a 12-inch and 8-inch main in Ala Wai Boulevard and Hobron Lane, respectively, fronting the project site. There are also fire hydrants located on both Ala Wai Boulevard and Hobron Lane fronting the project site.

Based on BWS records, there is one active and four inactive service connections to the various parcels within the project site. The only active meter, which serves parcel 32, is a 1-1/2-inch meter with 2-inch lateral connection to the existing main in Ala Wai Boulevard. Parcel 4 has a recently deactivated 2-inch and 4-inch lateral connection to the existing main in Hobron Lane. The other inactive service connections consist of a 1-1/2-, 2-1/2-, and 1-1/4-inch water laterals servicing parcels 1, 2, and 40, respectively, which have been turned off for over 5 years.

Average daily potable water demand of 68,400 gallons per day is anticipated for the proposed development.

Domestic water service for the proposed development will likely be provided through a new lateral connection to the existing BWS water main and a new compound meter. The size of the new

compound water meter, which is based on the projected gallons per minute usage rate required for the proposed development will be determined during the design phase of the project. After the meter, a reduced pressure backflow preventer assembly is required to protect the BWS system from cross contamination. The on-site water system will extend from the backflow preventer to the various buildings.

The fire protection water service lateral will consist of a detector check meter and waterline extending to the various buildings. The mechanical engineer will verify the need for a fire pump for the proposed building during the design phase of the project. The Fire Department will need to be consulted during the design phase of the project to determine the need for on-site fire hydrants and to review fire truck access requirements. The applicant will complete fire flow testing of fire hydrants in the area to determine that flows available to the site will meet Board of Water Supply's fire flow requirements.

The proposed development is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirement prior to the issuance of the Building Permit Application.

The BWS, by letter dated August 9, 2004 (Appendix III), stated that "The existing water system is presently adequate to provide water service to the proposed condominium development."

3. Wastewater

The project site is located in the Ala Moana collection area where wastewater flows are eventually conveyed to the Sand Island Sewage Treatment Plant for treatment and disposal. Existing 8-inch sewer mains are located within both Ala Wai Boulevard and Hobron Lane fronting the project site. An existing 8-inch sewerline extends from the City's sewer main in Ala Wai Boulevard into the project site. The on-site 8-inch sewerline extends along the portion of the project site fronting Ala Wai Boulevard.

An average sanitary sewer volume of 51,200 gallons per day is projected for the proposed development.

The sanitary sewer system for the proposed development will consist of a gravity sewer collection system that will service the new buildings. The new on-site sanitary sewer system will connect to the existing 8-inch sewer main located along Ala Wai Boulevard. New sewer manholes or clean outs will be located at each sewer lateral connection point to the new buildings.

The Department of Planning and Permitting on August 2, 2004 approved a Sewer Connection Application (Appendix III - Agency Comments) for the proposed Ala Wai Gateway development subject to the applicant splitting the project's wastewater flows between Ala Wai Boulevard and Hobron Lane. Wastewater flows from this project will be split between the Ala Wai Boulevard system and the Hobron

Lane system, since the Ala Wai Boulevard system is inadequate to handle all the flows from this project. The applicant will work with the Department of Planning and Permitting and/or the Department of Environmental Services to determine the appropriate flows to each system. This Sewer Connection Application approval is valid for two years.

4. Drainage

The project site is relatively flat with elevations ranging from approximately 3 to 5 feet above mean sea level. The majority of the project site (four of six parcels) is vacant and currently used as a parking lot. The parking lot area is paved with asphaltic concrete pavement extending from Hobron Lane to approximately 2/3 of the way toward the Ala Wai Boulevard side of the project site. Two parcels contain three apartment buildings (3-story, 18-units each), one of which will be demolished. All other areas of the site are unimproved with miscellaneous vegetation, including grass, trees and shrubs.

In general, the storm water generated within the project site sheet flows to the existing municipal storm drainage system in the adjacent streets. The preliminary topographic survey map indicates that there are some localized low spots in the middle of the project site that are serviced by several drain inlets.

Since the project site was previously developed with existing apartment buildings (that have since been demolished) including a large

portion of the project site that is currently paved, we do not expect to see any significant increase of storm water generated by the project site. A detailed storm drainage study will be prepared during the design phase of the project to confirm the respective existing and proposed storm runoff volumes. In the event that the detailed storm drainage study determines that there is an increase in storm runoff to the municipal system, an analysis of the municipal system will be conducted to determine that the system is adequate to accommodate the increased flows. If the offsite municipal system is not able to accommodate the increase in storm runoff, all increases in storm runoff will be accommodated on-site through the use of retention basins.

Prior to connection to the City's system, the on-site storm water will be filtered, per the City and County of Honolulu Department of Planning and Permitting, Rules Relating to Storm Drainage Standards, Storm Water Quality Section, dated January 2000.

The applicant will implement permanent post construction best management practices to prevent discharge of pollution into the City's storm drainage system. Trash enclosures and any designated car wash areas will be covered and isolated from storm water runoff with its floor drains connecting to the sanitary sewer (wastewater line).

There is no intent for navigable waters of the U.S. (i.e. Ala Wai Drainage Canal) to be impacted by construction of project structures and associated ground disturbing activities within the proposed development area. The applicant understands that with this attestation that it can be stated that a Department of Army (DA) Permit for Section 404 activities of the Clean Water Act will not be required for these proposed improvements at Waikiki.

Should it be determined in the future that discharge of fill material below the Ordinary High Water Mark of the Ala Wai Drainage Canal is necessary, the applicant will consult with the Department of the Army, U.S. Engineer District, Honolulu to determine if a DA permit will be required.

5. Flood Plain Management

According to the Flood Insurance Rate Map of the Federal Emergency Management Area (FEMA), panel 365 of 395, Map Number 15003C0365 E, dated November 20, 2000, the project site is in Zone AO, an area determined to have an average flood depth of 2 feet.

The project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), since it is within a Special Flood Hazard Area. The applicant will also comply with the

requirements of the City and County of Honolulu, Land Use Ordinance related to Flood Hazard Districts.

6. Solid Waste Disposal

The solid waste generated by the proposed development will be collected by a private firm and will not impact municipal refuse services.

7. Schools

The proposed condominium development, based on Department of Education standards, will add to the student population as follows:

a) Elementary (Kindergarten to 5th) - 24

b) Middle (6th to 8th) - 9

c) High (9th to 12th) - 15

This is the estimated student population for Honolulu developments. However, due to the transient nature of some of the new condominium buyers in Waikiki, the student population increase based on the 212 units will probably be less than a typical 212-unit condominium development, since a greater than average percentage of buyers are expected to be transient owners and second or vacation home buyers, as well as retirees. This mix of buyers are not expected to generate as many students as a typical condominium development. The students generated by this development would attend Ala Wai Elementary School, Washington Middle School and Kaimuki High

School. The following Table provides the capacity, the actual 2003/2004 student enrollment, the projected enrollment for 2006 and 2009, and the projected student population generated by Ala Wai Gateway:

School	Capacity	Act. '03-'04	2006	2009	Ala Wai Gateway
Ala Wai Elementary	590	522	479	466	24
Washington Middle	1,033	1,026	996	876	9
Kaimuki High	1,478	1,347	1,295	1,263	15

8. Parks

Development of Ala Wai Gateway will not have a significant impact on the existing parks or recreation areas in the surrounding neighborhood. The project will provide recreational amenities, including a swimming pool and private park and recreational area on-site for the condominium residents. Ala Moana Beach Park and the numerous beaches in Waikiki are located nearby and will provide additional recreational opportunities for the condominium residents.

Along Hobron Lane, the applicant has introduced a public park area (13,800 square feet) to serve as a gathering place for the community, dedicated to public use, and providing opportunities for a wider sidewalk and more landscaping. The applicant has also provided greater setback at the proposed parking garage which is situated 22'-6"

from the property line on one end and 36'-6" on the other end (providing 3,850 square feet of public open space, beyond our fence line).

The applicant has provided for public open space along Ala Wai Boulevard by setting the property fence back about 11 feet from their property line for most of this frontage (providing 4,110 square feet of public open space), which added to the existing 12-foot City pedestrian area provides a 23-foot setback from the curb which provides an opportunity for passive recreational use along Ala Wai Boulevard. Benches are planned within the City right-of-way as an amenity to encourage use of this passive recreational area. The feeling of open space will be enhanced by the large landscaped area beyond the fence line.

Altogether, the applicant will be providing 21,760 square feet of new public open space at the public park/gathering place on Hobron Lane, the landscaped area fronting the parking garage and the public open space provided along Ala Wai Boulevard.

9. Police

The Police Department's Alapai Headquarters is located approximately 2.0 miles away at the intersection of Alapai Street and Beretania Street. The distance to the Waikiki Substation is about 1.2 miles by road, however, Kalakaua Avenue is one-way for a significant length and would require driving against the flow of traffic. The applicant believes that the fastest route would be

traveling on Ala Wai Boulevard which results in a 1.9 mile distance. The other route, utilizing Kuhio Avenue and following customary street travel directions results in a 1.6 mile distance.

10. Fire

The Pawaa Fire Station (Station 2) is located approximately 0.7 mile away on Makaloa Street. The Waikiki Fire Station (Station 7) is located approximately 1.8 miles away on Kapahulu Avenue.

11. Utilities

a. Electric

The Hawaiian Electric Company has existing power lines serving this area and the applicant will coordinate development of the Ala Wai Gateway to ensure that the power lines will be adequate to support the proposed development.

b. Telephone

Verizon formally GTE Hawaiian Telephone Company has existing utility service lines in the area. It is expected that these existing lines will be used to service this proposed condominium development. The applicant will coordinate with Verizon to determine if new lines will be required. No off-site work is expected.

E. Environmental Impacts

1. Historical and Archaeological Resources

Cultural Surveys Hawaii Incorporated has prepared an archaeological assessment for the Ala Wai Gateway project for the applicant. The archaeological assessment is titled "Archaeological Assessment for the Kapiolani Akahi Project Site Kalia, Waikiki, Oahu" and dated March 2004. Please refer to Appendix IV - Archaeological Assessment.

The archaeological assessment "Recommendations" section states as follows:

> "In the mid-nineteenth century, a Hawaiian LCA award with a house site for the family of a man name Uma was present in the southern half of the project area. His land claim was bounded by a fishpond on the east side and a water ditch to the north. An 1881 map also shows several water channels to the south and an adjacent LCA, awarded to Luakiu. Luakiu stated in his testimony that he not only had a house on this lot, but also an *'auwai*, used to irrigated *lo'i* (irrigated plots, probably for taro). The pattern described above is fairly typical for much of Waikiki. Remnants of agriculture, pre-and post-contact habitation and even burials rarely create major impediments to development, but may require time and money to resolve to the satisfaction of State regulatory agencies."

"The current surface of the project area is illustrated as Fill Land (Foote et al. 1973) on Oahu soil maps, but there may be intact sand strata below one or more fill layers. It is anticipated, based on historical research and previous archaeological projects, that evidence of pre-contact and early post-contact (predating the construction of the Ala Wai Canal beginning in 1921) habitation, agriculture, and possibly burial practices may be found in the project area if intact Jaucus sand deposits remain below nineteenth and twentieth century fill layers. In the 1920s, single-family residences followed by large apartment complexes were built on the lot. It is also anticipated that historical artifacts post-dating 1920, after the completion of the Ala Wai Canal, may be found in twentieth century fill layers."

"Our recommendations for the project area include an archaeological inventory survey with subsurface testing. Based on past experience, the subsurface testing would utilize a backhoe to more efficiently document subsurface cultural features. Subsurface testing would focus on the paleo-environmental data from the fishpond sediments and habitation-related data from the general location of the mid-nineteenth century LCA house site. Based on the inventory survey results, the SHPD could require additional research in

the form of data recovery. Again based on the results, SHPD may require additional reports, such as a preservation plan and/or a burial treatment plan."

Cultural Surveys Hawaii, Inc. (CSH) has recently completed field work on an archaeological survey for the Ala Wai Gateway project for the applicant. The field work has turned up a coffin from the mid to late 1800's and some human bone fragments on the property.

The following provides the sequence of events during the field work on the archaeological survey:

Monday, 9/13/04

1. Excavations in the a.m. found two incomplete sets of human skeletal remains in a disturbed context.
2. The Honolulu Police Department (HPD) and the State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources were notified immediately.
3. Mr. Kanai Kapeliela from SHPD visited the site. The SHPD representative brought with them Ms. Kehau Kruse (introduced as Oahu Burial Council member) and Mr. Ted Norman (introduced as claimant of lineal descent of former neighboring property owners). It was agreed by them that the remains would be reburied in the same place for the present. This was done by CSH.

4. Chairperson of the Oahu Burial Council Mr. Van Diamond arrived after the others had left. He declined to see the trenches and stated that he agreed with the consensus of Mr. Kapeliela and Ms. Kruse to keep the bones in the location they were found.
5. Excavations in the p.m. found one complete burial in a coffin. SHPD was notified but due to the late time did not respond this day.

Tuesday, 9/14/04

1. SHPD representative Mr. Nathan Napoka called in the morning and indicated that they would visit the site in the afternoon. Mr. Napoka and Mr. Kapeliela arrived in the afternoon and brought with them Mr. Norman. On this visit they decided that the remains disturbed in the discovery of the burial should be placed back with the coffin and reburied as is for the present. CSH did this. They also concurred that we should excavate further to look for more burials in the vicinity of the coffin burial. They agreed that additional testing was not necessary in the vicinity of the disturbed remains as it was clear they were not in primary context. They requested copies of the archaeological assessment report previously produced by CHS.

Wednesday, 9/15/04

1. A copy of the assessment report was sent to Mr. Kapeliela at SHPD and two copies to Mr. Nathan Napoka.

2. A meeting on site has been scheduled for Friday, 9/17/04 at 10:00 a.m. at the request of the SHPD Archaeology Chief Dr. Sara Collins with her assistant Ms. Muffett Jourdane, Mr. Tom DeCosta (CM&D, owners consultant) and CSH.

The CSH will continue to work with SHPD and Oahu Island Burial Council (Burial Council), to determine the appropriate disposition of the remains.

The CSH has completed the Archaeological Inventory Survey Report and a Cultural Impact Assessment for the project site. Both documents are included in Appendix IV. The Archaeological Inventory Survey has been submitted to SHPD for review and acceptance.

2. Natural Resources

a. Water Resources

There are no potable water resources within the project site. The project site is located approximately 900 feet from the Ala Wai Yacht Harbor and will not have an impact on coastal resources. The project site is located across the street from the Ala Wai Canal and care will be taken during the construction phase to minimize impacts to the canal from runoff from the construction activity.

b. Flood Plain Management

According to the Flood Insurance Rate Map of the Federal Emergency Management Agency (FEMA), panel 365 of 395, Map Number 15003C0365 E, dated November 20, 2000, the project site is in Zone AO, an area determined to have an average flood depth of 2 feet.

The project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), since it is within a Special Flood Hazard Area. The applicant will also comply with the requirements of the City and County of Honolulu, Land Use Ordinance related to Flood Hazard Districts.

c. Wetlands Protection

The project site is an urbanized lot that contains no wetlands.

d. Coastal Zone Management

The development site is within the Coastal Zone Management Area, but not within the City's Special Management Area. As such, a Special Management Area Use Permit will not be required.

e. Unique Natural Features

The project site is relatively flat with elevations ranging from approximately 3 to 5 feet above mean sea level. There are no unique features such as sand dunes or sloped areas where erosion would be a concern.

f. Flora

Char & Associates, has prepared a botanical assessment for the project site, for the applicant. The botanical assessment is titled "Ala Wai Gateway: Botanical Resources Assessment Study", dated July 18, 2004. Please refer to Appendix V - Botanical Resources Assessment.

The Botanical Assessment "Discussion" section states as follows:

"The Ala Wai Gateway project site has been disturbed for a long time and is situated in an urban environment. The site is graded and much of it is covered by asphalt pavement. The open, grassy area supports a few landscape plantings. The vegetation on the two parcels which make up the project site is composed almost exclusively of introduced or alien species. Introduced species are all those plants which were brought to the islands by humans, intentionally or accidentally, after Western contact, that is, Cook's arrival in the islands in 1778. The coconut and 'ulu are originally of Polynesian introduction.

The only native species observed on the site is the 'uhaloa (Waltheria indica). 'Uhaloa is indigenous, that is, it is native to Hawaii and the tropics. In Hawaii, it occurs in dry, often disturbed sites."

"None of the plants found on the Ala Wai Gateway project site is a threatened and endangered species or a species of concern (U.S. Fish and Wildlife Services 1999a, 1999b; Wagner et al. 1999). There are no native plant-dominated communities on the project site. This is not surprising given the location of the project site."

"The proposed development of the site is not expected to have a significant negative impact on the botanical resources. However, a few of the larger trees should be preserved. The single specimens of Cook pine, 'ulu, and coral trees along the boundary of Parcel 4 should be retained in place. The coconut palms can be transplanted and reused in the new landscaping project. The 'opiuma, pink tecoma, and Chinese banyan are considered somewhat weedy tree species. These can be replaced with other, more ornamental species."

g. Fauna

Faunal Surveys, has prepared a faunal study for the project site, for the applicant. The faunal study is titled "Avifaunal and Feral Mammal Field Survey for the Ala Wai

Gateway Project, Waikiki, Oahu", dated July 22, 2004. Please refer to Appendix VI - Faunal Study.

The Faunal Study's "Conclusions" section states as follows:

> "The typical array of alien birds in this region of Oahu were observed on the survey. No unexpected species were noted. The absence of native land birds and waterbirds was expected due to an absence of appropriate habitat for these species. The migratory Pacific Golden-Plover may forage in the open areas on the site during August through April. Feral mammal observations were limited to the Roof Rat but other alien mammals likely occur on the property. The development on this property should not significantly alter the relative abundance of alien birds in Waikiki. VanderWerf (pers. comm..) suggest that because the White Tern is not federally listed that concerns about any possible impact the proposed development may have on this species should be directed to David Smith, Oahu Biologist with DLNR DOFAW (808) 973-9787. This survey did not find any White Terns using the trees on this site."

h. Agricultural Lands

The project site is in an urban area where its use will not impact agricultural lands or lands with the potential for agricultural use.

i. Open Space

The project site is partially unimproved and zoned Apartment Precinct. The proposed development is situated in an urbanized and developed area and development of this site will not affect any important open space features in the area.

Development within the Apartment Precinct will require 50% open space and will provide a significantly greater amount of open space not typically found in existing developments in the Waikiki area.

F. Topography

The project site is relatively flat with elevations ranging from approximately 3 to 5 feet above mean sea level. There are no unique features such as sand dunes or sloped areas where erosion would be a concern.

G. Soils

The U.S. Department of Agriculture Soil Conservation Service Soil Survey Report for the Island of Oahu classifies the soils for this area as Fill land, mixed (Fl) under the Fill land Series. This series consists of areas filled with materials from excavation from adjacent sloping terrain,

dredging, bagasse and slurry from sugar mills and garbage. This type of soil can be found on the islands of Kauai, Maui and Oahu.

Fill land, mixed (Fl)-This soil occurs in area adjacent to the ocean near Pearl Harbor and in Honolulu. It consist of material dredged from the ocean, hauled from surrounding areas and garbage This soil is used for urban development including: airports, industrial facilities and housing.

H. Noise

D.L. Adams Associates, Ltd., has prepared an environmental noise assessment for the Ala Wai Gateway, for the applicant. The noise assessment is titled "Environmental Noise Assessment Report: Ala Wai Gateway Residential Project Honolulu, Oahu, Hawaii", and dated July 2004. Please refer to Appendix VII - Environmental Noise Assessment.

The noise assessment "Executive Summary" section states as follows:

"1.1 The Ala Wai Gateway residential project is proposed to offer approximately 228 units in a residential tower condominium. Any existing structures will be demolished prior to erecting the new building."

"1.2 Continuous ambient noise levels on the existing property were measured at two locations for approximately 4 days. One noise measurement location (Location 1) was near Hobron Lane, approximately 35 feet from the center of the road. The second location (Location 2) was near the existing private road in the middle of the property, approximately 135 feet from the

centerline of Ala Wai Boulevard. The results from the noise measurements shows a daytime average Leq noise level of 62 dBA at Location 1, and 56 dBA at Location 2. The nighttime average Leq was 58 dBA at Location 1 and 52 dBA at Location 2. Dominant sources of noise at the project site generally include vehicular traffic in the area, occasional aircraft flyover, pedestrians, and nearby construction noise."

"1.3 During the construction phase of the project, typical construction noises will be audible in the area. Noise from construction activities must comply with State Department of Health regulations as specified for construction related activities."

"1.4 After construction is complete, noise generated by the residential tower must meet the State Department of Health noise regulations, which allow adjustments for existing ambient noise levels."

"1.5 Noise from vehicular traffic in the area due to the project is not expected to significantly increase over the existing ambient nosie levels. The increase in project generated traffic noise was calculated to be less than 1 dB."

The applicant is considering alternatives to pile driving to lay the foundation. Should pile driving be required, the applicant will provide notice to the surrounding neighbors (either with a meeting or through a mailout) to

warn them of the disruption and projected period of pile driving. The applicant will consult with the Noise, Radiation & Indoor Air Quality Branch of the Department of Health on construction noise issues.

The applicant will direct contractors to comply with the State Department of Health (DOH) regulations specified for construction related activities to help mitigate the short term noise impacts during construction. Noise generated by mechanical and electrical equipment needed for the condominium development will be sited to meet DOH noise regulations.

I. Air Quality

J.W. Morrow, has prepared an air quality impact report for the Ala Wai Gateway. The air quality impact report is titled "Air Quality Impact Report: Ala Wai Gateway Honolulu, Hawaii" and dated July 27, 2004. Please refer to Appendix VIII- Air Quality Impact Report.

The Air Quality Impact Report "Conclusions and Mitigation" section states as follows:

"8.1 Short term Impacts. Since as noted in Section 4, the project area is considered semi-arid by Thorwaite's climate classification system with a P/E index lower than that associated with the EPA fugitive dust emissions factor, there appears to be somewhat greater potential for fugitive dust. It will therefore be very important to employ adequate dust control measures during the construction period, particularly during the drier summer months. Dust control could be

accomplished through frequent watering of unpaved roadways and areas of exposed soil. The EPA estimates that twice daily watering can reduce the fugitive dust emissions by as much as 50%. The soonest possible paving fo roadways and landscaping of bare soils will also help. Dust screens may also be necessary to reduce impacts on adjacent buildings and other areas of human activity in this high visibility tourist zone."

"Short-term air quality impacts due to offsite activities supporting the proposed development, i.e., concrete asphalt production, appear to be *de minimus* due in larger part to the high removal efficiency of control devices typically found on such production facilities. Furthermore, any emissions will be strictly regulated by the Department of Health permit which each batch plan must have in order to operate and demonstrate compliance with ambient air quality standards."

"8.2 Mobile Source Impacts. As reported in Section 6, compliance with federal and state carbon monoxide standards is demonstrated under worst case conditions of meteorology and peak hour traffic; thus, no special mitigative measures are required."

"8.3 Offsite Stationary Source Impacts. The proposed project will increase electrical demand which in turn will cause more fuel to be burned and more pollutants to be emitted into the air.

This increase in electrical generation-related emissions is estimated to be less than 0.1%. These impacts can be mitigated by energy efficient design of the proposed dwelling units. The state Department of Business, Economic Development and Tourism has energy conservation design guidelines to assist in this effort. As for HECO's facilities which provide the power, each must continuously demonstrate compliance with all applicable ambient air quality standards and control regulations in order to retain its operating permit.

The increase in emissions associated with the disposal of solid waste generated by the project are also estimated to be less than 0.1%. They can be reduced by encouraging the use of recyclable products."

Based on recommendations from the Department of Health, Clean Air Branch, in a letter dated October 12, 2004 (Appendix XII), the applicant agrees to the following to mitigate potential air quality impacts during the construction phase of the project:

1. Prior to construction/demolition activities involving asbestos, if any is present, the applicant will contact the Asbestos Abatement Office in the Noise, Radiation and Indoor Air Quality Branch of the Department of Health at 586-5800.
2. Construction activities will comply with the provisions of Hawaii Administrative Rules, Section 11-60.1-33 on Fugitive Dust.

3. The applicant will develop a dust management control plan, including, as needed, the following:

   a. Plan the different phases of construction, focusing on minimizing the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes, and locating potentially dust-generating equipment in areas of the least impact;

   b. Provide an adequate water source at the site prior to start up of construction activities;

   c. Landscape and provide rapid covering of bare areas, including slopes, starting from the initial grading phase;

   d. Minimize dust from shoulders and access roads;

   e. Provide adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and

   f. Control dust from debris being hauled away from the project site.

J. Visual Impact

The proposed structure will have a finished height of 355 feet which is just over the 350-foot height limit of this Apartment Precinct. A zoning adjustment will be requested for the additional 5 feet which is needed to provide for energy saving features within the building. The proposed development will not affect any important view planes in the area of Waikiki. Public views are provided from the Ala Wai Canal Promenade on

the north side of the Ala Wai Canal and from the sidewalk area on the south side of the canal. The applicant was sensitive in directing the design professionals working on the proposed tower design to orient it to minimize visual impacts to the Ala Wai Canal Promenade. The design also features a significant landscape feature and garden along the Ala Wai Boulevard frontage that provides a pleasant visual amenity for joggers, residents and visitors using the Promenade.

The potential visual impact on surrounding areas is further depicted in the Axonometric Plans provided in Appendix IX.

The Webster Dictionary defines "axonometric" as, "being or prepared by the projection of objects on the drawing surface so that they appear inclined with three sides showing and with horizontal and vertical distances drawn to scale but diagonal and curved lines distorted". The axonometric plan provided attempts to provide a three dimensional appearance to the buildings.

The Axonometric Plan provides evidence that the primary views from the north for the high rises located across Ala Wai Canal (Yacht Harbor Towers, Discovery Harbor and The Summer Place) will not be affected by the Ala Wai Gateway Tower. Secondary angular views looking south from The Summer Place will be affected, but were already impacted by high rises on both sides of Ala Moana Boulevard between Hobron Lane and Holomoana Street.

Primary makai views from portions of the Marina Towers and secondary angular makai views from 1717 Ala Wai to the south will be affected but are presently impacted by high rises on both sides of Ala Moana Boulevard between Hobron Lane and Holomoana Street. Views from The Villa at Eaton Square and Waipuna will not be affected since their primary views run north and south.

Primary views of portions of the Chateau Waikiki and portions of the Windsor looking to the northwest and north, respectively, will be affected by the Ala Wai Gateway Tower. Primary views from the Discovery Bay north tower will be affected, however, the narrowest face of the building faces the north tower and that combined with the distance between the buildings serves to reduce the visual impact. Primary views looking north from the Holiday Inn Waikiki may be partially affected by the Ala Wai Gateway Tower.

Primary mauka views from the Prince Hotel west tower, Harbor View Plaza, Ala Wai Terrace, Big Sur and Aqua Marina will be affected by the Ala Wai Gateway Tower.

The orientation and location of the Ala Wai Gateway Tower provides significant separation from all the surrounding high rises and serves to mitigate the visual impact of the proposed structure. This coupled with a generally mauka-makai orientation helps to mitigate the visual impact in the mauka and makai directions.

The applicant considered the following design alternatives to the proposed 212 Unit Condominium Development being presented in this Waikiki Special District Permit application:

a. Low-Rise Buildings

Provide nine low-rise (three to four story) buildings on the site. This design concept was not selected for the following reasons. First, while the overall building height for the project was drastically reduced, it increased the feeling of density at the public pedestrian level and decreased efficiencies in vehicular access and parking for the site. Second, this scheme did not allow for the maximization of open landscaped area along Ala Wai Boulevard and Hobron Lane as compared to the current scheme. Only 39% open space could be provided under this plan. The current tower design minimizes the building footprint which provides an opportunity to exceed the 50% Open Space requirement set forth in the WSD requirements by 10%, providing 60% open space.

b. Two Towers

Provide two towers, one along Ala Wai Boulevard and one along Hobron Lane with a parking structure between the towers towards the internal portion of the site. While this scheme decreased the overall width of each individual tower above 75 feet, it greatly increased the massing of the podium along the entire depth of the site from Ala Wai Boulevard to Hobron Lane. Compared to the current scheme,

there was no significant difference in impact along Ala Wai Boulevard, however, the addition of a second tower caused some duplication of infrastructure such as loading & trash areas, security and fire command, and an increase need for vehicular access on site which decreased opportunities for open space. This scheme also decreased the distance between existing high-rise buildings and the new towers adding to an increased feeling of density in the area.

The building orientation has been sensitive to the need to protect public pedestrian views from the Ala Wai Canal and Ala Wai Promenade while providing an angle toward a mauka-makai orientation as recommended by the Waikiki Special District. The applicant has maintained a generally mauka-makai orientation, that is slightly off-set to minimize visual impact to the Ala Wai Promenade. A full mauka-makai orientation would have resulted in the widest building face along Ala Wai Boulevard and the Promenade. To further soften impact on pedestrian views, most of the Ala Wai Boulevard frontage is in landscaped open space and the property's fence has been set back about 11 feet, which added to the existing 12-foot City pedestrian area provides a 23-foot setback from the curb which provides an opportunity for passive recreational use along Ala Wai Boulevard.

Along Hobron Lane, in order to improve the pedestrian experience, the applicant has introduced a public park area (13,800 square feet) to serve as a gathering place for the community, dedicated to public use, and

providing opportunities for a wider sidewalk and more landscaping. The applicant has also provided greater setback at the proposed parking garage which is situated 22'-6" from the property line on one end and 36'-6" on the other end (providing 3,850 square feet of public open space, beyond our fence line).

K. Hazards

The project site does not contain any nuisances, airport clear zones, or other features which would jeopardize its development.

V. MAJOR IMPACTS AND ALTERNATIVES CONSIDERED

As mentioned throughout this report the proposed development of Ala Wai Gateway will not have a significant impact on the surrounding area in terms of public services and the environment.

Positive socio-economic impacts are projected with the development of the condominium complex, and increases in short term employment.

A. No Action

This alternative was considered and rejected due to the continuing negative cash flow that would result from payment of property taxes, maintenance cost and liability expenses and the acquisition cost for the high value vacant land.

B. Condominium Development with 300 Units

This alternative was considered but would result in greater impacts to the surrounding neighborhood, primarily related to traffic.

This alternative was also eliminated due to the lack of sewer capacity to accommodate 300 multi-family dwelling units.

C. Proposed Condominium Development with 212 Units

The proposed condominium development with 212 units was selected since it represents a replacement of the units formerly on the project site and it can be supported by the existing municipal sewer system.

D. Design Alternatives to the Proposed 212 Unit Condominium Development

1. Low-Rise Buildings

Provide nine low-rise (three to four story) buildings on the site. This design concept was not selected for the following reasons. First, while the overall building height for the project was drastically reduced, it increased the feeling of density at the public pedestrian level and decreased efficiencies in vehicular access and parking for the site. Second, this scheme did not allow for the maximization of open landscaped area along Ala Wai Boulevard and Hobron Lane as compared to the current scheme. Only 39% open space could be provided under this plan. The current tower design minimizes the building footprint which provides an opportunity to exceed the 50% Open Space requirement set forth in the WSD requirements by 10%, providing 60% open space.

2. Two Towers

Provide two towers, one along Ala Wai Boulevard and one along Hobron Lane with a parking structure between the towers towards the internal portion of the site. While this scheme decreased the overall width of each individual tower above 75 feet, it greatly increased the massing of the podium along the entire depth of the site from Ala Wai Boulevard to Hobron Lane. Compared to the current scheme, there was no significant difference in impact along Ala Wai Boulevard, however, the addition of a second tower caused some duplication of infrastructure such as loading & trash areas, security and fire command, and an increase need for vehicular access on site which decreased opportunities for open space. This scheme also decreased the distance between existing high-rise buildings and the new towers adding to an increased feeling of density in the area.

VI. MITIGATION MEASURES

Although the impacts from the proposed development are not expected to be significant, the following mitigation measures are planned to minimize impact on the surrounding area:

A. Traffic

1. Provide sufficient driveway width to accommodate safe vehicle ingress and egress.

2. Provide adequate turning radii at all project driveways to avoid or minimize vehicle encroachment to oncoming traffic lanes.
3. Maintain adequate sight distances for motorist to safely enter and exit all project driveways.
4. Provide adequate on-site loading and off-loading service areas and prohibit off-site loading operations.
5. Provide a dedicated right-turn lane on the eastbound approach of the intersection of Hobron Lane and Lipeepee Street.
6. Convert the intersection of Hobron Lane and Lipeepee Street from an all-way stop controlled intersection to a two-way stop controlled intersection with eastbound and westbound traffic traveling through the intersection unimpeded.
7. Ensure that parking area gates are located an adequate distance from the adjacent City streets to ensure that vehicular queues to not encroach onto these streets.

B. Wastewater

Wastewater flows from this project will be split between the Ala Wai Boulevard system and the Hobron Lane system, since the Ala Wai Boulevard system is inadequate to handle all the flows from this project. The applicant will work with the Department of Planning and Permitting and/or the Department of Environmental Services to determine the appropriate flows to each system.

C. Drainage

Prior to connection to the City's system, the on-site storm water will be filtered, per the City and County of Honolulu Department of Planning and Permitting, Rules Relating to Storm Drainage Standards, Storm Water Quality Section, dated January 2000.

The applicant will implement permanent post construction best management practices to prevent discharge of pollution into the City's storm drainage system. Trash enclosures and any designated car wash areas will be covered and isolated from storm water runoff with its floor drains connecting to the sanitary sewer (wastewater line).

D. Archaeological

The applicant will work with the State Historic Preservation Division (SHPD) and the Oahu Island Burial Council (OIBC) on a reburial plan to either provide an on-site burial location at the open space/park area planned on Hobron Lane or on the open space/private park area planned on Ala Wai Boulevard or to re-inter the coffin and human bone fragments to an approved off-site burial location. In any case, the applicant will follow the recommendations of OIBC and SHPD for disposition of coffin and human bone fragments.

The applicant will instruct the contractor (earthwork) to immediately stop work and contact the State Historic Preservation Division (SHPD) for review and approval of proposed mitigation measures should any previously unidentified historic sites (including but not limited to artifacts, shell, bone,

or charcoal deposits, human burials, rock or coral alignments, pavings or walls) be encountered during the Assessment. Work in the immediate area shall be stopped until SHPD is able to assess impacts and make further recommendations for appropriate mitigation measures.

E. Noise

1. The applicant will direct contractors to comply with the State Department of Health (DOH) regulations specified for construction related activities to help mitigate the short term noise impacts during construction.
2. Noise generated by mechanical and electrical equipment needed for the condominium development will be sited to meet DOH noise regulations.

F. Air Quality

Dust control measures appropriate to the situation will be employed by the contractor, including where appropriate, the use of water wagons, erection of dust barriers and other methods for minimizing dust.

VII. GOVERNMENT PERMITS AND APPROVALS REQUIRED

The development will require the following governmental permits or approvals:

- Finding of No Significant Impact for the Final Environmental Assessment or Acceptance of a Final Environmental Impact Statement

- Waikiki Special District Permit, Major
- Park Dedication Permit
- Grading and/or Trenching Permits
- Building Permits from the Department of Planning and Permitting, City and County of Honolulu.

A Conditional Use Permit for Joint Development of the six parcels (Conditional Use Permit No. 2004/CUP-44) was approved by the Department of Planning and Permitting on August 9, 2004, subject to several conditions (Appendix III - Agency Comments). This joint development will be executed through recordation at the Bureau of Conveyance, after approval of the Waikiki Special District Permit.

The applicant will work with the Department of Planning and Permitting to determine if park dedication will be required for this development. If Park dedication is required, it will be met through dedication of 27,280 square feet of land area dedicated to private recreational use through a recorded restrictive covenant or some combination of land area and recreational improvements (swimming pool and deck area).

VIII. PHOTOGRAPHS

Photographs of the project site and adjoining land uses are provided in Appendix X to provide a visual record of existing conditions. Also included in

Appendix X are before and after photographs from the Ala Wai Promenade, Magic Island and an elevated view toward Diamond Head, utilizing photographic simulation with the proposed Ala Wai Gateway Tower rendered into the photograph for the after image.

IX. LAND USE ORDINANCE

The project's compliance with the development standards of the Land Use Ordinance, including the Apartment Precinct Development Standards and parking and loading requirements is provided in Appendix XI.

X. WAIKIKI SPECIAL DISTRICT

The proposed development will satisfy the objectives and standards of the Waikiki Special District as follows:

A. Objectives

1. Promote a Hawaiian Sense of Place

The proposed Ala Wai Gateway will provide lush landscaped open space on about 60% to 70% of its Ala Wai Boulevard frontage facing the Ala Wai Canal and Ala Wai Promenade, presenting a very tropical appearance from these important viewing areas.

The applicant's architectural consultant has been working with the Director and staff at the Department of Planning and Permitting

to create the articulation and rich visual textures by contrasting light and shadows on surfaces of the building to further the Hawaiian sense of place at Ala Wai Gateway.

The applicant is considering some of the design elements discussed in the City's "Waikiki Special District Design Guidelines", including railing designs and building motifs to further promote a Hawaiian sense of place.

2. District Guidelines

a. Building Design

i. Orientation and Form

The building orientation has been sensitive to the need to protect public views from the Ala Wai Canal and Ala Wai Promenade while providing an angle toward a mauka-makai orientation to maximize natural ventilation. The high rise tower has a generally mauka-makai orientation as depicted in Appendix IX, which shows the mauka-makai orientation as being perpendicular to Ala Wai Canal between McCully Street and the Kapahulu Library.

The design of the Ala Wai Gateway project steps in both plan and in elevation. In plan, in order to conform to all site setbacks while orienting the building toward the ocean view, the building's units are staggered, reducing the visual

impact of the buildings mass. The building also steps as it rises. At the ground level a large covered entry drive and a trellis that runs along the entire façade combine to provide a pedestrian scale element. A base element, which is essentially comprised of lanai screening, provides a substantial, slightly projected massing element at the ground level, stopping at the 7th story. Here the building further steps back to the main tower, which runs vertically to the 34th floor. At this level, a unit on the south end is omitted. At level 37, one more unit of the south end is omitted, then at level 38, two more units, one on each end is omitted. All of this stepping at levels 34, 37, and 38 allow the building to be further articulated near the top. The roof elements are also scaled in relation to the staggered portions of the building, emphasizing the stepped nature of the design. Note that due to the combination of plan stepping, elevational differentiation and façade articulation, the building's form is extremely graduated, and scaled with the view from the pedestrian level in mind. In order to further reduce the massing of the building, the applicant has reduced the building by one bay (36 feet) by wrapping the end units around the tower creating a semi-double loaded corridor condition at both end units of the

east side of the building as recommended in the October 14, 2004 presentation to the Design Advisory Committee and DPP.

The center bays of the building at the west elevation have been extended from 350 feet to 355 feet. This additional height will be used to provide greater energy savings through shadows, shade trellises and greater cross ventilation of units. Greater energy savings has also been realized with the relocation of 36 feet of the structure and double loading portions of the end units which was made possible by the additional 5 feet. The applicant will be submitting a zoning adjustment, in accordance with 21-2.140.1(b) of the Land Use Ordinance.

Although not required, the applicant will look into the opportunity to further step the massing at the base of the building (lower six to eight floors) to evaluate if this would provide further articulation and reduction in the appearance of building massing.

ii. Open Space

The open space on the project site has been focused on it's frontage on Ala Wai Boulevard, providing an important and significant visual link to the public spaces along the Ala Wai Canal and Promenade as

recommended by the "Waikiki Special District Design Guidelines". The applicant expects to provide 60% open space, more than the required 50% open space in an area where few lots have been developed with 50% or more open space.

iii. Parking Facilities

The impact of the parking structure and the surface parking located on the Hobron Lane side of the site is mitigated through a variety of means. For the surface parking, there are trees and plantings every 4 to 6 spaces, which reduces the visual impact of the cars and driveways. The setback from the parking structure to the property line at Hobron Lane has been increased and now ranges from 22'-6" to 36'-6" which allows for a lush landscaped buffer zone, effectively screening the structure from pedestrian views. At other points along the perimeter, all spaces are setback from the lot line at least 15feet, and the area is heavily landscaped, with the intention of screening the entire parking area from view. For the parking structure, we have rotated it so that the thinner, shorter facade is oriented toward the street. The plantings are organized to screen the building from the pedestrian view, and essentially cover the building

entirely. Additionally, the garage borrows important reference lines from the main building, to promote appropriate scale and articulation along the Hobron Lane facade. It is important to note that the Hobron Lane property line is 430 feet in length, and that the parking structure is 115' wide affecting only about 26% of the street edge.

In accordance with recommendations from the October 14, 2004 presentation to the Design Advisory Committee and DPP, the applicant will, as mentioned earlier, provide a greater setback for the proposed parking structure along Hobron Lane (adding about 5 additional feet); provide screening/grilles at the ramp elevations of the parking garage structure facing the new park at Hobron Lane to reduce the visual impact of the parking garage; provide a planter box around the perimeter of the top level of the parking garage to further reduce visual impacts; provide a trellis or similar structure at the top level to provide partial screening for high rises in the surrounding area; and provide a physical connection from the parking structure to the condominium tower through incorporation of a covered walkway as indicated in the latest Site Plan.

iv. Articulation, Scale, Material and Color

The building facade will be varied with a high degree of articulation as evidenced in the Photographs provided in Appendix V. The applicant will utilize lanais, shading devices, recessed windows and projecting eyebrows in providing articulation and contrast.

The applicant will be utilizing articulated concrete and plaster finishes bringing out neutral tones for the larger areas of color on the condominium structure to blend with the natural environment.

These elements of articulation, material and color are in keeping with the recommendation of the "Waikiki Special District Design Guidelines".

In reducing the building by one bay (36 feet) the amount of glazing non the building has been reduced. In addition, the applicant intends to utilize Low E glass for the project to further supplement the energy efficiency of the building.

The color palette and materials are represented in the Schematic Outline Specifications included in Appendix XI and the materials board submitted to DPP on November 3, 2004.

b. Ground Level Features

i. Entries, Lobbies and Arcades

The applicant plans an open air lobby to provide further articulation, natural cooling and to provide a sense of inviting visitors into the building.

The parking structure is planned with openings around each level to minimize the blank walls facing a street. In addition, as mentioned earlier, the parking structure will be screened by lush landscaping along Hobron Lane.

These elements are in keeping with the recommendations of the "Waikiki Special District Design Guidelines".

ii. Visual Links

The open air lobby will provide a visual link to the Ala Wai Canal and Promenade, the prominent open space and water feature along the Ala Wai Boulevard.

c. Features in Required Yards

i. Porte Cocheres

The applicant has set back the Porte Cochere outside of the required front yard and through landscaping will soften its view from Ala Wai Boulevard. The Porte Cochere will present a pleasant formal open entry into

the open air lobby and will provide an off-street drop off and pick up point for residents.

ii. Walls and Fences

The applicant plans to utilize wrought iron type fences, as recommended by the "Waikiki Special District Design Guidelines", on the Ala Wai Boulevard side of the proposed development to maintain a visual benefit to the pedestrians along Ala Wai Boulevard and from the Ala Wai Promenade viewing the large landscaped grounds. A wrought iron type fence will also be provided at the park on Hobron Lane between the park and surface parking areas.

iii. Shading Devices

Shading devices such as roof overhangs, eaves and eyebrows are planned, but for the most part are not expected to encroach into the required yards, although limited encroachment is permitted by the LUO.

iv. Roof Design and Equipment Screening

Rooftop machinery, equipment and utility installations may exceed the established height limit as permitted by the LUO, but will be screened from view.

d. Landscaping

The applicant proposes a large landscaped open area along Ala Wai Boulevard which will provide a tropical image with a relatively small portion of hardscape from the lobby area and tower development.

The parking structure will be screened with extensive landscaping utilizing a mix of vertical and mid-height canopy form trees to screen walls of the parking structure and canopy form trees and hedges to screen the surface parking lot from public view.

The project is being designed to direct water runoff from roofs, parking facilities and other large impervious surfaces to the extensive open space system, covering about 60% of the zoning lot.

The applicant plans to utilize the following plant species to create a lush tropical setting:

- Coconut palms
- Monkeypods
- Singapore Plumeria
- Wiliwili
- Travelers Trees
- Areca Palms
- Rainbow Shower Trees
- Gold Tree

The following, which describes trees to be removed or relocated that are 6 inches or greater in diameter and how they meet the Waikiki Special District criteria for removal:

i. Eight Coconut Palm trees (six inch caliper or larger) are being relocated further into the property from Ala Wai Boulevard to allow for introduction of seven Monkey Pod trees (six to eight inch caliper) to allow appropriate development of the Ala Wai Boulevard frontage and to provide shade relief for pedestrians on Ala Wai Boulevard.

ii. Eight dead Coconut Palm trees (six inch caliper or larger) are being removed and will be replaced at other locations on the property by eight or more Coconut Palm trees (six inch caliper or larger).

iii. One Norfolk Island Pine tree (six inch caliper or larger) will be removed and replaced by one of the seven Monkey Pod trees (six to eight inch caliper) along Ala Wai Boulevard to allow appropriate development of the Ala Wai Boulevard frontage and to provide shade relief for pedestrians on Ala Wai Boulevard.

iv. One Erythrina Sp. tree and one Ulu tree (both six inch caliper or larger) will be removed and replaced with four Wiliwili trees (three inch caliper) to allow appropriate

development of the landscaped private park area in accordance with the landscape plan for the residents of Ala Wai Gateway.

v. Removal of two Orchid trees (six inch caliper or larger) that are located in an area where a driveway is planned (allow appropriate development). These two trees will be replaced by one Monkey Pod tree (six inch caliper or larger) along Ala Wai Boulevard and one Monkey Pod tree (six inch caliper or larger) located across the driveway from the condominium tower.

vi. Relocation of eleven Coconut Palm trees (six inch caliper or larger) that are located under the proposed condominium tower footprint and the proposed swimming pool and deck footprint (relocation to allow appropriate development). These Coconut Palm trees will be interspersed throughout the planned private park.

vii. Relocation of eight Coconut Palm trees (six inch caliper or larger) to provide allow appropriate development of the private park area with proper spacing between clusters of Coconut Palms within the private park area.

viii. Removal of four White Tecomas (six inch caliper or larger) and replacement/relocation with eleven Singapore Plumeria trees (four to six inch caliper) to provide

appropriate development of the private park area with a planned landscape design.

ix. Removal of five Orchid trees (six inch caliper or larger) located within the footprint of the planned parking garage (allow appropriate development) and replacement/relocation with Travelers trees and Areca Palms (along the south and east faces of the parking garage).

x. Removal of two Mango trees and two Pink Tecoma trees (all six inch caliper or larger) located within the footprint of the planned surface parking lot (allow appropriate development). These trees will be replaced by four Rainbow Shower trees (three inch caliper) and one Monkey Pod tree (six to eight inch caliper).

xi. Removal of three Orchid trees, one Pink Tecoma tree and three White Tecoma trees (all six inch caliper or larger) to allow appropriate development of the Hobron Street frontage in accordance with the landscape plan with six Rainbow Shower trees (three inch caliper) and one Monkey Pod tree (six to eight inch caliper).

The net result of the landscape plan is removal of eight dead Coconut Palms and 25 other species of trees and replacement with 30 new Coconut Palms (15' to 35' trunk height), 10

Wiliwili trees (three inch caliper), 25 Singapore Plumeria (four to six inch caliper), 11 Gold trees (three inch caliper), Travelers trees and Areca palms (along the south and east faces of the parking garage), 10 Monkey Pod trees (six to eight inch caliper), 18 Rainbow Shower trees (three inch caliper), flowering shrubs, ground cover, and hedges. The sparse landscaping that presently exists will be replaced by extensive landscaping and trees covering about 60% of the property.

These landscape elements are in keeping with the recommendation of the "Waikiki Special District Design Guidelines".

- Water Features and Artwork

  A couple of artwork sculptures are planned in the large open landscaped space along Ala Wai Boulevard to enhance the value of the landscaped open space as recommended in the "Waikiki Special District Design Guidelines".

- Sidewalks and Paving

  Private walkways will be developed with patterned and/or textured paving materials to provide a sense of scale and rhythm appropriate to the surrounding buildings. We are proposing just four curb cuts over our

extensive street frontage which will not significantly impact pedestrians on these roadways.

e. Signage

The applicant is proposing an indirectly illuminated ground sign to identify the Ala Wai Gateway Condominium. The ground sign will not exceed 12 square feet, as permitted by the LUO.

f. Lighting

Lighting will be utilized to contribute to public safety and to enhance the nighttime ambiance of the outdoor recreational and open space areas on the property. Outdoor lighting will be subdued or shielded so as not to provide spillage onto surrounding properties or public rights-of-way.

B. URBAN DESIGN CONTROLS

1. Waikiki Gateways

A portion of the Ala Wai Gateway is situated at the Ala Moana Boulevard/Ala Wai Canal gateway to Waikiki, however, this portion of the development site is planned for landscaped open space in keeping with the recommendation of the "Waikiki Special District Design Guidelines".

2. Fort DeRussy

The Ala Wai Gateway is not in close proximity to Fort DeRussy and will not affect its park like setting.

3. Major Streets

The Ala Wai Gateway fronts on Ala Wai Boulevard and will provide extensive landscaped open space along this frontage as a benefit to pedestrians along this roadway. The building orientation has been sensitive to this major roadway and has provided a narrow building front along the Ala Wai Boulevard.

4. Waikiki Promenade

The Ala Wai Gateway fronts on Ala Wai Boulevard and Ala Wai Canal and will provide extensive landscaped open space along this frontage as a benefit to pedestrians along this roadway and the Canal. Ala Wai Canal at this ewa end of Waikiki is recognized as a significant part of the Waikiki Promenade. The building orientation has been sensitive to this portion of the Waikiki Promenade and through tower orientation has provided a narrow building front along the Ala Wai Canal while maintaining a generally mauka-makai orientation. The development adjacent to this right-of-way provides limited building frontage and extensive landscaping and open space, including a swimming pool and deck area. In working with the Department of Planning and Permitting there is a plan to setback the project's fence line to create a wider appearance for the right-of-way and possibly benches for pedestrians within the project's property.

5. Coastal Height Setback

The Ala Wai Gateway is not situated along the shoreline and is not subject to the coastal height setback.

6. Mini Parks

The Ala Wai Gateway is providing a private mini park along the Ala Wai Boulevard, a major street in Waikiki and adjacent to the Ala Wai Canal portion of the Waikiki Promenade. The visual connection between these public rights-of-way and the Ala Wai Gateway landscaped open space will provide a visual benefit to the public.

Along Hobron Lane, the applicant has introduced a public park area (13,800 square feet) to serve as a gathering place for the community, dedicated to public use, and providing opportunities for a wider sidewalk and more landscaping. The applicant has also provided greater setback at the proposed parking garage which is situated 22'-6" from the property line on one end and 36'-6" on the other end (providing 3,850 square feet of public open space, beyond our fence line)

The applicant has provided for public open space along Ala Wai Boulevard by setting the property fence back about 11 feet from their property line for most of this frontage (providing 4,110 square feet of public open space), which added to the existing 12-foot City pedestrian area provides a 23-foot setback from the curb which

provides an opportunity for passive recreational use along Ala Wai Boulevard. Benches are planned within the City right-of-way as an amenity to encourage use of this passive recreational area. The feeling of open space will be enhanced by the large landscaped area beyond the fence line.

Altogether, the applicant will be providing 21,760 square feet of new public open space at the public park/gathering place on Hobron Lane, the landscaped area fronting the parking garage and the public open space provided along Ala Wai Boulevard.

7. Significant Public Views

The Ala Wai Gateway will not have a significant effect on the view of Diamond Head from Ala Wai Boulevard which turns toward the ocean between McCully Street and Kalakaua Avenue, eliminating the Diamond Head view opportunity. The Ala Wai Gateway, however, has been oriented in a manner to provide a narrow building front along Ala Wai Boulevard.

8. Public Pedestrian Access

The Ala Wai Gateway's location does not provide opportunities for public pedestrian access across or through the project, as encouraged in the "Waikiki Special District Design Guidelines". However, public pedestrian access is enhanced by the provision of about 21,760 square feet of new public open space at the public park/gathering place on Hobron Lane, the landscaped area

fronting the parking garage and the public open space provided along Ala Wai Boulevard.

9. Historic Structures, Significant Sites and Landmarks

The Ala Wai Canal and Promenade are on the State Historic Register and are considered eligible for the National Historic Register. This important historic site and feature will be positively enhanced by the visual connection with the Ala Wai Gateway's extensive landscaping along Ala Wai Boulevard and its narrow building face, minimizing visual impacts to the Ala Wai Promenade.

XI. SIGNIFICANCE CRITERIA

The following review of the significance criteria indicates that the development will not have a significant impact on the environment.

- **No irrevocable commitment to loss or destruction of any natural or cultural resource would result.**

Following the recommendations of the archaeological assessment will minimize impact on natural or cultural resources that may be present on the project site.

During the construction of the development, should any previously unidentified archaeological resources such as artifacts, shell, bone, or charcoal deposits, human burial, rock or coral alignments, pavings or walls be encountered, the applicant will stop

work and contact the Historic Preservation Office for review and approval of mitigation measures.

- **The action would not curtail the range of beneficial uses of the environment.**

The proposed development will not curtail, but will instead enhance the range of beneficial uses of the environment. The present vacant portion of the project site mostly covered in asphalt and overgrown shrubs is void of appealing landscaping, offering no beneficial use to the public. With the development of the proposed Ala Wai Gateway, landscaping and an irrigation system will be installed where none exist at the present time. The site will have 50% open space. The project site will provide much needed condominium units to meet the growing demand for housing, particularly in Waikiki.

- **The proposed action does not conflict with the state's long-term environmental policies or goals and guidelines.**

The State's environmental policies and guidelines are set forth in Chapter 344, Hawaii Revised Statutes, "State Environmental Policy". The broad policies set forth include conservation of natural resources and enhancement of the quality of life. As discussed earlier, the project does not affect significant natural resources, and will provide an enhancement of the quality of life by filling the demand for dwelling units and/or timeshare units in Waikiki.

- **The economic or social welfare of the community or state would not be substantially affected.**

The development will give a temporary boost to the State's economy with the provision of short-term construction employment and related tax impacts, and a long-term job in the form of a resident manager.

The social welfare of the community would be positively affected by the development of this condominium complex. The Ala Wai Gateway will offer attractive living conditions to those seeking to live and play in the heart of Waikiki. The development will offer an attractive living environment and in addition will offer lush landscaping and open spaces all for the benefit of residents and visitors alike.

- **The proposed action does not substantially affect public health.**

The proposed action will not affect public health. The proposed land use is compatible with the surrounding condominium, developments.

- **No substantial secondary impacts, such as population changes or effects on public facilities, are anticipated.**

As mentioned earlier under "Residential Population" of our Final EA the General Plan Population Guidelines establish a population range for the Primary Urban Center Development Plan Area for the Year 2010 of between 450,800 and 497,800 persons. In 2000 the actual population for the Primary Urban Center was

419,339. The additional population supported by this development will help the Primary Urban Center in reaching the population range planned in the Year 2010.

The BWS, by letter dated August 9, 2004 (Appendix III), stated that "The existing water system is presently adequate to provide water service to the proposed condominium development."

A sewer connection permit application was approved for this development on August 2, 2004 by the Department of Planning and Permitting. (Appendix III - Agency Comments).

With the modifications to the intersection control and configuration at the intersection of Hobron Lane and Lipeepee Street and the implementation of the remainder of the other recommendations of the traffic assessment, the proposed Ala Wai Gateway development is not expected to have a significant impact on traffic operations in the project vicinity.

- **No substantial degradation of environmental quality is anticipated.**

The development will not result in a substantial degradation of the environment. Only minimal impact is projected during the construction phase. Dust control measures appropriate to the situation will be employed by the contractor, including where appropriate, the use of water wagons, erection of dust barriers and other methods for minimizing dust. Only minimal impact is projected during the construction phase of the proposed development.

- **The proposed action does not involve a commitment to larger actions, nor would cumulative impacts result in considerable effect on the environment.**

The proposed development does not involve a commitment to larger actions nor will it result in cumulative impacts to the environment. The proposed development of the Ala Wai Gateway will not generate future developments, creating a cumulative impact.

- **No rare, threatened or endangered species or their habitats would be affected.**

According to the Floral Study, no rare, threatened or endangered flora will be affected by the proposed development.

According to the Faunal study, no rare, threatened or endangered species or their habitats would be affected by the proposed development.

- **Air quality, water quality or ambient noise levels would not be detrimentally affected.**

Short term impacts on air quality are expected to be primarily related to dust generated by the construction activity. Dust will be generated in the course of excavating for foundations and utility lines. Dust control measures appropriate to the situation will be employed by the contractor, including where appropriate, the use of water wagons, erection of dust barriers and other methods for minimizing dust.

Short term noise impacts at construction sites are a normal result of construction activity. The State Department of Health

administers rules and regulations relating to the hours during which construction is permitted and the noise levels permitted during those hours. The contractor will be required to apply for a permit from the State Department of Health should noise from construction activities exceed regulatory limits. The contractor will abide by the noise regulations incorporated into the permit.

Long term noise impact from the proposed development will be minimized by proper siting of mechanical and electrical equipment.

Water quality would not be detrimentally affected by the proposed development. The Honolulu Board of Water Supply (BWS) currently provides potable water for the project site. No off-site water improvements are needed to service the proposed development.

- **The project would not affect environmentally sensitive areas, such as flood plains, tsunami zones, erosion-prone areas, geologically hazardous lands, estuaries, fresh waters or coastal waters.**

The project site is in Zone AO, an area determined to have an average flood depths 2 feet. The project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), since it is within a Special Flood Hazard Area. The applicant will also comply with the requirements of the City and County of Honolulu, Land Use Ordinance related to Flood Hazard Districts.

The development will not affect tsunami zones, erosion-prone areas, geologically hazardous land, estuaries, fresh water nor coastal waters.

- **Substantially affects scenic vistas and view planes identified in county or state plans or studies.**

The proposed development will not impact on important coastal views described in the 1987 Department of Land Utilization Coastal View Study. In this portion of Waikiki, Ala Wai Yacht Harbor makai of the project site provides important stationary coastal views. The proposed development will not affect significant public views identified in Section 21-9.80-3 of the Land Use Ordinance.

- **Requires substantial energy consumption.**

The Hawaiian Electric Company has existing power lines serving this area and the applicant will coordinate development to ensure that the power lines will be adequate to support the proposed condominium or timeshare development. The applicant will consider the use of energy saving appliances and fixtures in the design of the project and is also considering utilizing photovoltaic systems (if economically feasible).

The applicant will consider utilizing the following sustainable building techniques ("Guidelines for Sustainable Building Design in Hawaii") that will lead to further energy savings for the project:

1) Design space for recycling and waste diversion opportunities during occupancy.

2) The applicant plans to use the following for natural cooling:
   a) Light colored building surfaces and
   b) Tree planting to shade paved areas
3) Provide tenant sub-metering to encourage utility use accountability.
4) Use of photovoltaics.
5) Avoid light spillage in exterior lighting by using directional fixtures.
6) Install water conserving, low flow fixtures as required by the Uniform Building Code.
7) Start the watering cycle in the early morning to minimize evaporation.

XII. LIST OF AGENCIES CONSULTED

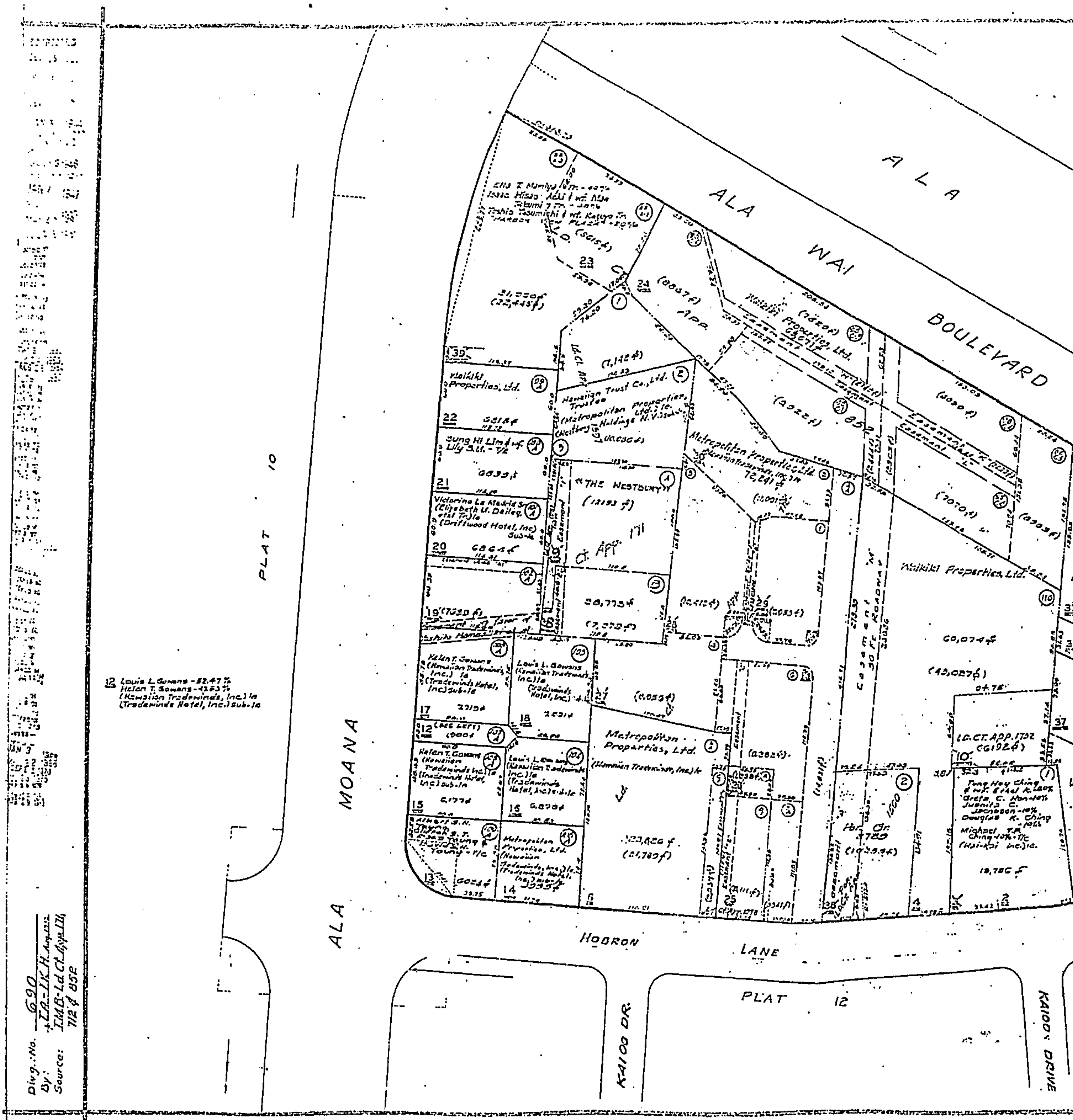
The applicant has prepared point by point responses to each of the comments received during the agency and public review period for the Draft Environmental Assessment. Copies of the agency and public comment letters and the applicant's response are included in Appendix XII, Agency and Public Comments on the Draft EA.

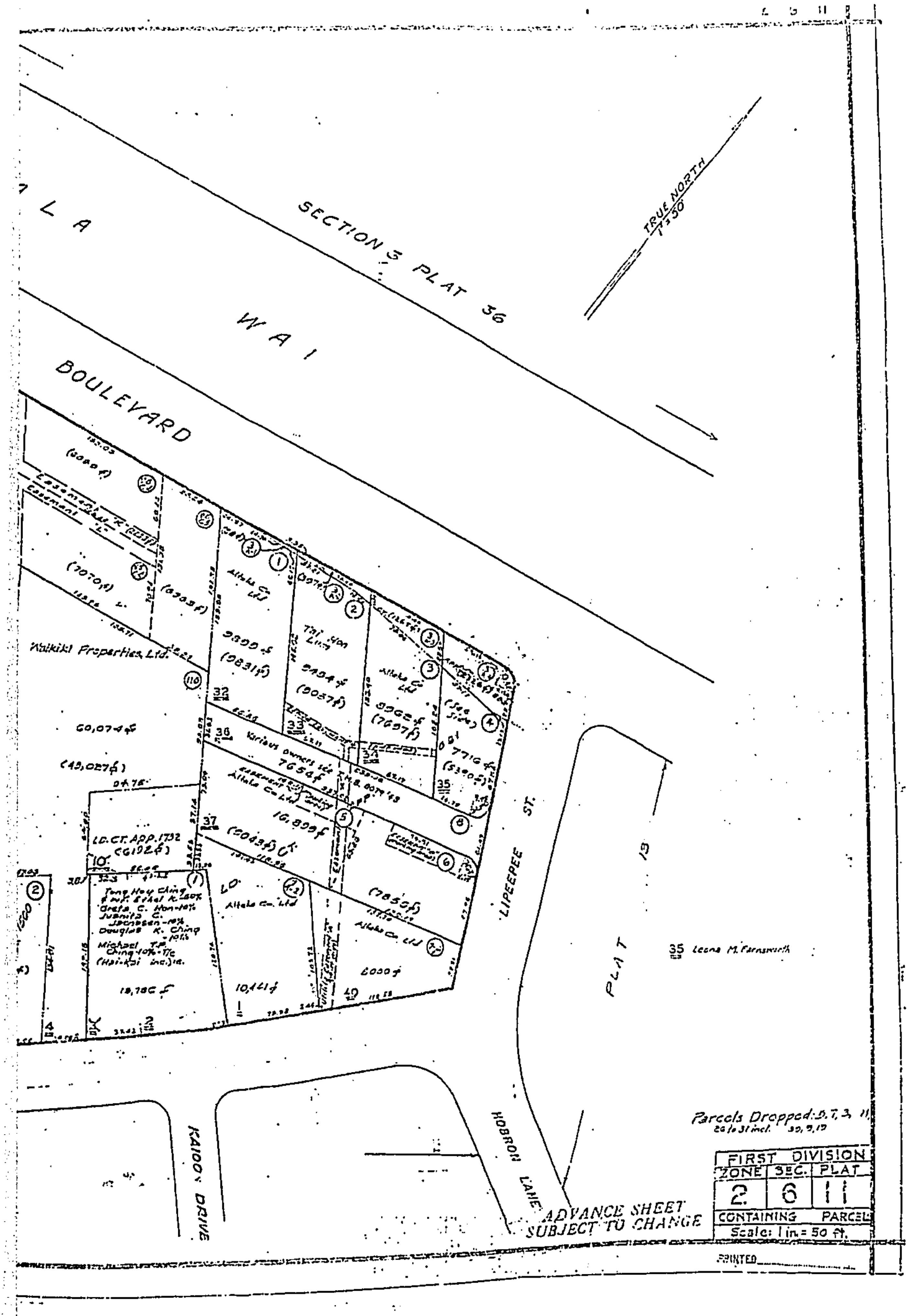
XII. RECOMMENDATION

Based on this Final Environmental Assessment, a Finding of No Significant Impact (FONSI) for the proposed development of the Ala Wai Gateway is requested.

APPENDIX I

PLANS


ALA WAI BOULEVARD
ALA MOANA
PLAT 10
HOBRON LANE
PLAT 12
KAIOO DR.
KAIOO DRIVE
"THE WESTBURY"
Ct. App. 171
Waikiki Properties, Ltd.
Metropolitan Properties, Ltd.
Hawaiian Trust Co., Ltd.
Louis L. Gowans
Helen T. Gowans
L.D. CT. APP. 1752
Dwg. No. 690


SECTION 3 PLAT 36
TRUE NORTH
BOULEVARD
WAI
Waikiki Properties, Ltd.
Various owners see
Alteka Co. Ltd
LD. CT. APP. 1732
LIPEPEE ST.
PLAT 13
35 Leona M. Farnsworth
HOBRON LANE
KAIOO DRIVE
Parcels Dropped:
ADVANCE SHEET
SUBJECT TO CHANGE
FIRST DIVISION
ZONE
SEC.
PLAT
2
6
11
CONTAINING
PARCELS
Scale: 1 in. = 50 ft.
PRINTED

Drawing No. Description

Cover Sheet w/ Sheet Index

Architectural
WSDX.00 Axonometric views
WSD1.00 Site Plan
WSD1.00.A Site Plan: Setbacks
WSD1.01 Floor Plan: Lobby
WSD1.02 Floor Plan: Level 2
WSD1.03 Floor Plan: Level 3
WSD1.04 Floor Plan: Level 4
WSD1.05 Floor Plan: Level 5
WSD1.06 Floor Plan: Level 6
WSD1.07 Floor Plan: Levels 7-25
WSD1.08 Floor Plan: Levels 26-31
WSD1.09 Floor Plan: Level 32
WSD1.10 Floor Plan: Level 33
WSD1.11 Floor Plan: Level 34
WSD1.12 Floor Plan: Level 35
WSD1.13 Floor Plan: Level 36
WSD1.14 Floor Plan: Level 37
WSD1.15 Floor Plan: Level 38
WSD1.16 Plan: Mechanical Penthouse
WSD1.17 Roof Plan
WSD1.18 Parking Structure
WSD2.01 Elevation: West
WSD2.02 Elevation: North + Parking
WSD2.03 Elevation: East + Parking
WSD2.04 Elevation: South + Parking
WSD2.05 Lot 37 Plans & Elevations
WSD2.06 Section A: Transversal
WSD2.07 Section B: Longitudinal

C-104 Site Grading Plan 1
C-105 Site Grading Plan 2
C-106 Site Grading Plan 3

Tree Disposition Plan
Color Landscape Plan

Color West Elevation
Color North Elevation
Color East Elevation
Color East Elevation (Hobron Lane)
Color South Elevation

ALA WAI GATEWAY

WSD SUBMITTAL
11 / 15 / 2004

1001 BISHOP STREET, SUITE 300
AMERICAN SAVINGS BANK TOWER
HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-9616
FAX: (808) 521-3280
www.architects-hawaii.com

ARCHITECTS-HAWAII LIMITED

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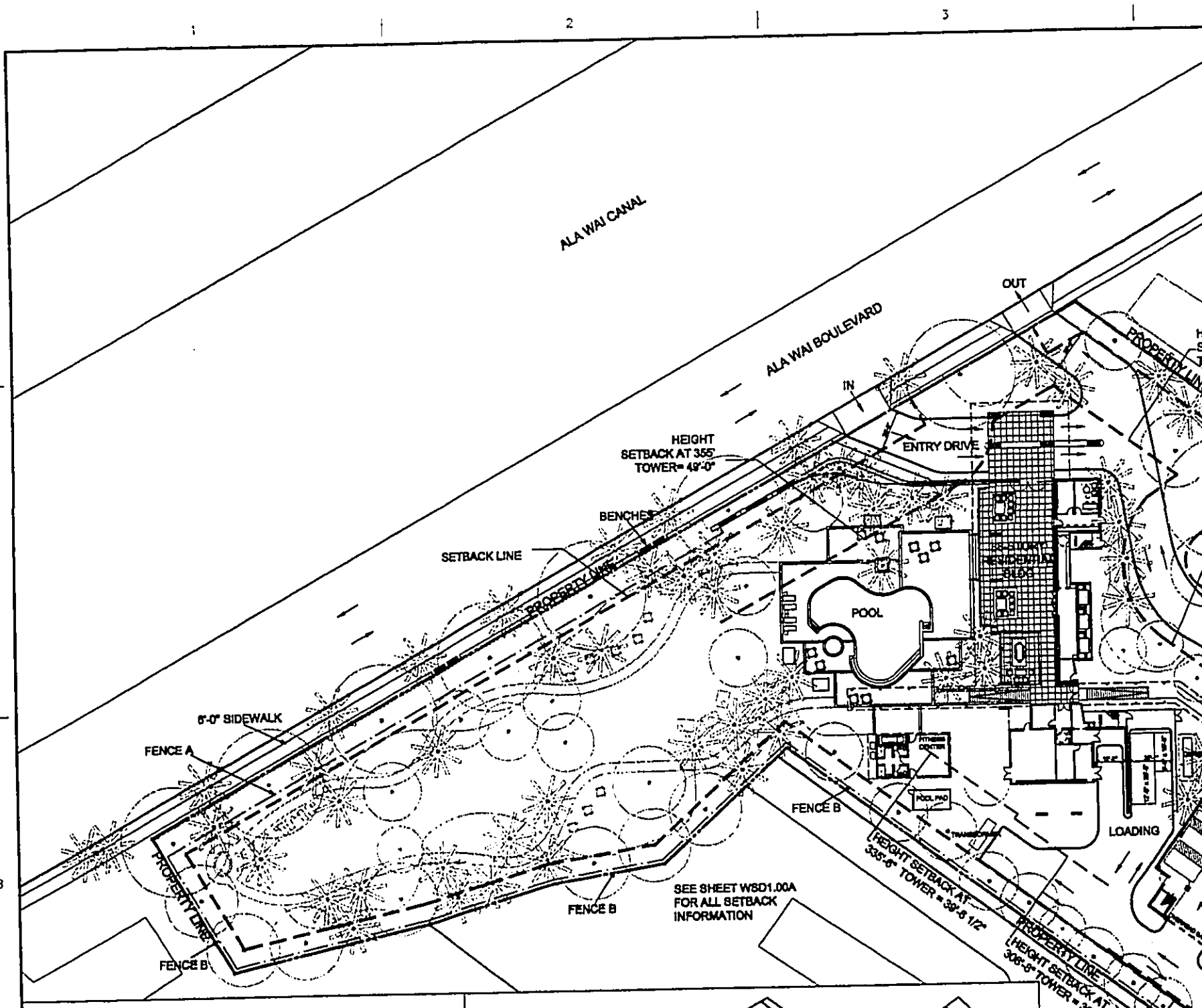
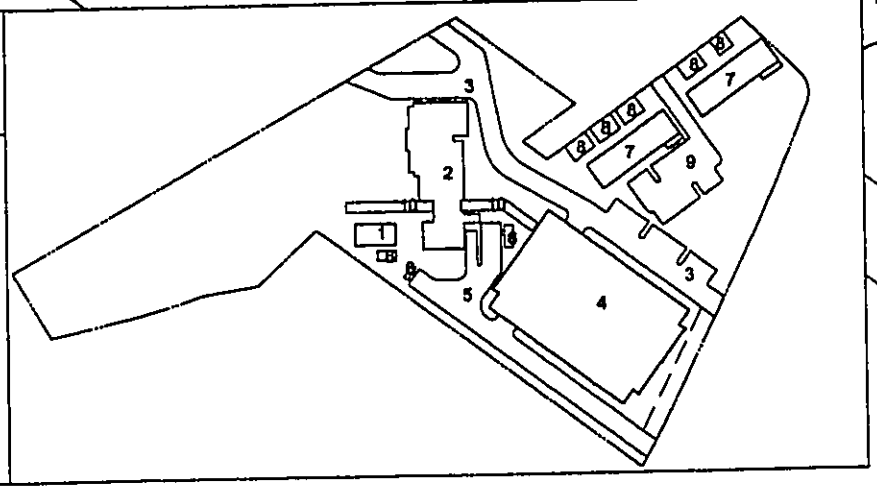


OPEN SPACE CALCULATIONS

TOTAL LAND AREA	175,382 SQ FT

ITEMS NOT INCLUDED AS OPEN SPACE:

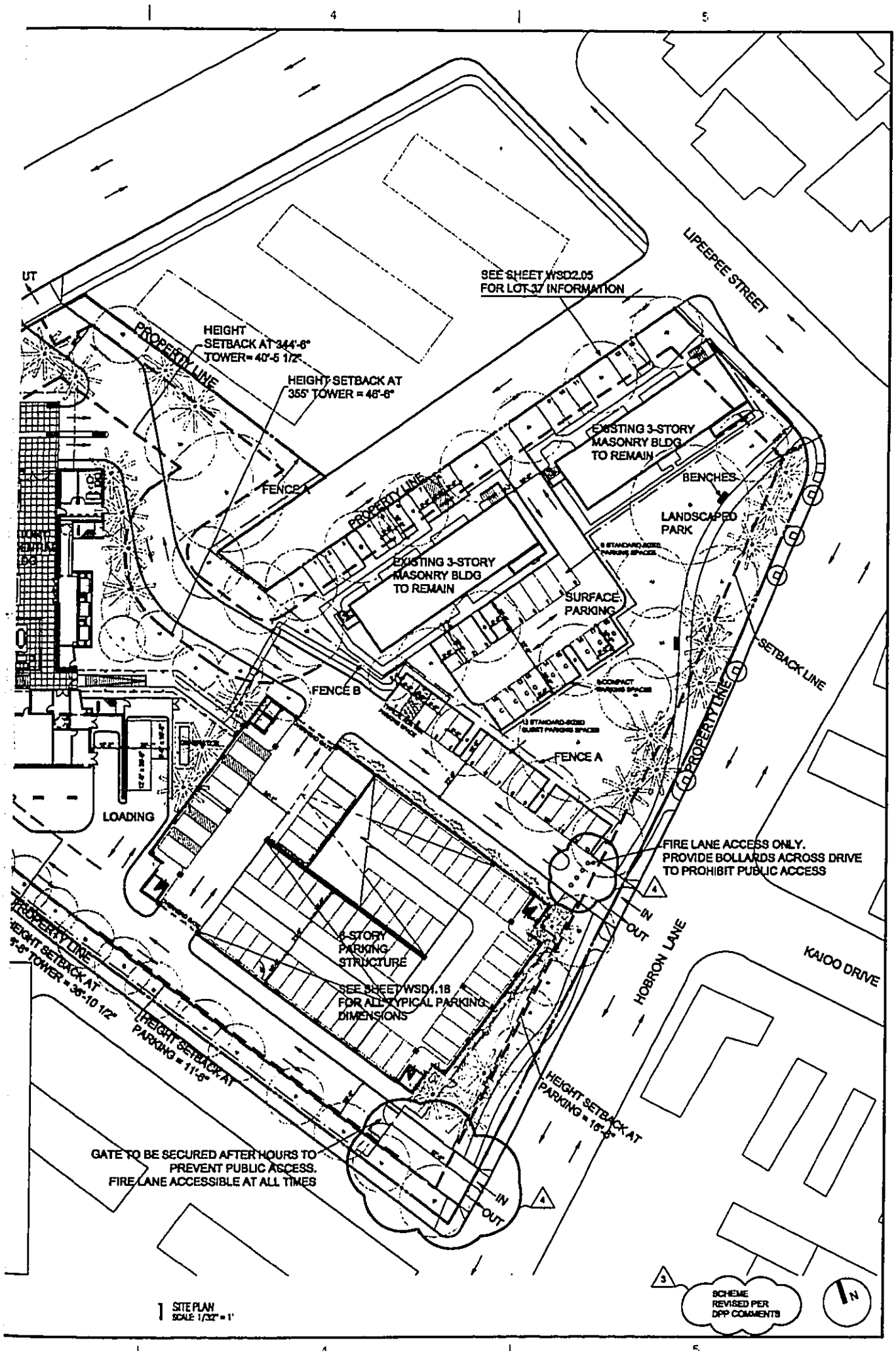
1. POOL HOUSE & FITNESS CENTER	778 SQ FT
2. BUILDING OUTLINE (FOOTPRINT)	7,882 SQ FT
3. ENTRY DRIVE & SURFACE PARKING	14,647 SQ FT
4. STRUCTURED PARKING	21,447 SQ FT
5. SERVICE DRIVE & LOADING	8,937 SQ FT
6. EQUIPMENT PADS (TRANSFORMER, GENERATOR, POOL)	484 SQ FT
7. EXISTING BUILDINGS ON LOT 37	5,704 SQ FT
8. EXISTING SURFACE PARKING ON LOT 37	2,178 SQ FT
9. NEW SURFACE PARKING FOR LOT 37	8,957 SQ FT
10. RAMPS	1,819 SQ FT
TOTAL	69,301 SQ FT
OPEN SPACE PROVIDED	105,981SQ FT
OPEN SPACE REQUIRED (50% OF TOTAL LAND AREA)	87,676 SQ FT
EXCESS OPEN SPACE	18,285 SQ FT



3 OPEN SPACE CALCULATION
SCALE

2 OPEN SPACE CALCULATION DIAGRAM
SCALE: 1/100" = 1'

1



1 SITE PLAN
SCALE: 1/32" = 1'

ARCHITECTS HAWAII LIMITED
1001 BISHOP STREET, SUITE 360
AMERICAN SAVINGS BANK TOWER
HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-9636
FAX: (808) 521-3280
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ALA WAI BLVD. HONOLULU, HI

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signature | registration, state of the license

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1	10/22/04

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WSD1.00

SITE PLAN
SCALE: 1/32" = 1'

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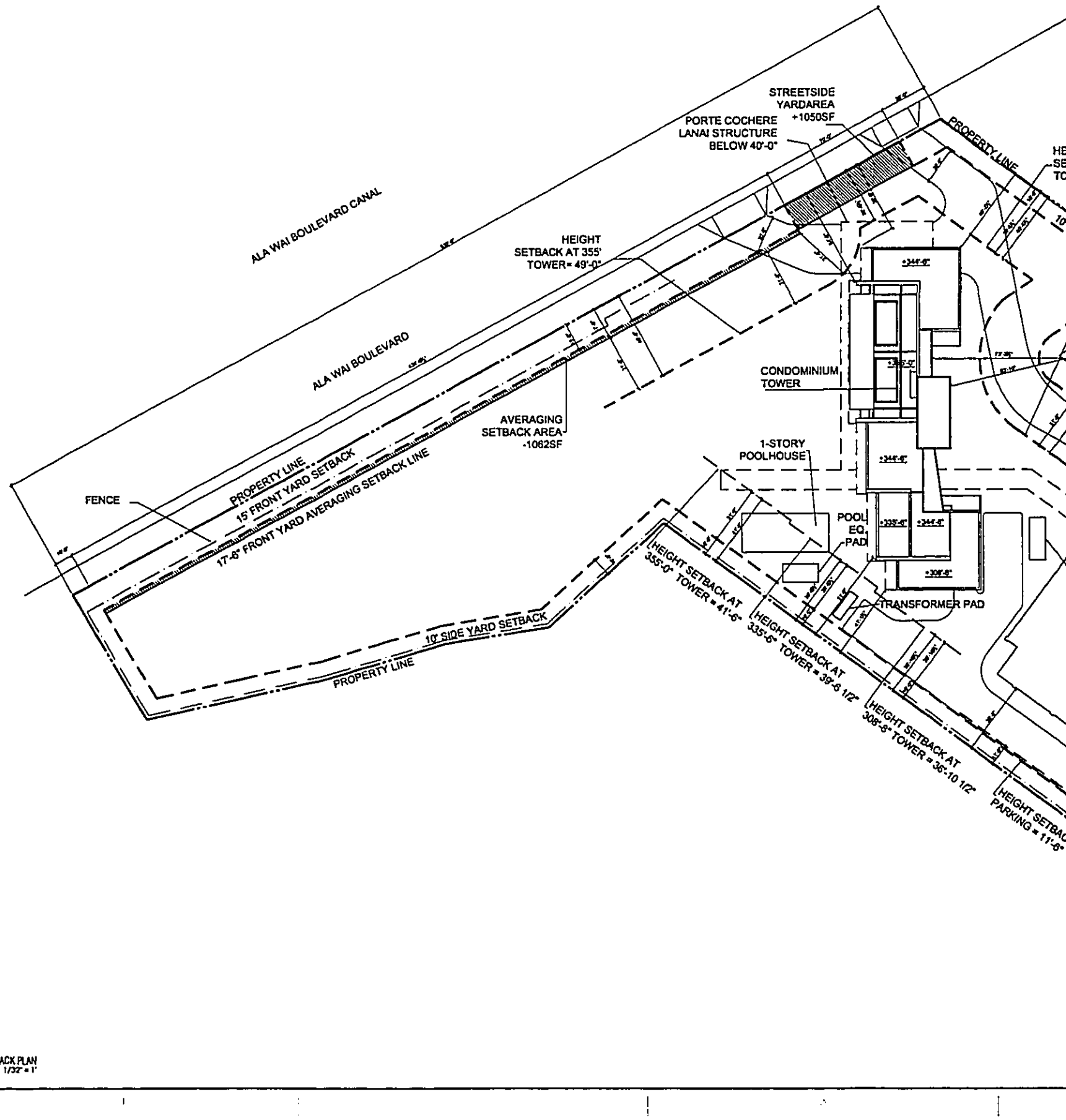
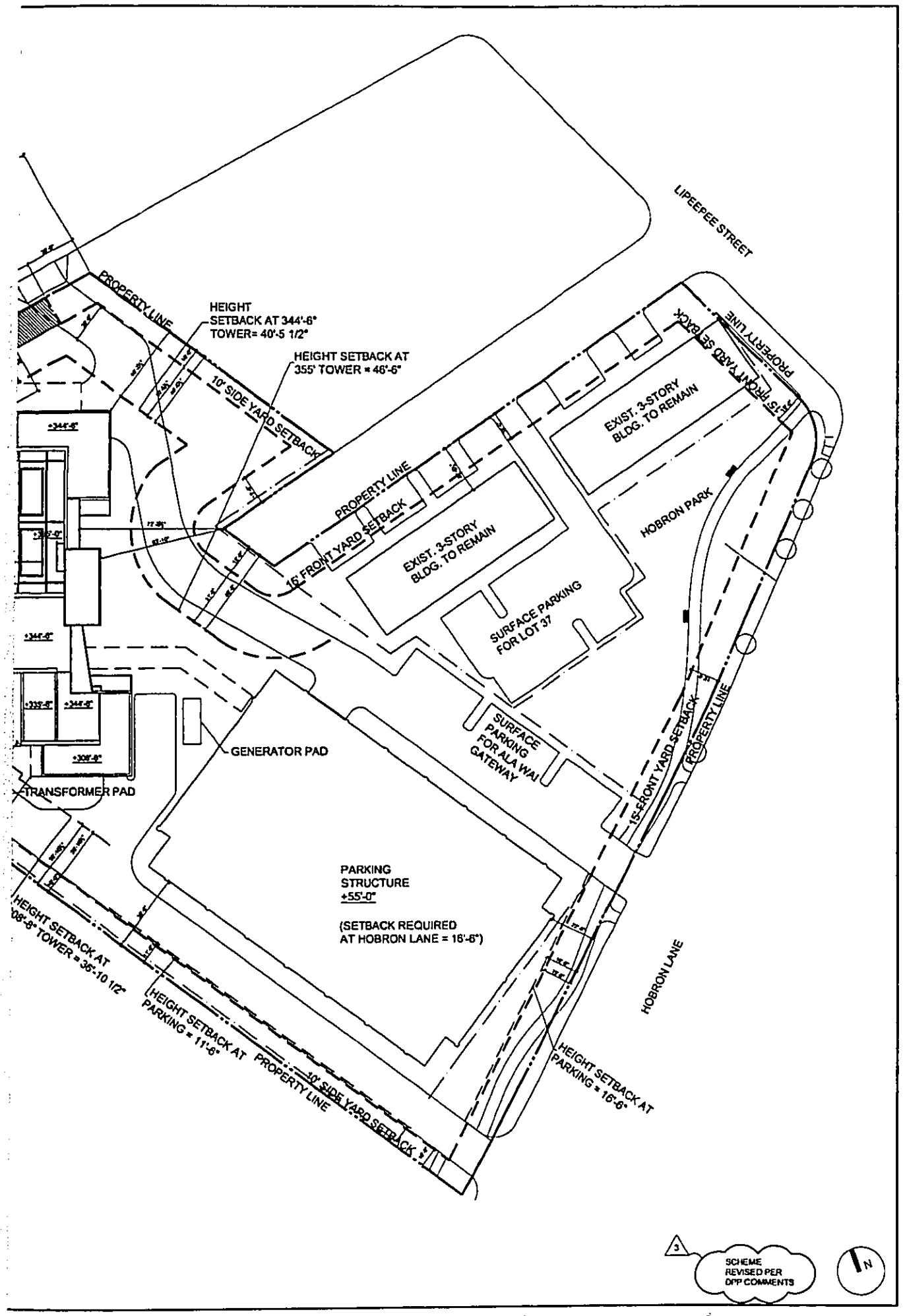


1 SETBACK PLAN
SCALE: 1/32" = 1'



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SETBACK REQUIREMENTS
SCALE: 1/32" = 1'

3 OF 28 SHEETS

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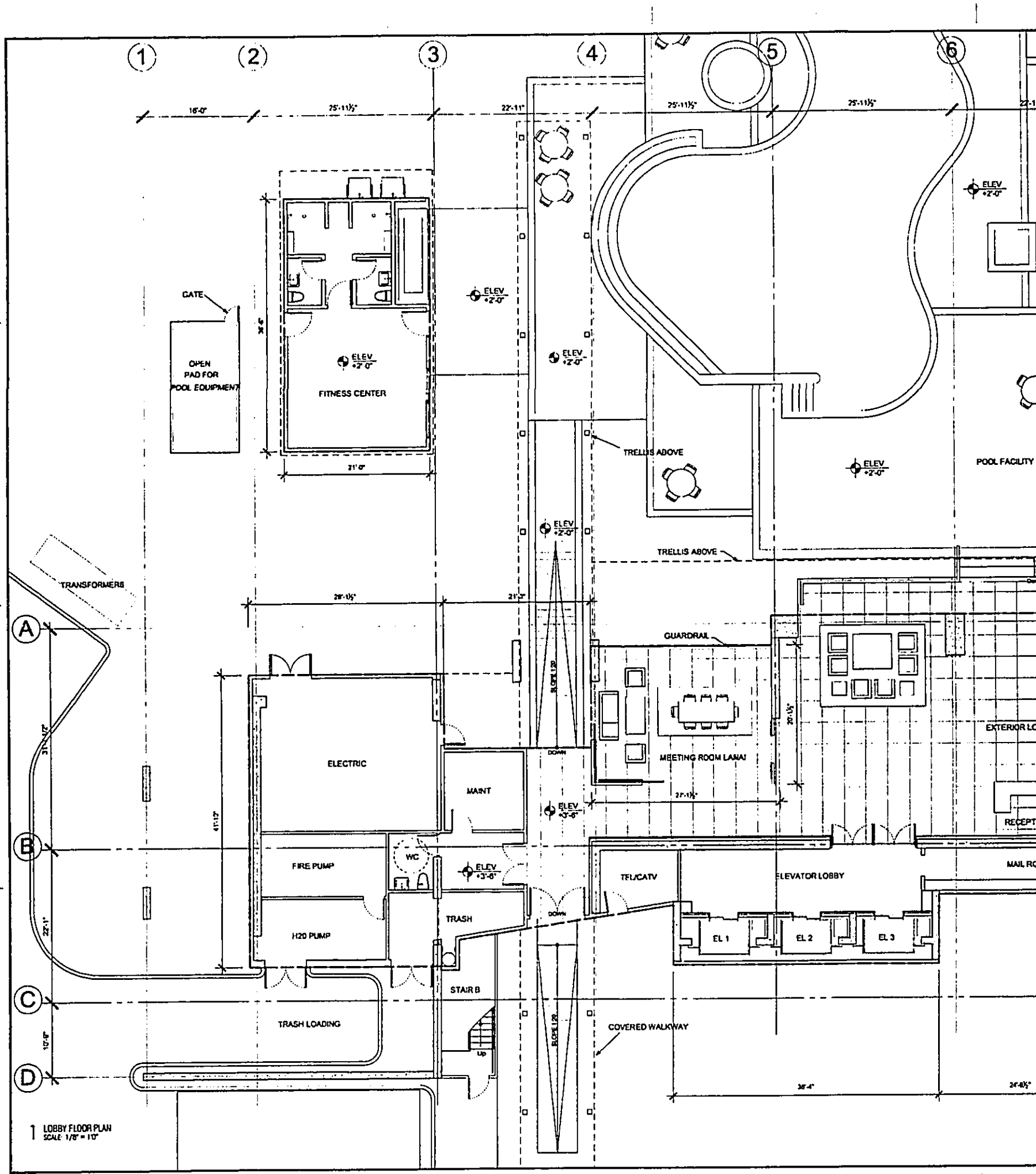
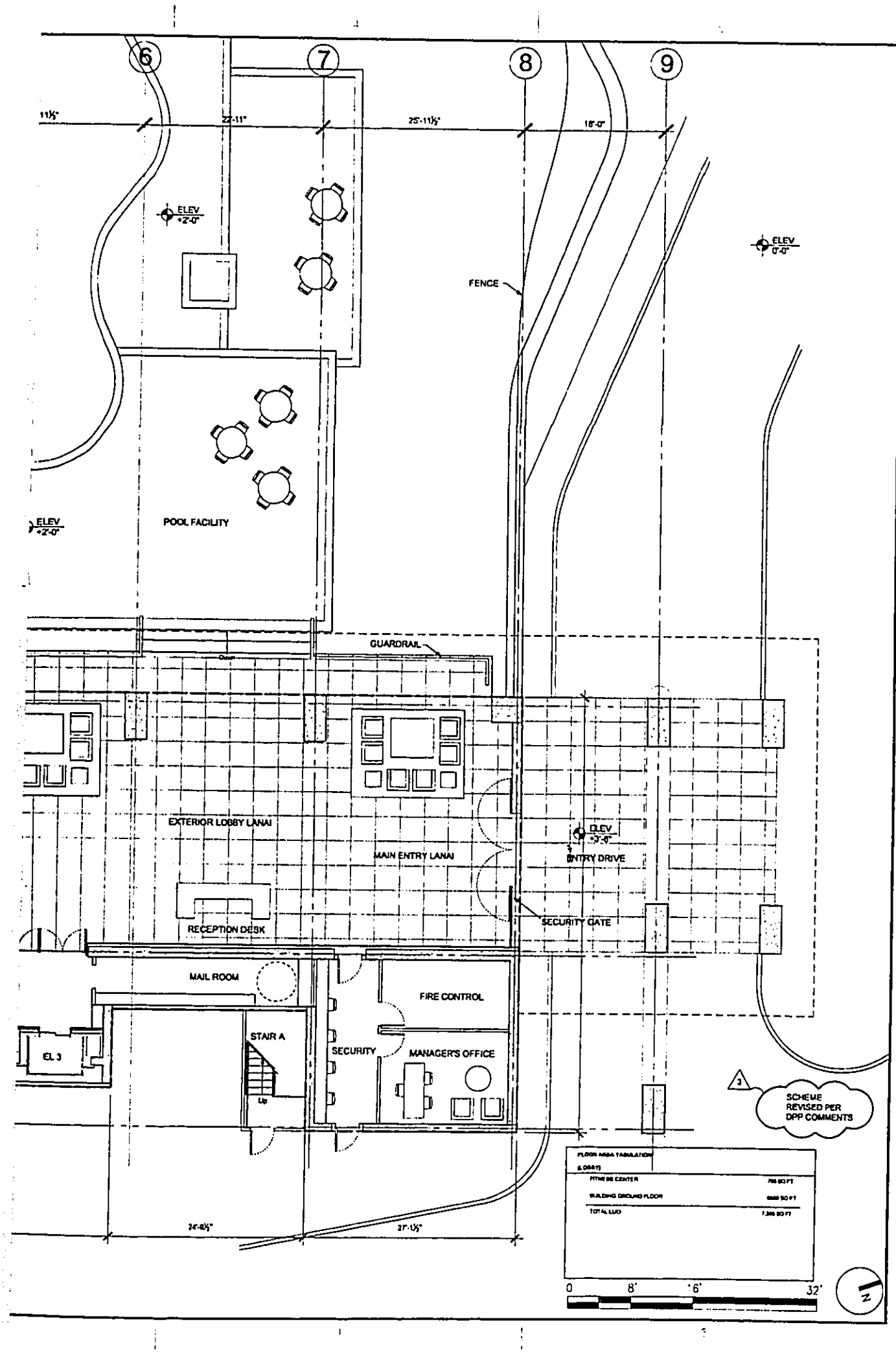

1
2
3
4
5
6
A
B
C
D
16'-0"
25'-11½"
22'-11"
25'-11½"
25'-11½"
GATE
OPEN PAD FOR POOL EQUIPMENT
FITNESS CENTER
ELEV +2'-0"
21'-0"
TRELLIS ABOVE
POOL FACILITY
TRANSFORMERS
ELECTRIC
MAINT
GUARDRAIL
MEETING ROOM LANAI
FIRE PUMP
WC
ELEV +3'-6"
TEL/CATV
ELEVATOR LOBBY
EL 1
EL 2
EL 3
H20 PUMP
TRASH
STAIR B
TRASH LOADING
COVERED WALKWAY
SLOPE 1:20
DOWN
UP
EXTERIOR LO
RECEPT
MAIL RO
1 LOBBY FLOOR PLAN
SCALE: 1/8" = 1'0"



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DATE: 09/15/04

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FLOOR PLAN: LOBBY

SCALE: 1/8" = 1'-0"

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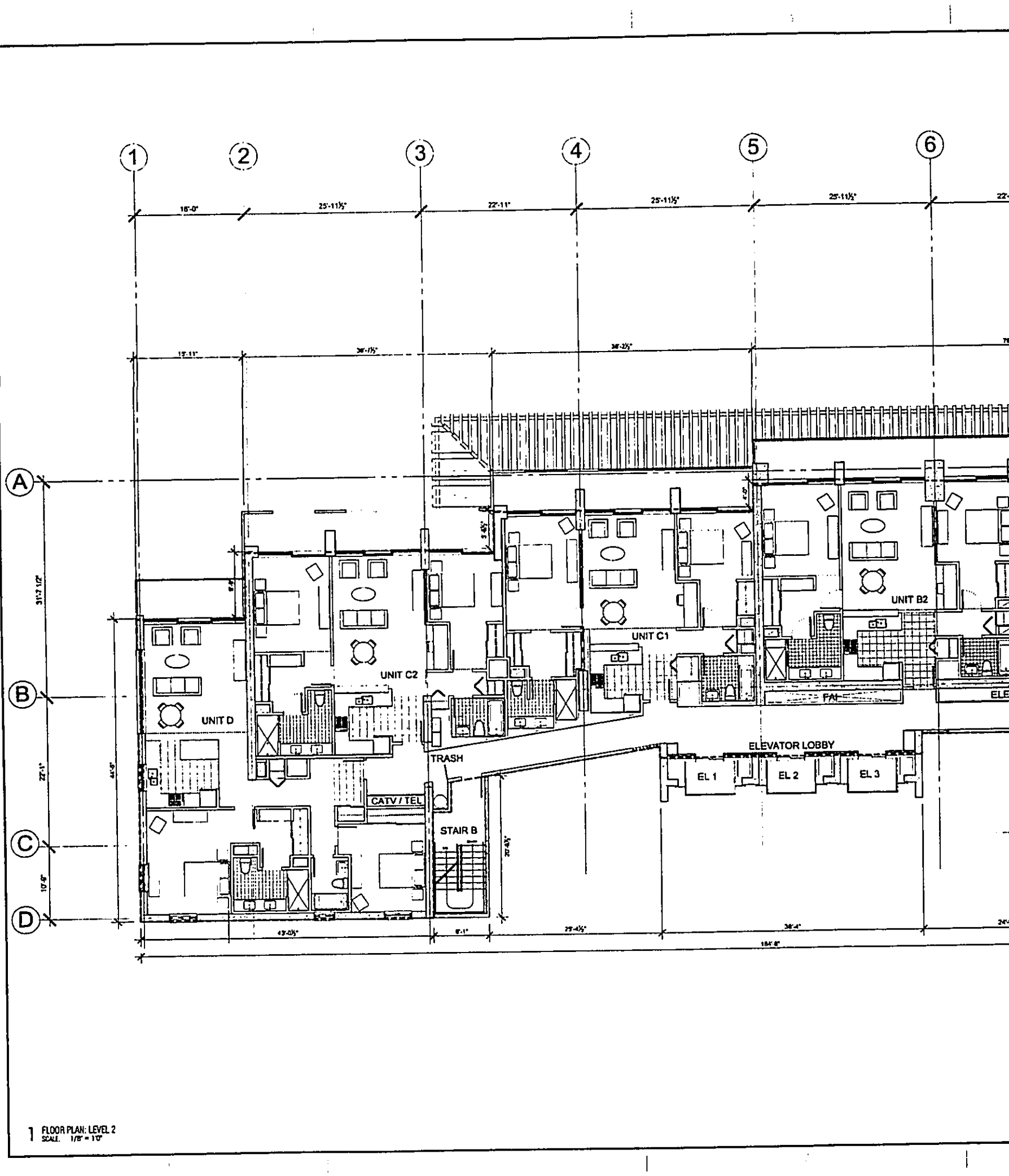
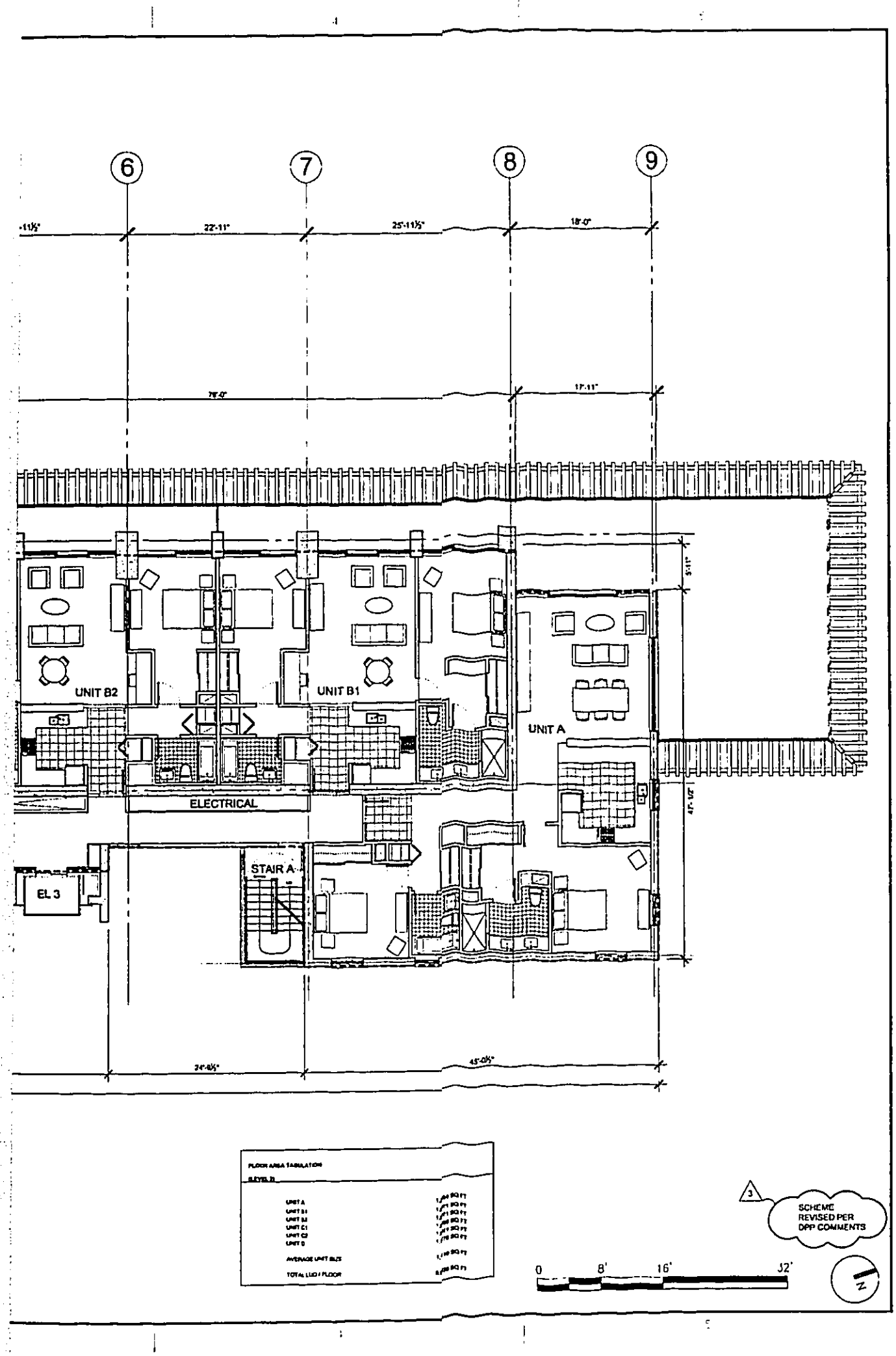


1 FLOOR PLAN: LEVEL 2
SCALE: 1/8" = 1'0"



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FLOOR PLAN: LEVEL 2
SCALE: 1/8" = 1'-0"

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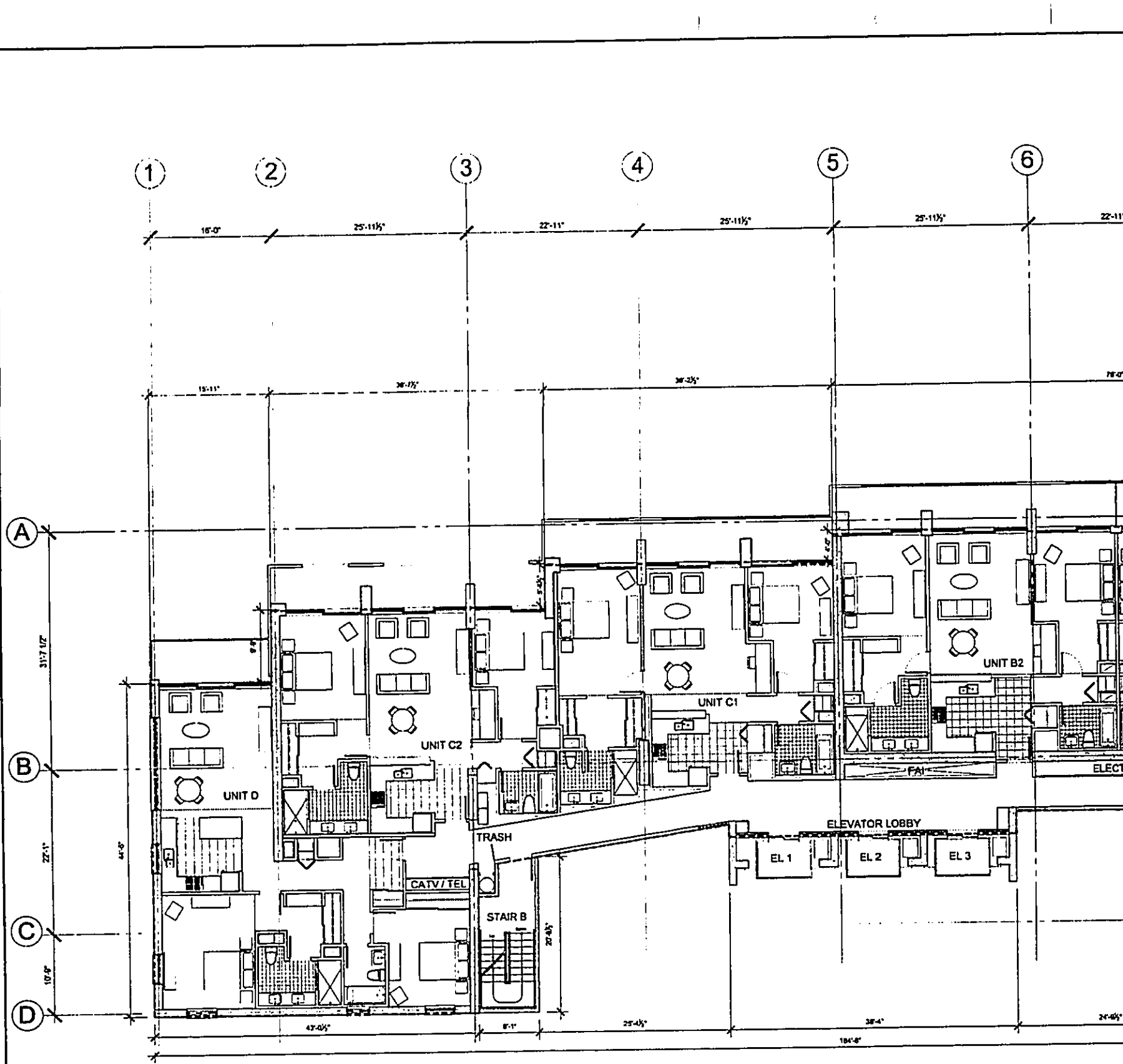
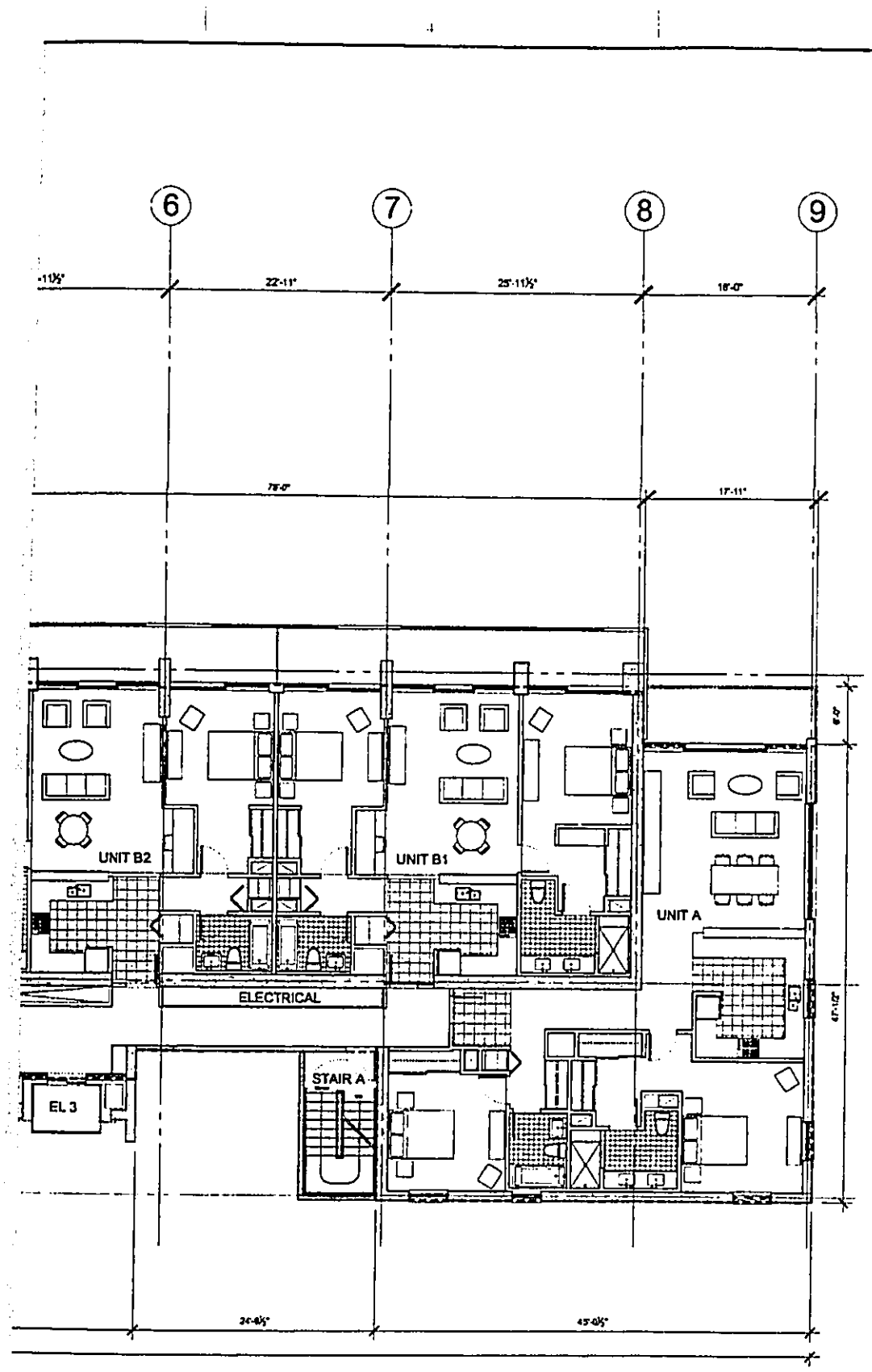


1 FLOOR PLAN: LEVEL 3
SCALE 1/8" = 1'0"



FLOOR AREA TABULATION
DATA B
UNIT A — 1,264 SQ FT
UNIT B1 — 1,671 SQ FT
UNIT B2 — 1,671 SQ FT
UNIT C1 — 1,266 SQ FT
UNIT C2 — 1,041 SQ FT
UNIT D — 1,179 SQ FT
AVERAGE UNIT SIZE — 1,116 SQ FT
TOTAL LIVING FLOOR — 8,928 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

N

AHL

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ALA WAI BLVD. HONOLULU, HI

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WSD1.03
FLOOR PLAN: LEVEL 3
SCALE: 1/8" = 1'-0"

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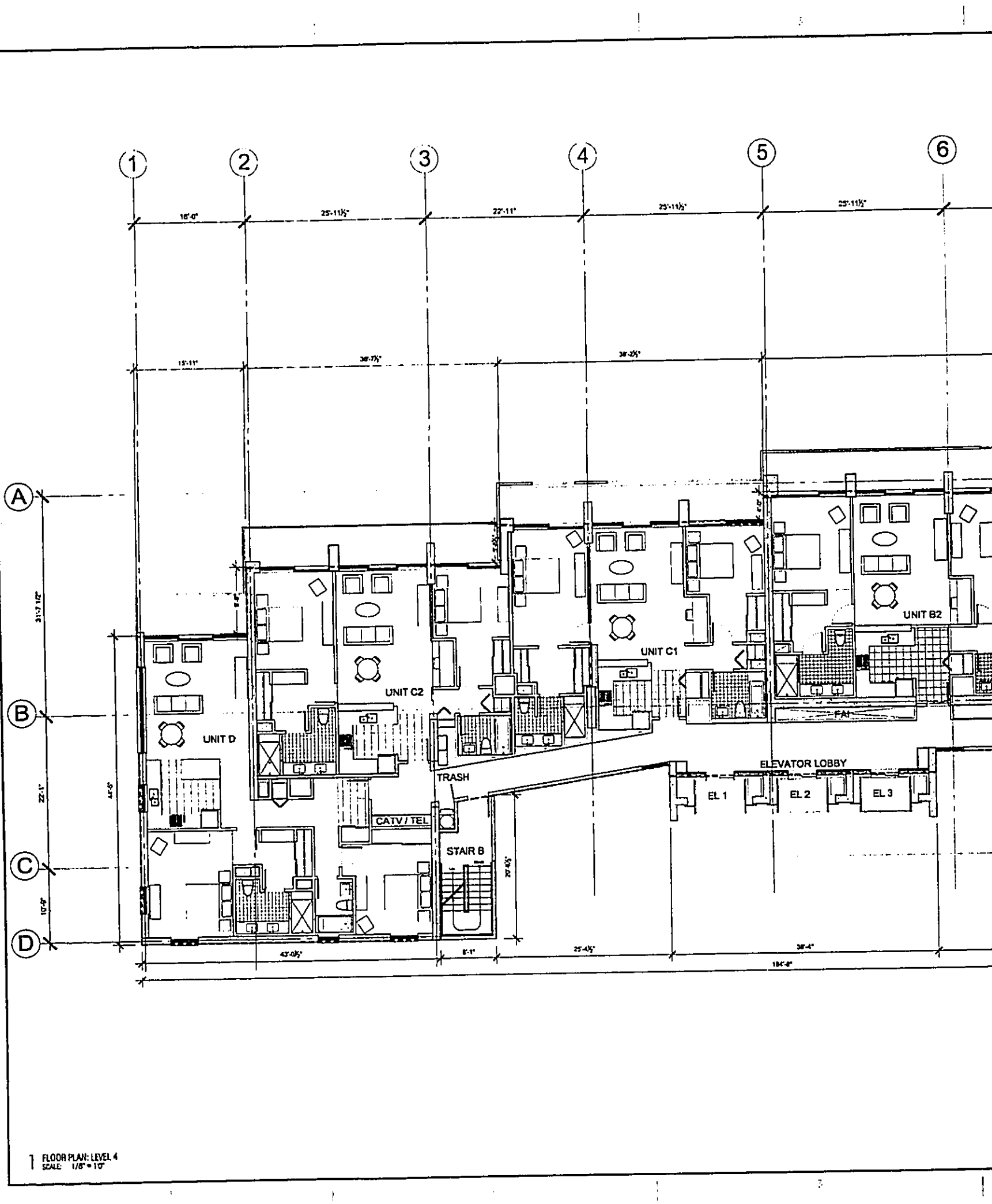
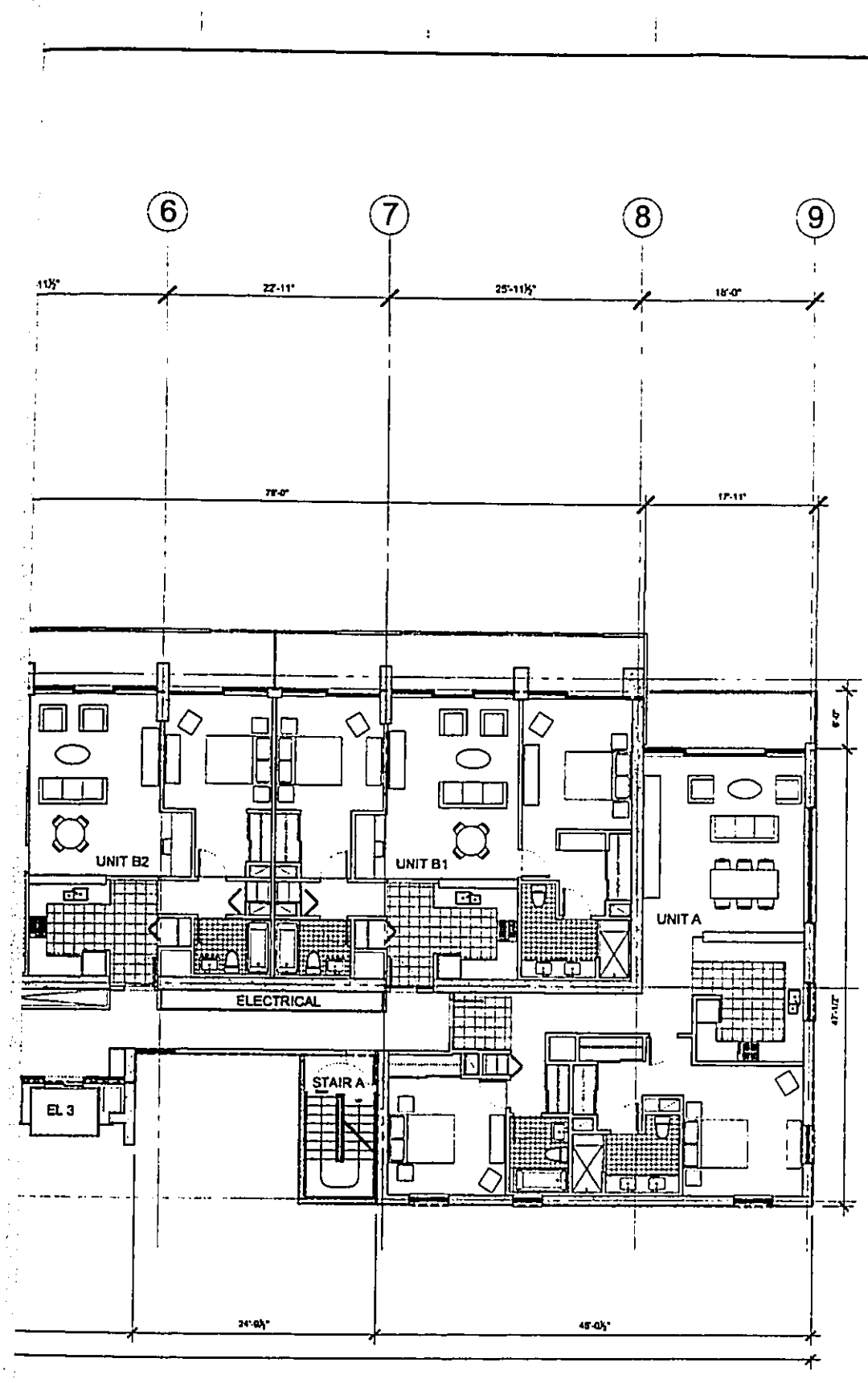


1 FLOOR PLAN: LEVEL 4
SCALE: 1/8" = 1'0"



FLOOR AREA TABULATION	
LEVEL 01	
UNIT A	1,384 SQ FT
UNIT B1	1,571 SQ FT
UNIT B2	1,571 SQ FT
UNIT C1	1,266 SQ FT
UNIT C2	1,261 SQ FT
UNIT D	1,176 SQ FT
AVERAGE UNIT SIZE	1,116 SQ FT
TOTAL LIVING FLOOR	8,828 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

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FLOOR PLAN: LEVEL 4
SCALE: 1/8" = 1'-0"

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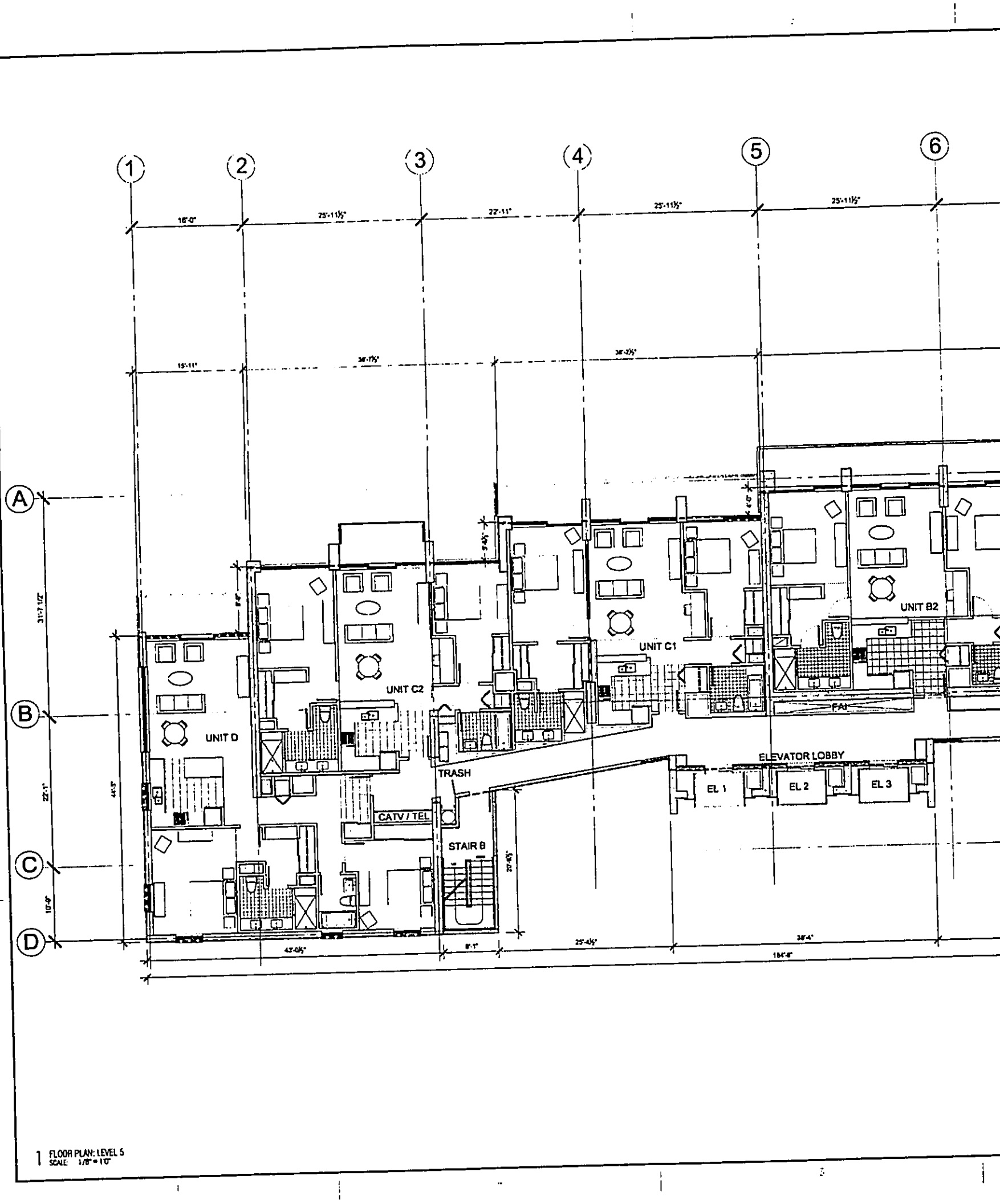
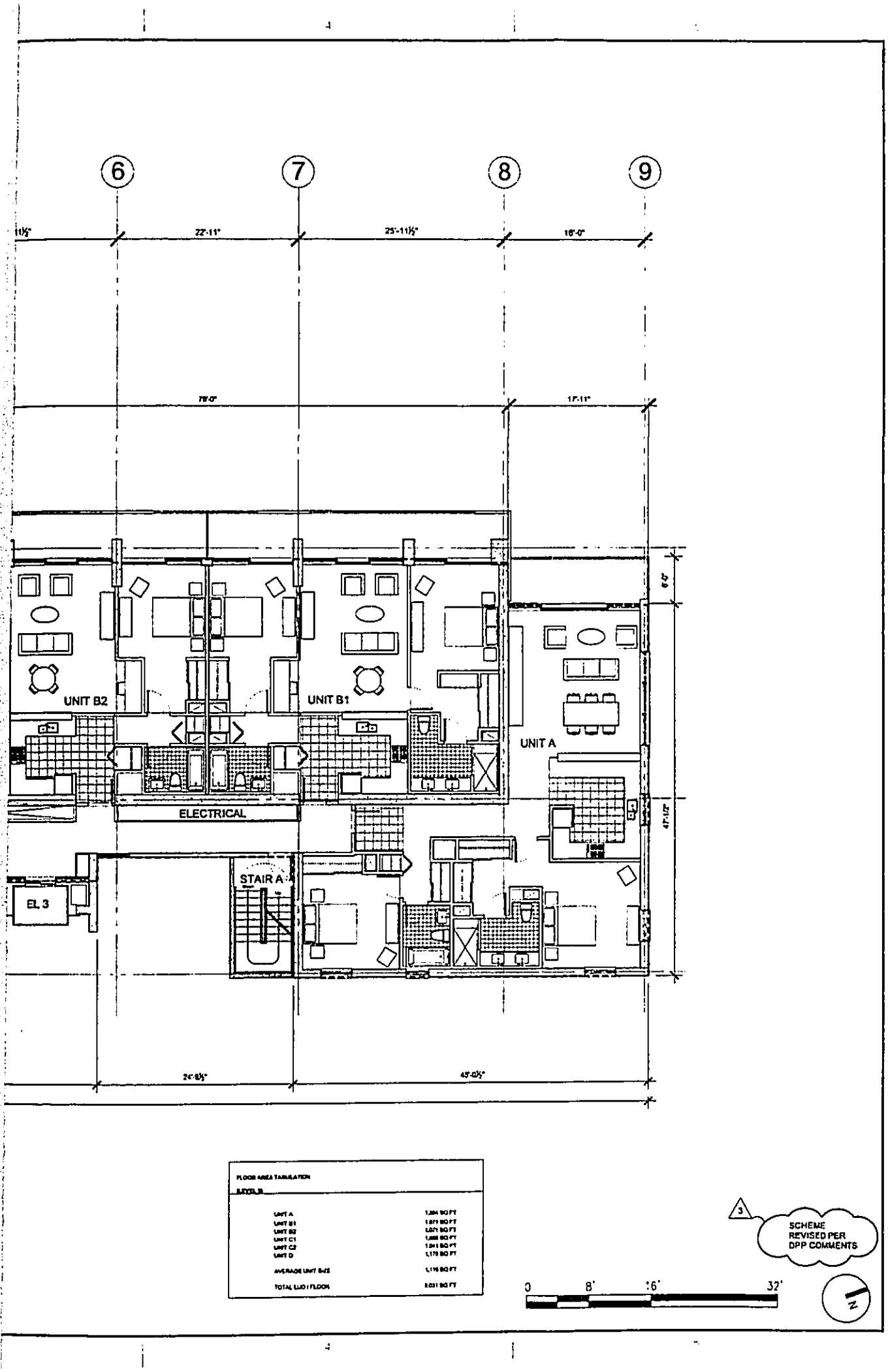


1 FLOOR PLAN: LEVEL 5
SCALE: 1/8" = 1'0"



FLOOR AREA TABULATION	
LEVEL 5	
UNIT A	1,384 SQ FT
UNIT B1	1,011 SQ FT
UNIT B2	1,071 SQ FT
UNIT C1	1,088 SQ FT
UNIT C2	1,041 SQ FT
UNIT D	1,178 SQ FT
AVERAGE UNIT SIZE	1,116 SQ FT
TOTAL LUO / FLOOR	8,031 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

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FLOOR PLAN: LEVEL 5
SCALE: 1/8" = 1'-0"

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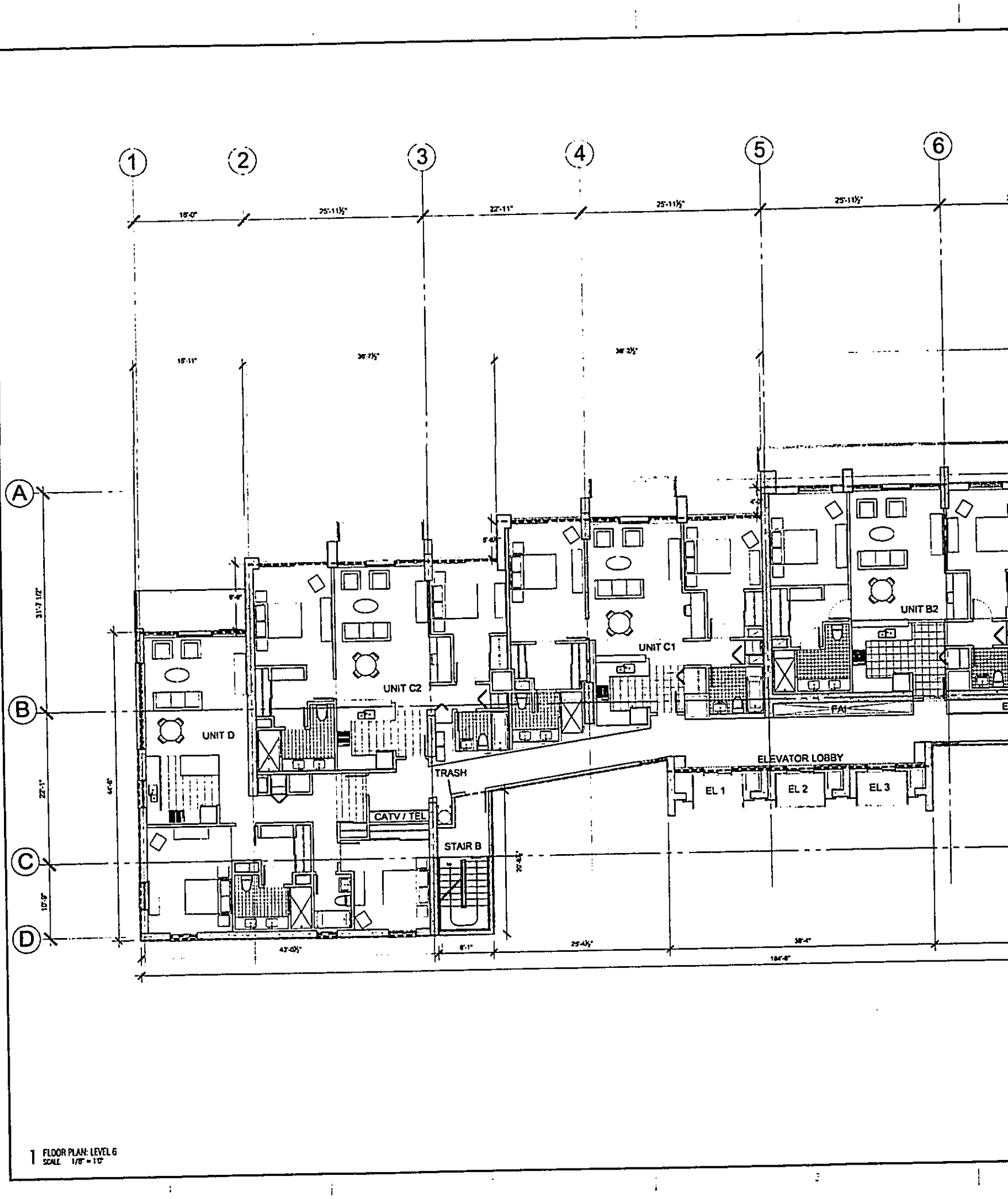
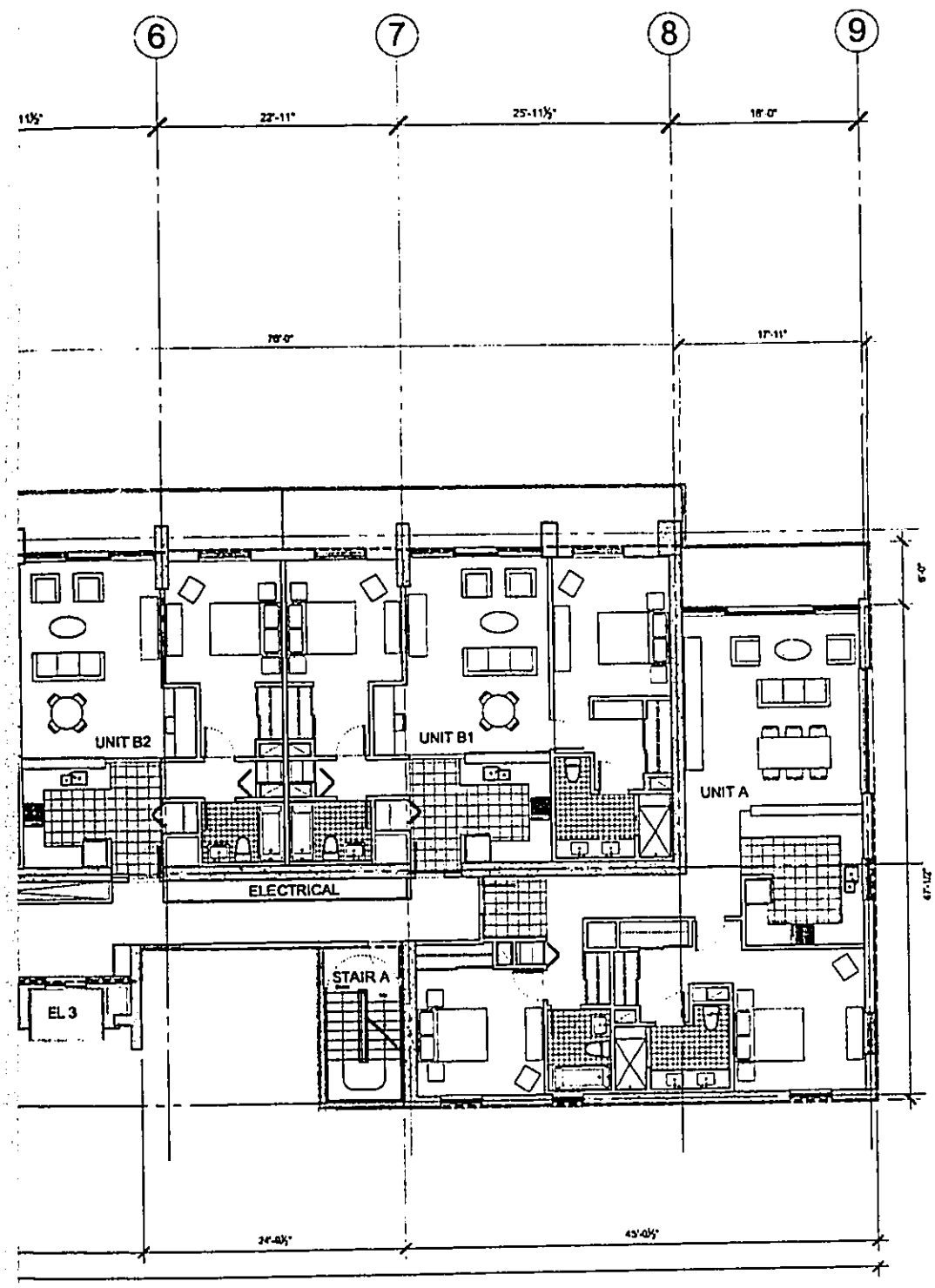


1 FLOOR PLAN: LEVEL 6
SCALE 1/8" = 1'0"



FLOOR AREA TABULATION	
LEVEL 6	
UNIT A	1,284 SQ FT
UNIT B1	1,071 SQ FT
UNIT B2	1,051 SQ FT
UNIT C1	1,036 SQ FT
UNIT C2	1,041 SQ FT
UNIT D	1,170 SQ FT
AVERAGE UNIT SIZE	1,116 SQ FT
TOTAL LUC / FLOOR	6,356 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

N

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signature expiration date of the license

will. Contractor to check and verify dimensions at job before proceeding with work

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1	10/22/04

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FLOOR PLAN: LEVEL 6
SCALE: 1/8" = 1'-0"

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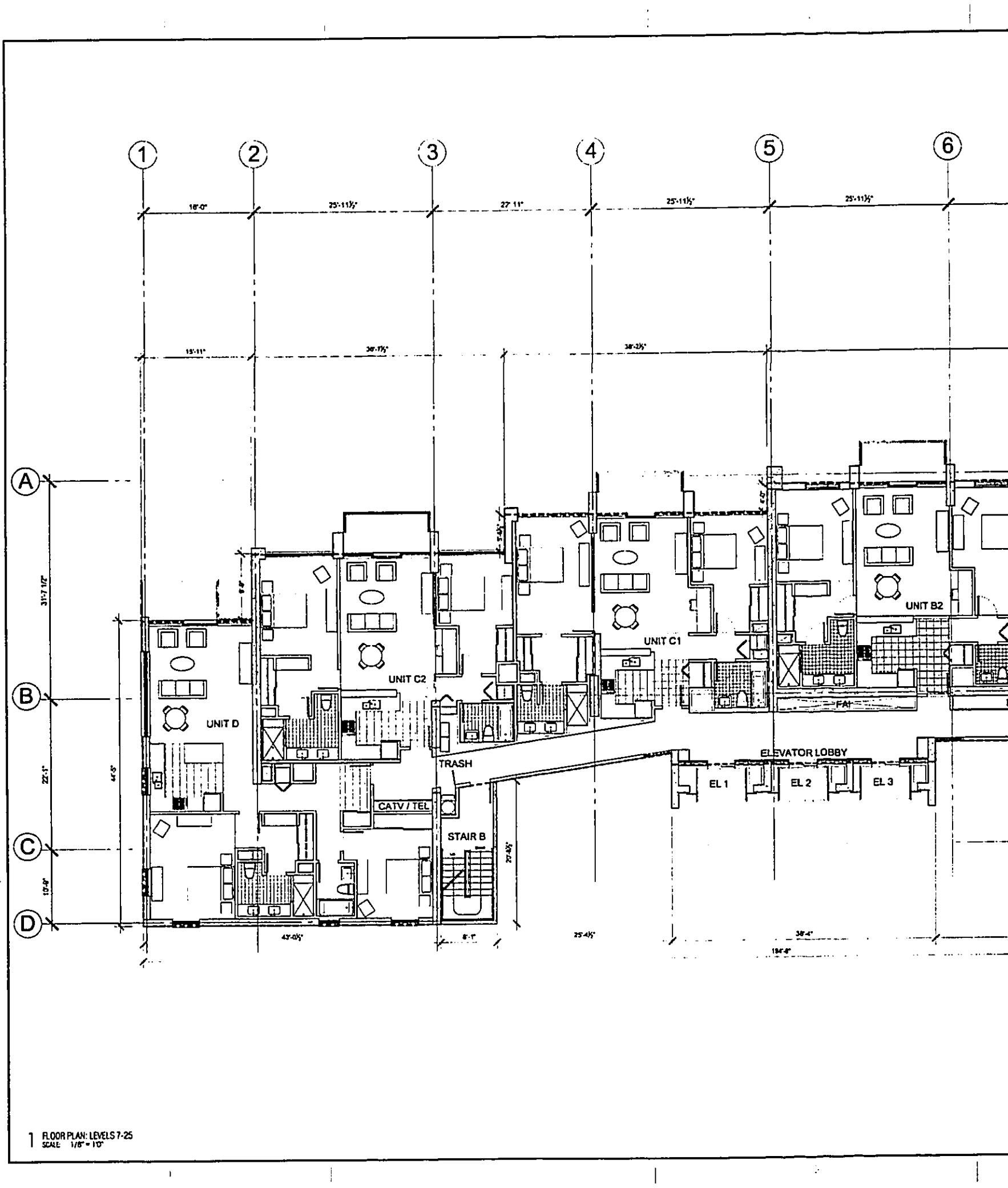
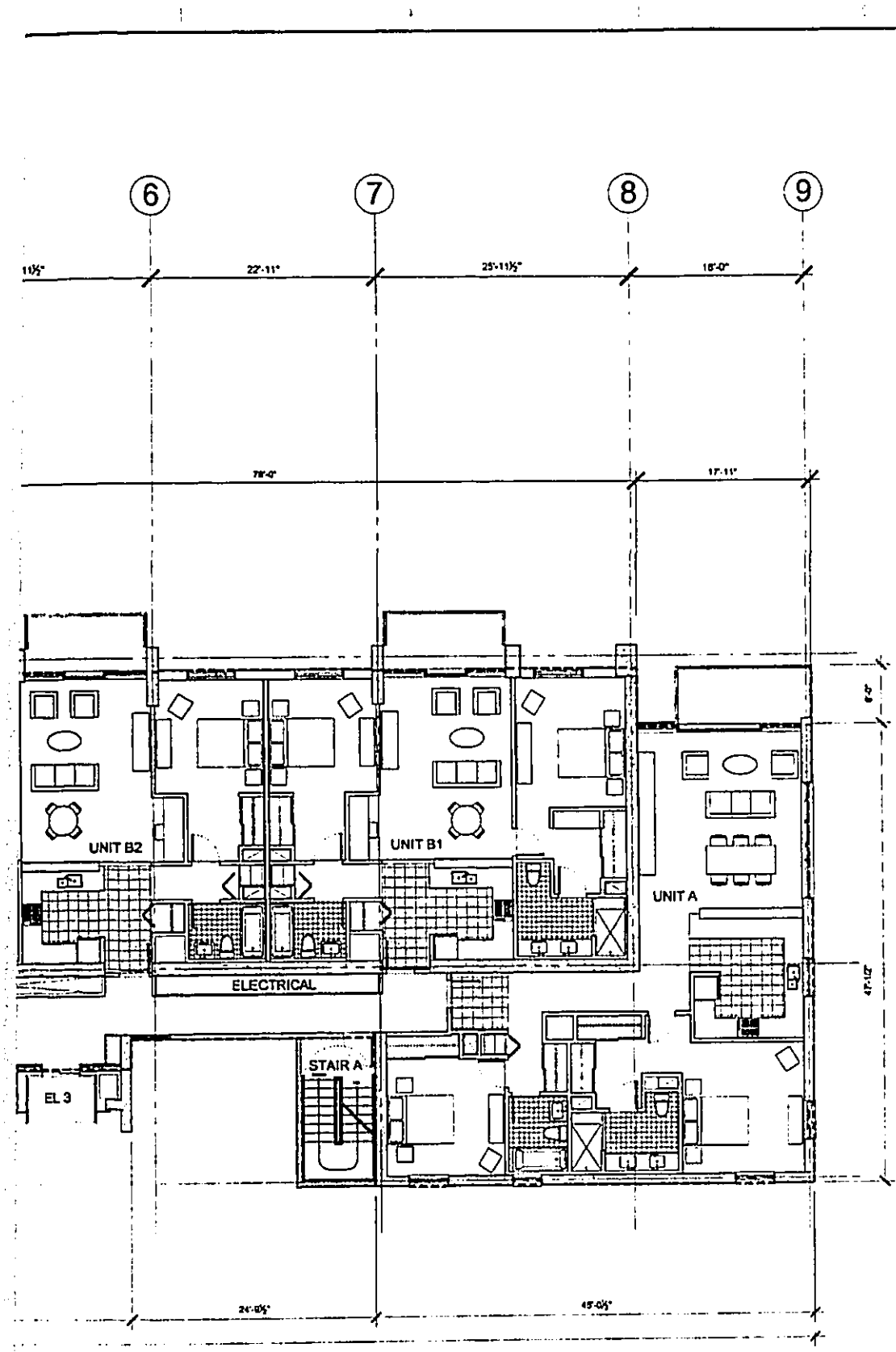


1 FLOOR PLAN: LEVELS 7-25
SCALE: 1/8" = 1'0"



FLOOR AREA TABULATION	
LEVELS 7-25	
UNIT A	1,284 SQ FT
UNIT B1	1,071 SQ FT
UNIT B2	1,321 SQ FT
UNIT C1	1,266 SQ FT
UNIT C2	1,041 SQ FT
UNIT D	1,175 SQ FT
AVERAGE UNIT SIZE	1,110 SQ FT
TOTAL LUO / FLOOR	8,096 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

N

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Signature Expiration date of the license

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1	10/22/04

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FLOOR PLAN: LEVELS 7-25
SCALE: 1/8" = 1'-0"

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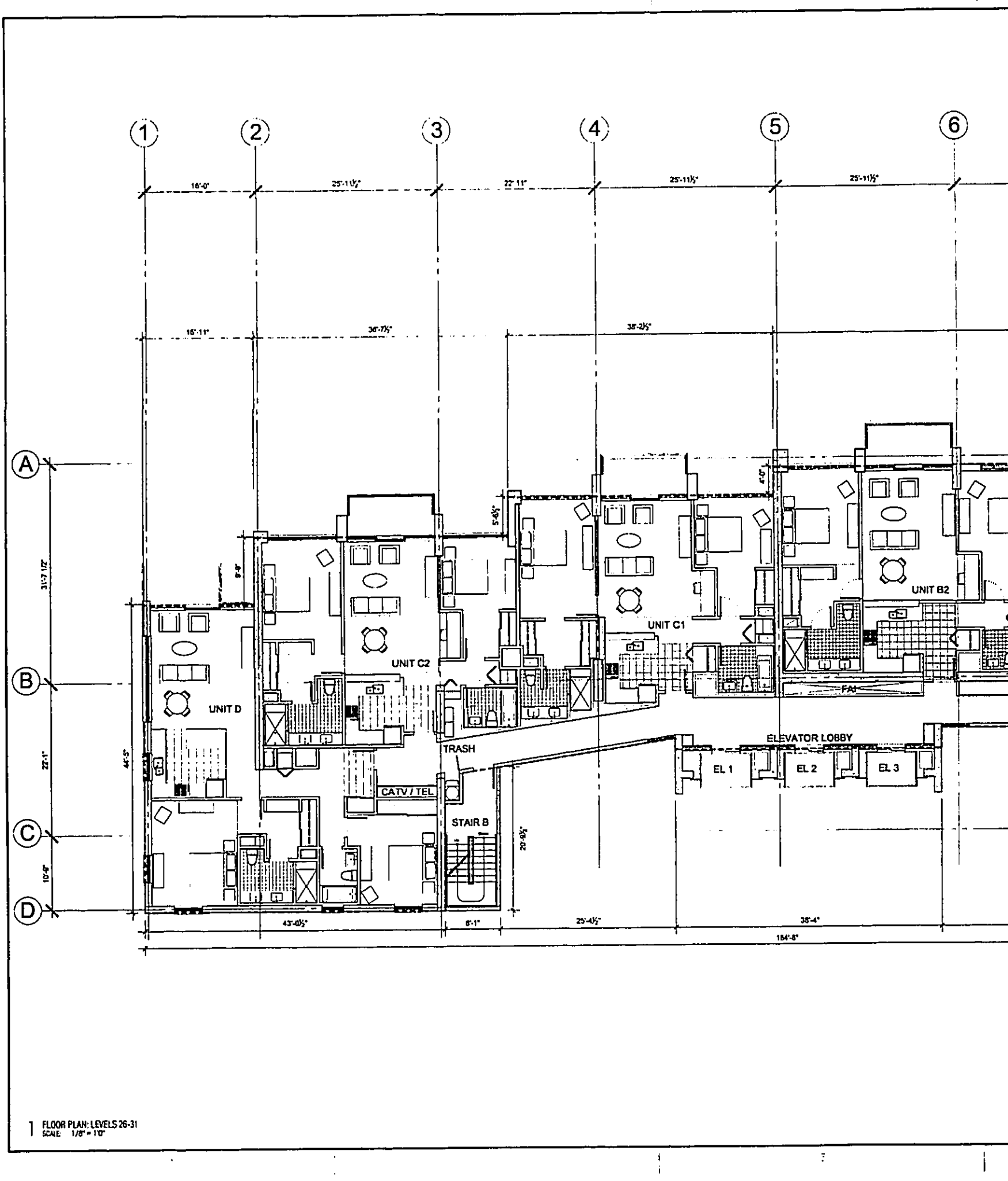
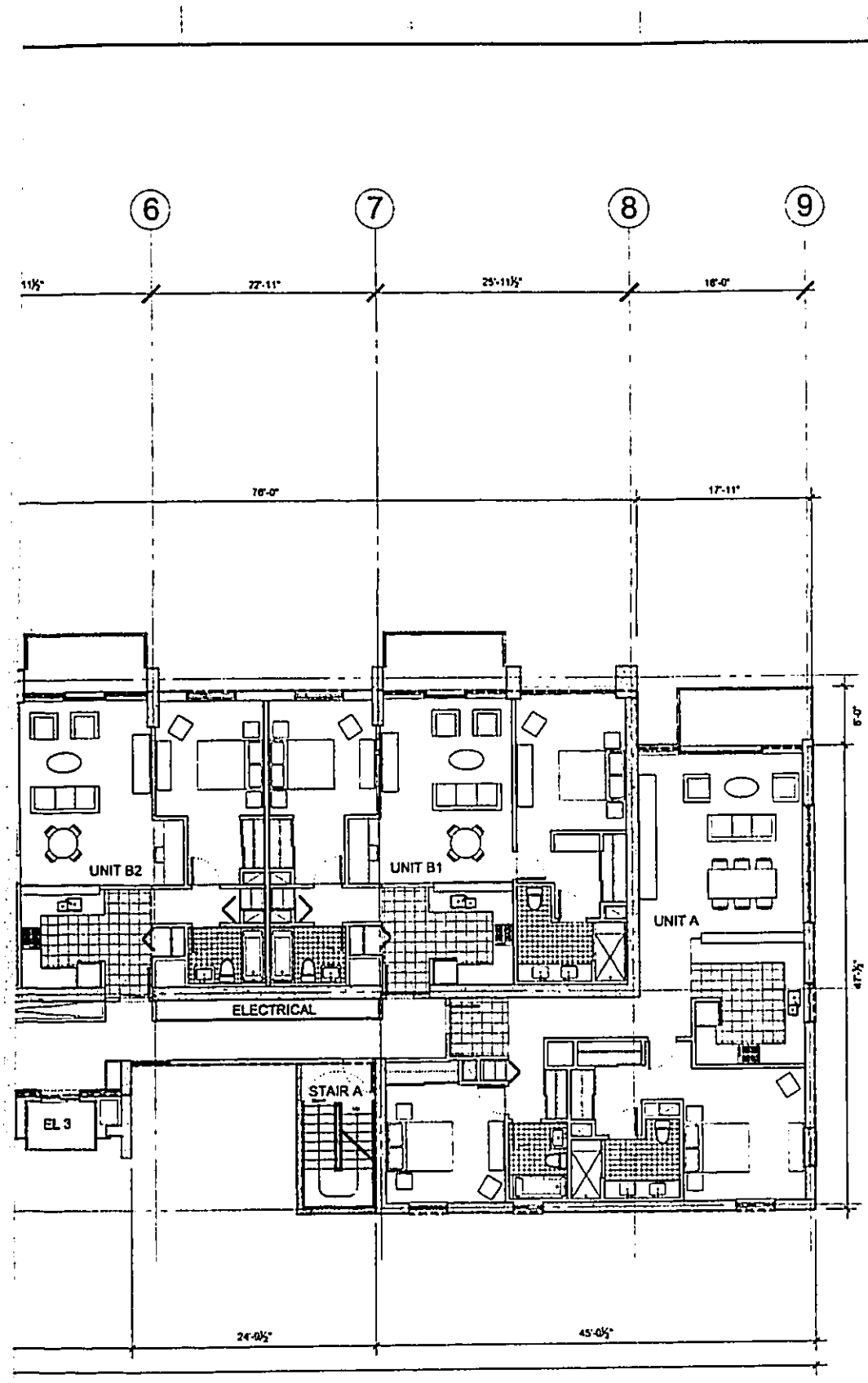


1 FLOOR PLAN: LEVELS 26-31
SCALE: 1/8" = 1'0"



FLOOR AREA TABULATION	
UNIT A	1,284 SQ FT
UNIT B1	1,671 SQ FT
UNIT B2	1,671 SQ FT
UNIT C1	1,286 SQ FT
UNIT C2	1,041 SQ FT
UNIT D	1,175 SQ FT
AVERAGE UNIT SIZE	1,176 SQ FT
TOTAL LUO / FLOOR	6,882 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

N

G2 ARCHITECTURE, P.C.

ALA WAI GATEWAY
ALA WAI BLVD. HONOLULU, HI

3 11/15/04
2 10/29/04
1 10/22/04

PROJECT NO. 5061 / 0401
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WSD1.08

FLOOR PLAN: LEVELS 26-31
SCALE: 1/8" = 1'-0"

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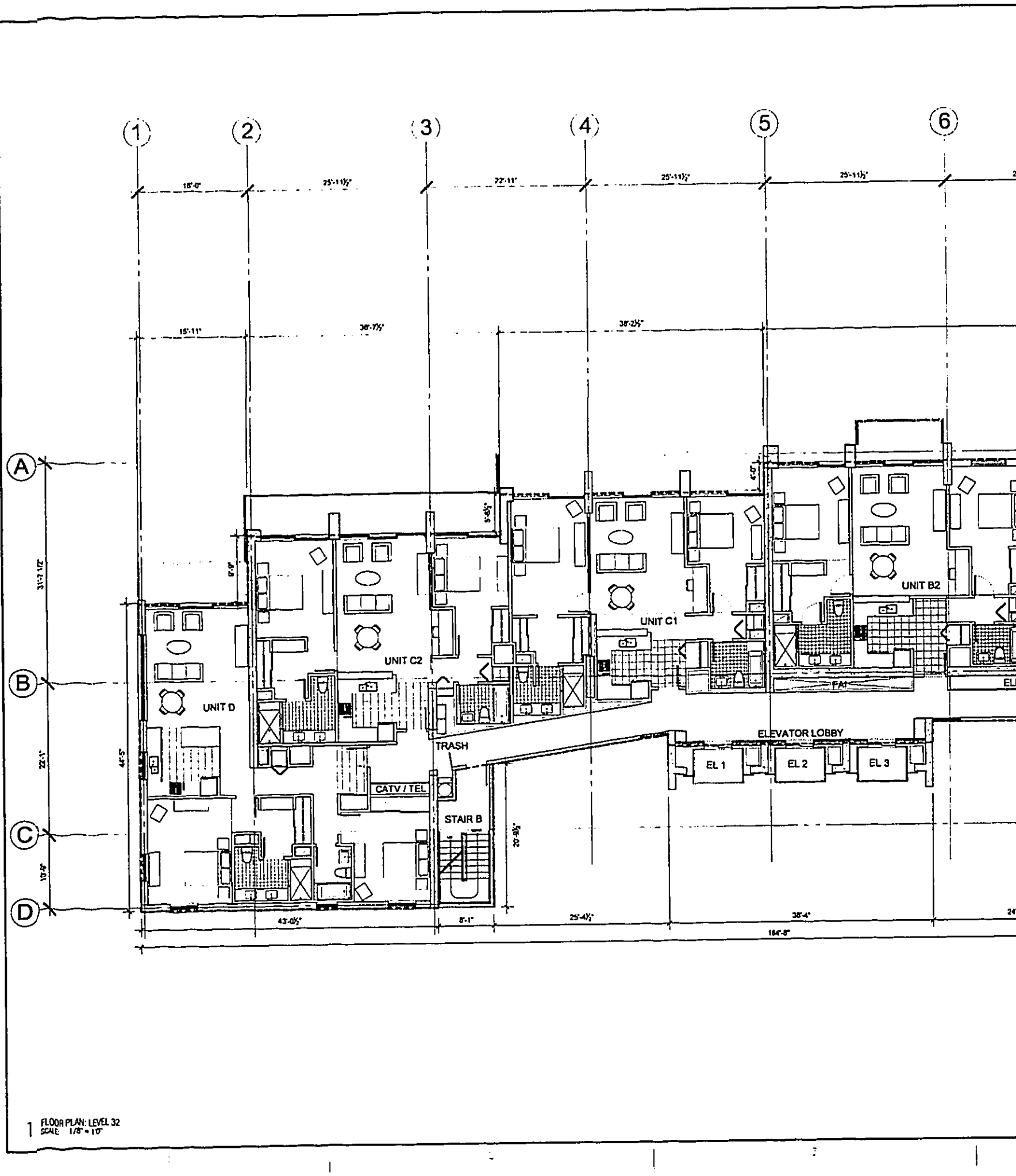
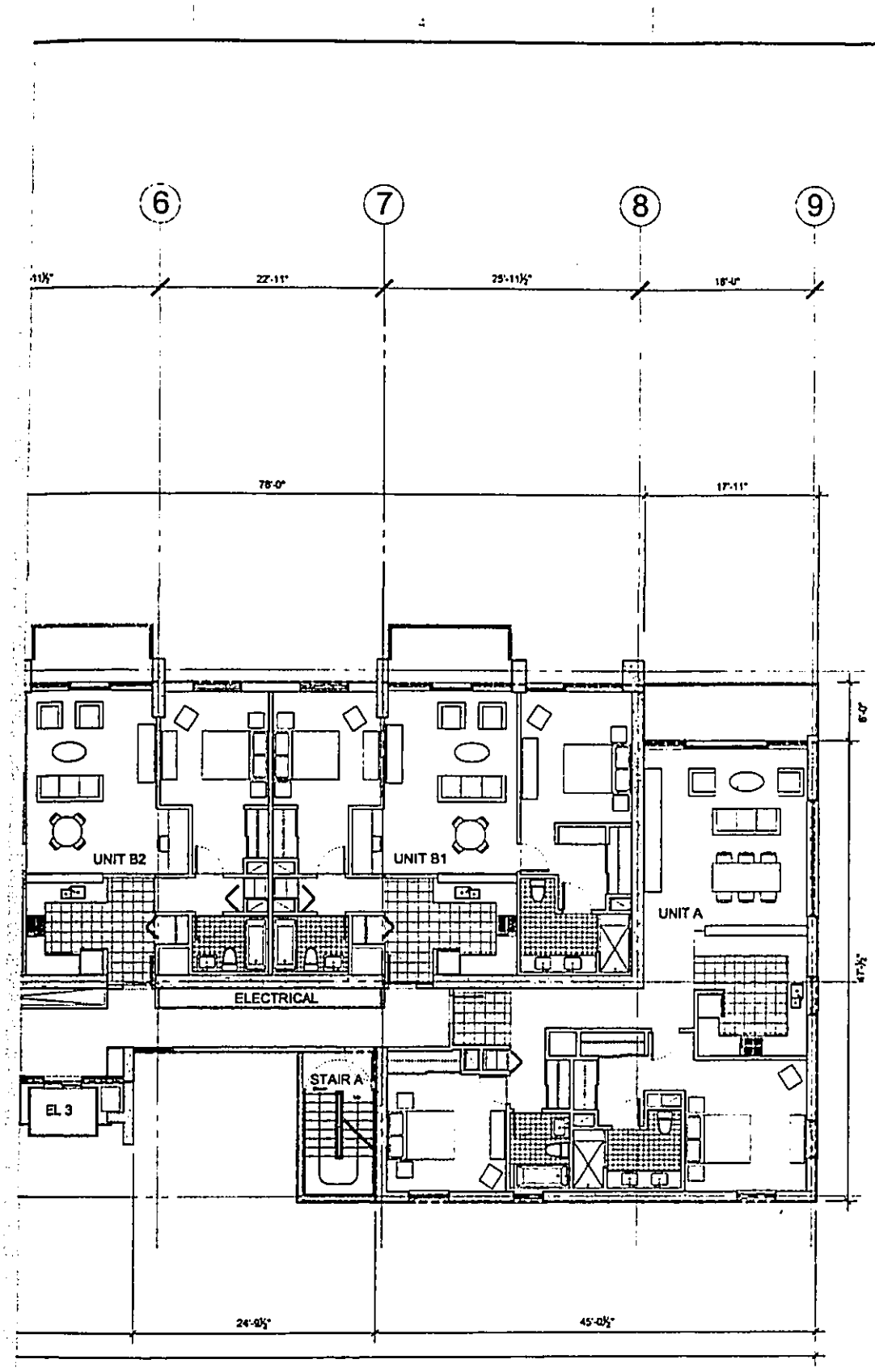


1 FLOOR PLAN: LEVEL 32
SCALE: 1/8" = 1'0"



FLOOR AREA TABULATION	
UNIT A	1,284 SQ FT
UNIT B1	1,071 SQ FT
UNIT B2	1,071 SQ FT
UNIT C1	1,068 SQ FT
UNIT C2	1,041 SQ FT
UNIT D	1,175 SQ FT
AVERAGE UNIT SIZE	1,116 SQ FT
TOTAL LIG / FLOOR	8,946 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

N

G2 ARCHITECTURE, P.C.
[illegible]

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ALA WAI BLVD. HONOLULU, HI

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Signature Expiration date of this license

NOTE: Contractor to check and verify dimensions at all times preceding with work

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FLOOR PLAN: LEVEL 32
SCALE: 1/8" = 1'-0"

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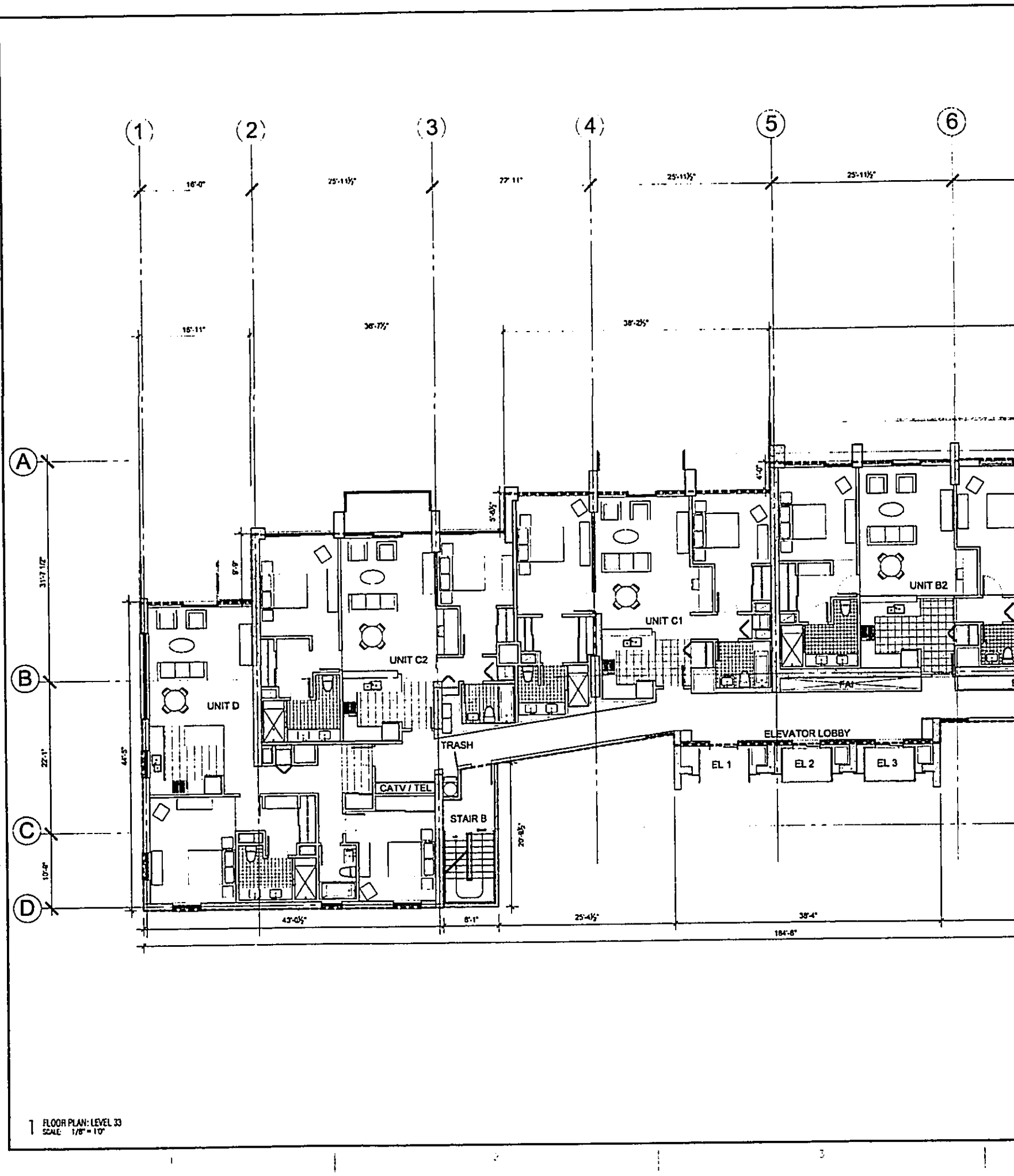
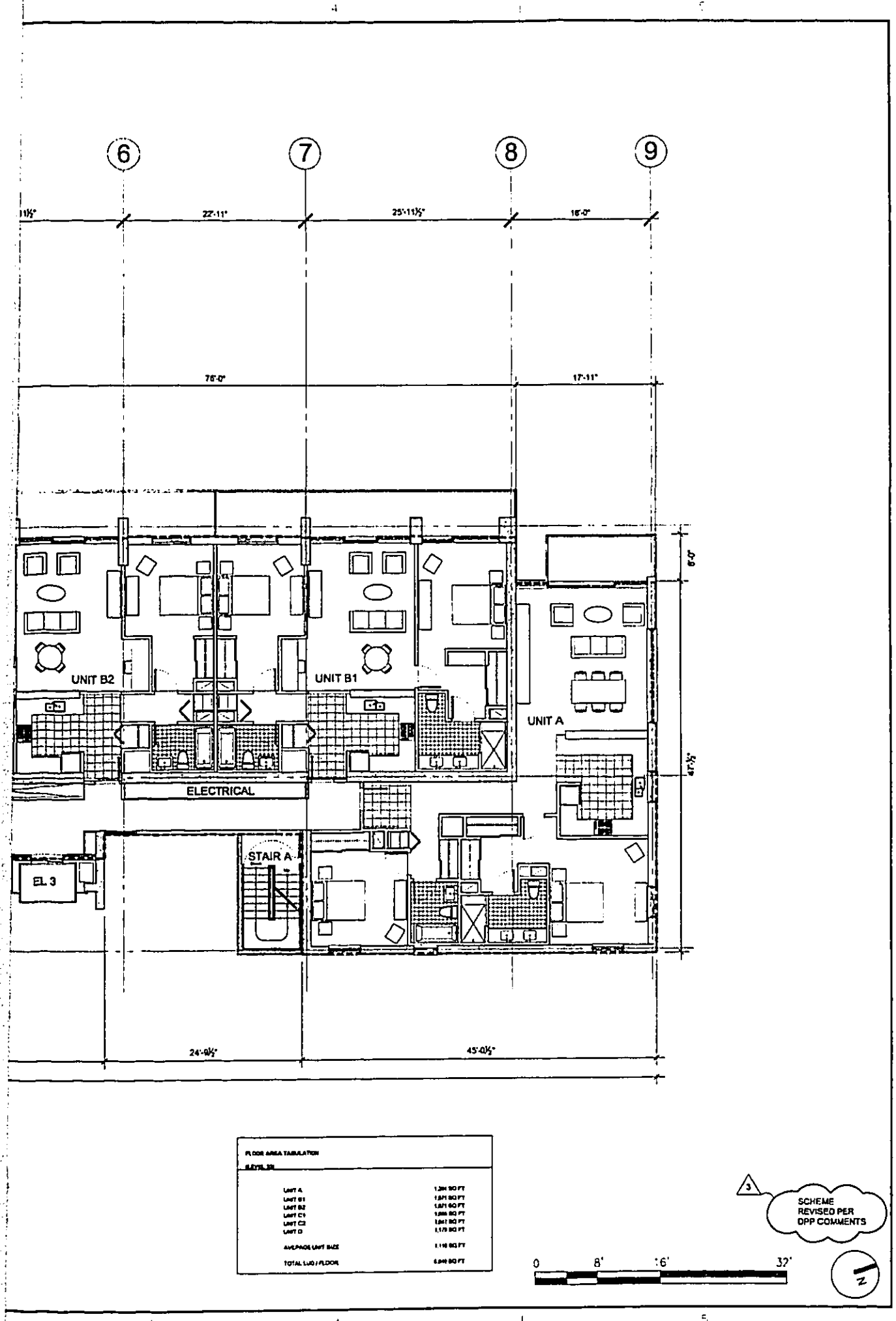


1 FLOOR PLAN: LEVEL 33
SCALE: 1/8" = 1'0"



FLOOR AREA TABULATION	
Unit A	1,284 SQ FT
Unit B1	1,871 SQ FT
Unit B2	1,871 SQ FT
Unit C1	1,886 SQ FT
Unit C2	1,841 SQ FT
Unit D	1,175 SQ FT
AVE/PAGE UNIT SIZE	1,116 SQ FT
TOTAL LUO / FLOOR	8,848 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

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ALA WAI BLVD. HONOLULU, HI

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signature registration date of the licensee

NOTE: Contractor to check and verify all measurements at job before proceeding with work.

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2	10/29/04
1	10/22/04

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WSD1.10

FLOOR PLAN: LEVEL 33
SCALE: 1/8" = 1'-0"

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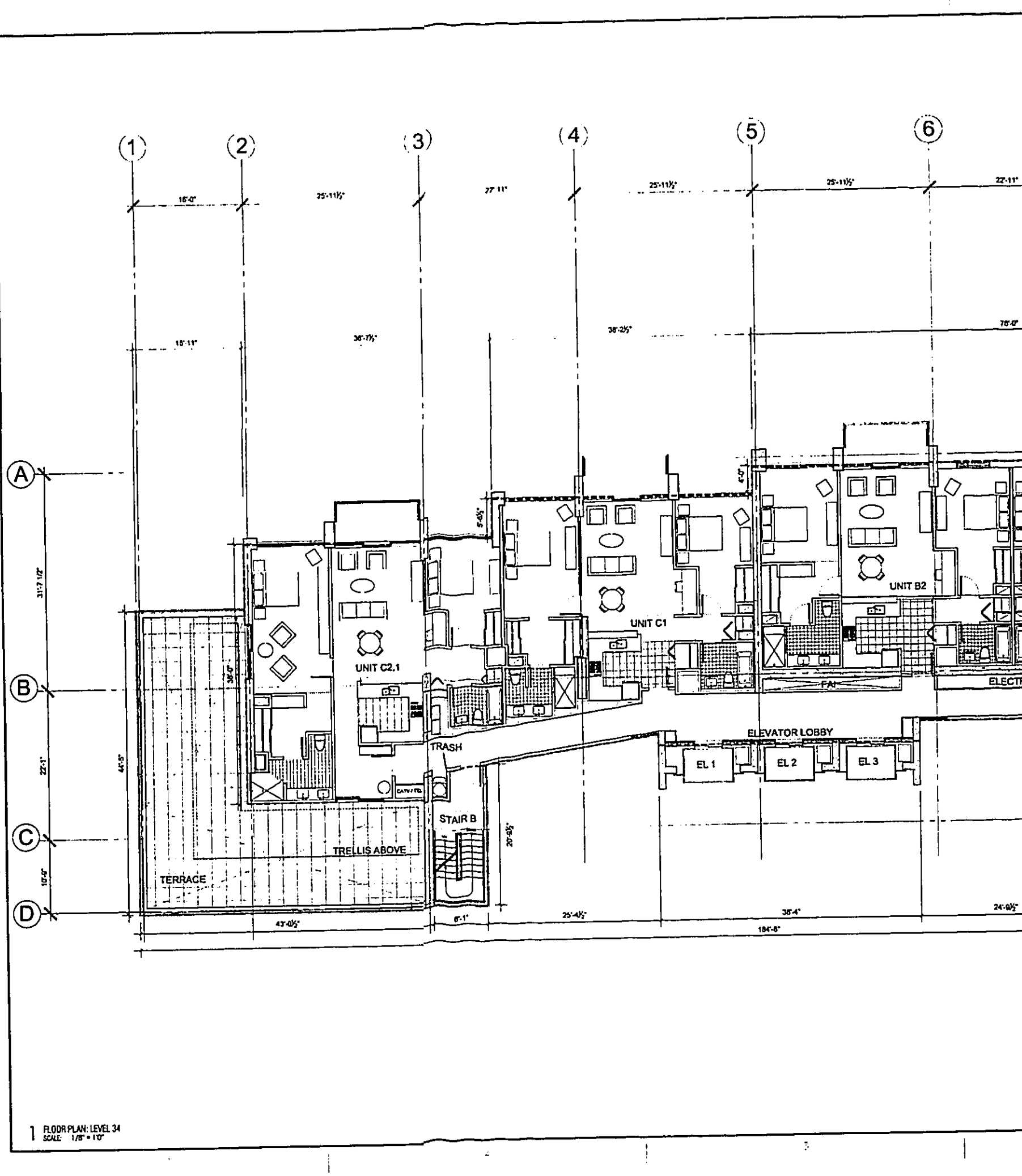
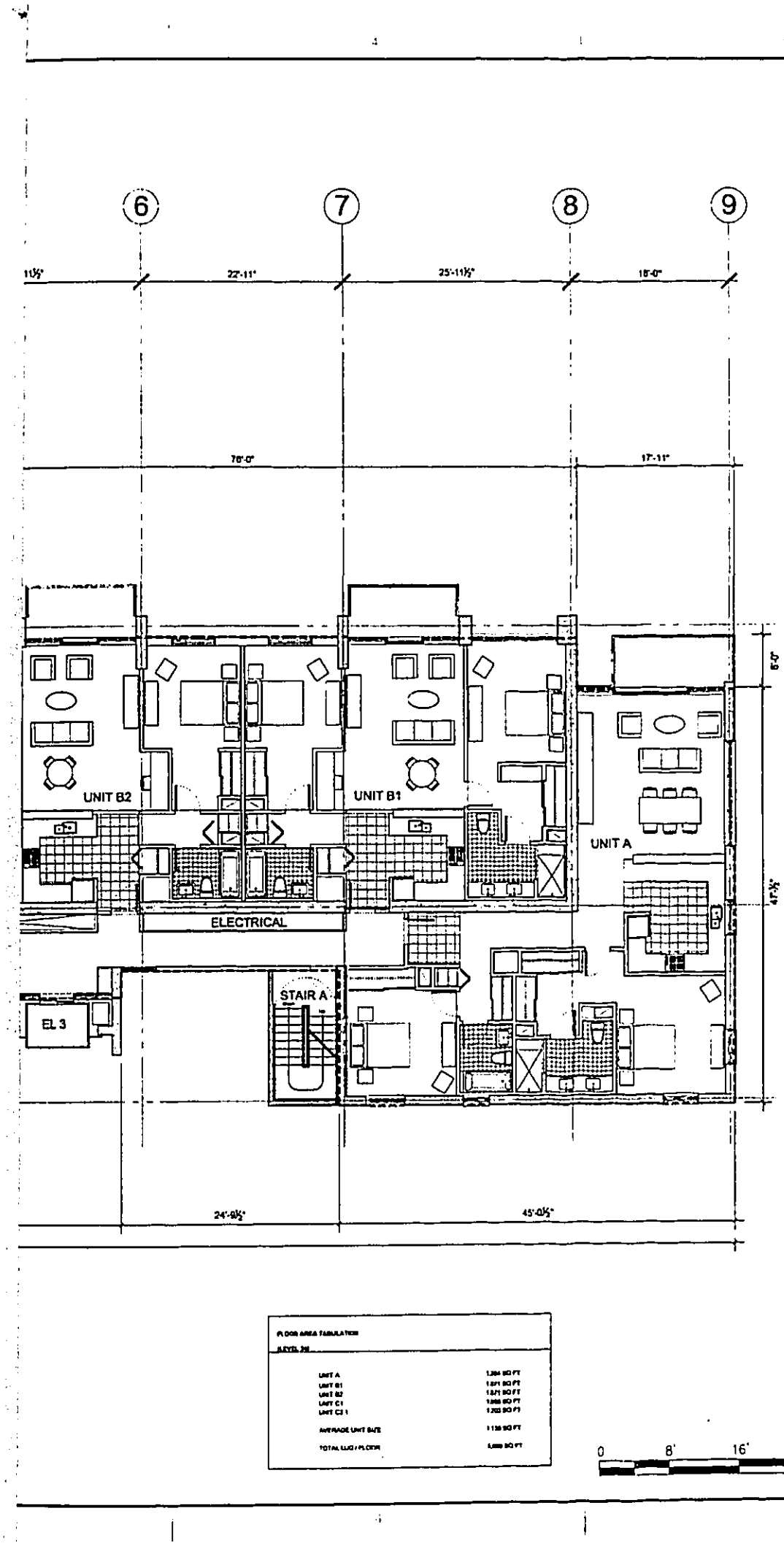


1 FLOOR PLAN: LEVEL 34
SCALE: 1/8" = 1'0"



FLOOR AREA TABULATION	
LEVEL 34	
UNIT A	1,264 SQ FT
UNIT B1	1,071 SQ FT
UNIT B2	1,071 SQ FT
UNIT C1	1,068 SQ FT
UNIT C2.1	1,703 SQ FT
AVERAGE UNIT SIZE	1,139 SQ FT
TOTAL LUG / FLOOR	5,699 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

N

G2 ARCHITECTURE, P.C.
165 Chrystie St. Ste. 304
New York, New York 10002
T 212 966 5300 F 212 226 6561
www.g2arch.com

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ALA WAI BLVD. HONOLULU, HI

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signature registration expiration date of the license

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

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FLOOR PLAN: LEVEL 34
SCALE: 1/8" = 1'-0"

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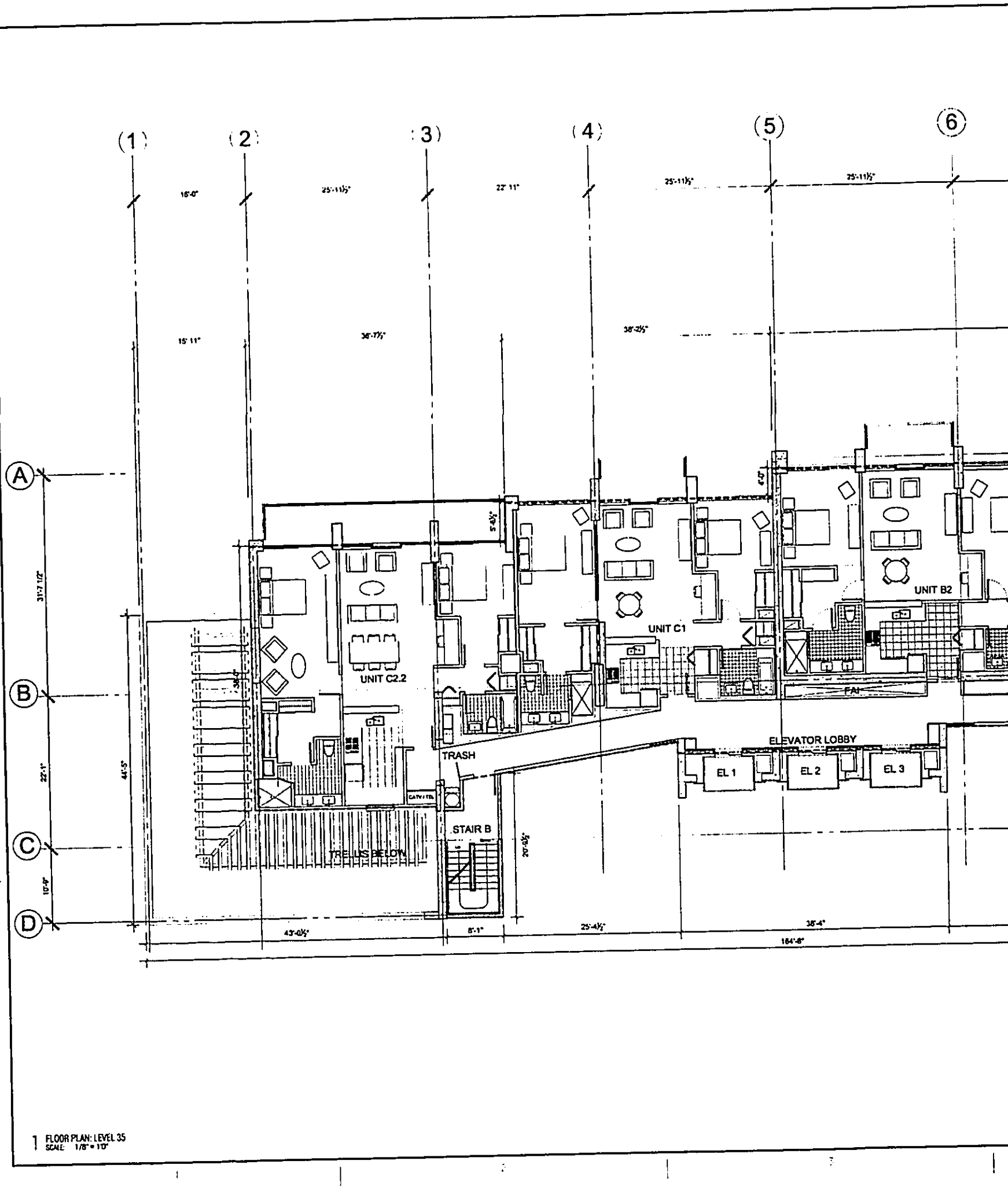
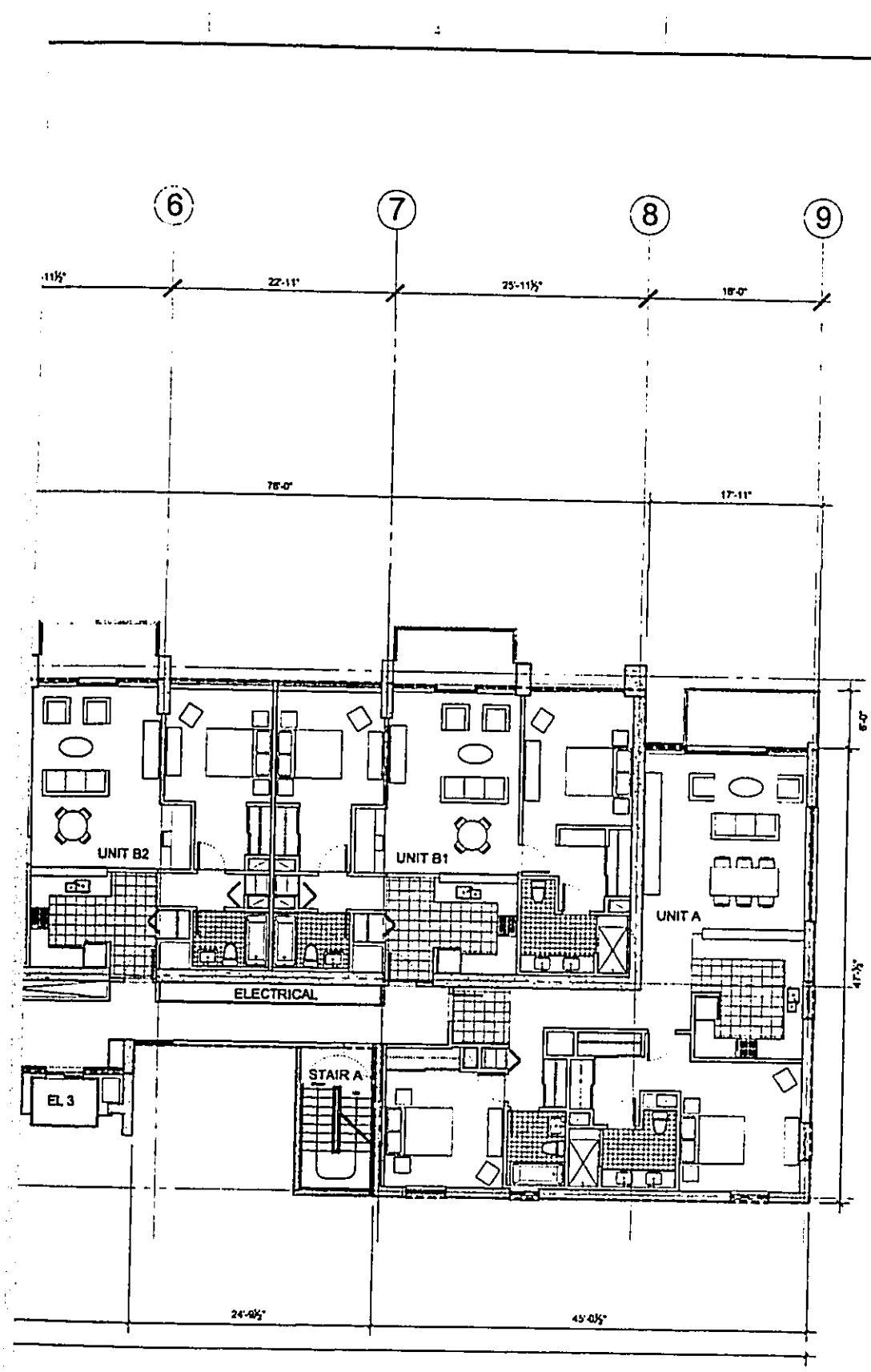


1 FLOOR PLAN: LEVEL 35
SCALE: 1/8" = 1'0"



FLOOR AREA TABULATION	
UNIT A	1,289 SQ FT
UNIT B1	1,671 SQ FT
UNIT B2	1,671 SQ FT
UNIT C1	1,488 SQ FT
UNIT C1.2	1,289 SQ FT
AVERAGE UNIT SIZE	1,482 SQ FT
TOTAL LIVING FLOOR	8,911 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

N

G2 ARCHITECTURE, P.C.

ALA WAI GATEWAY
ALA WAI BLVD. HONOLULU, HI

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1 10/22/04

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WSD1.12
FLOOR PLAN: LEVEL 35
SCALE: 1/8" = 1'-0"

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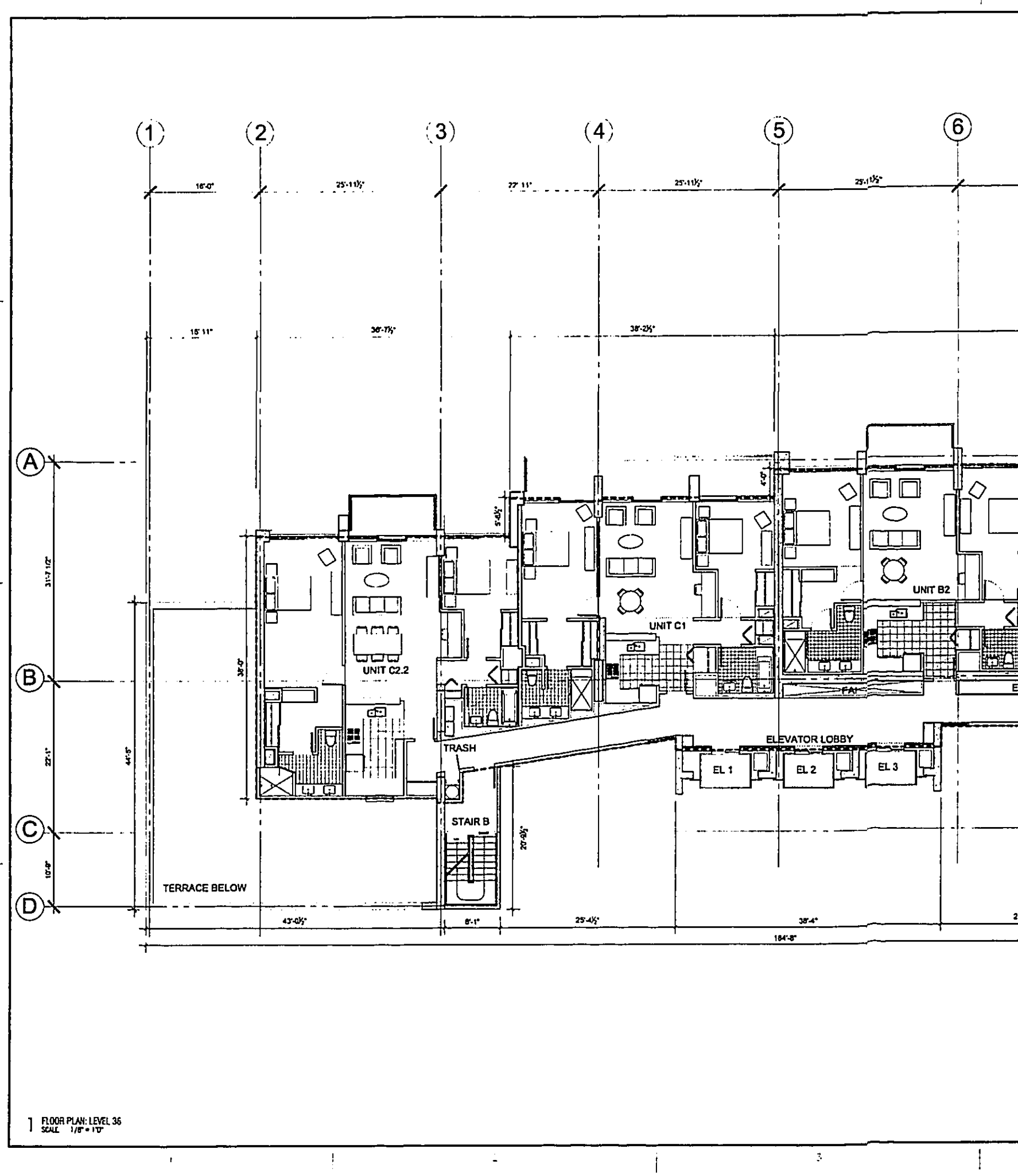
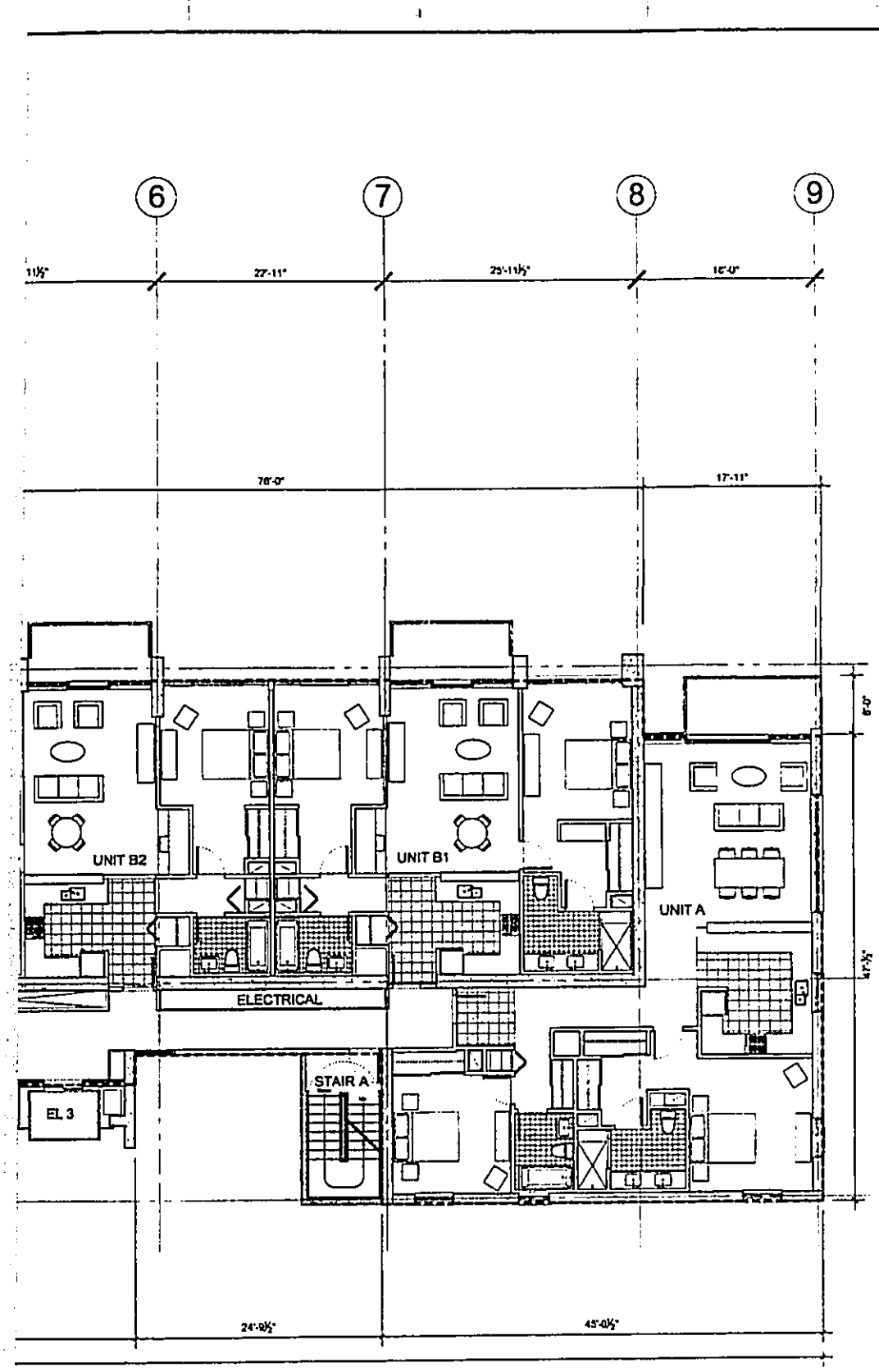


1 FLOOR PLAN: LEVEL 36
SCALE 1/8" = 1'0"



FLOOR AREA TABULATION	
UNIT A	1,284 SQ FT
UNIT B1	1,021 SQ FT
UNIT B2	1,021 SQ FT
UNIT C1	1,286 SQ FT
UNIT C2.2	1,286 SQ FT
AVERAGE UNIT SIZE	1,139 SQ FT
TOTAL LUU / FLOOR	6,913 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

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Signature Expiration date of the license

NOTE: Contractor to check and verify dimensions on job before proceeding with work.

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1	10/22/04

PROJECT NO. 5061 / 0401
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DATE 09/15/04
DRAWING NO.

WSD1.13

FLOOR PLAN: LEVEL 36
SCALE: 1/8" = 1'-0"

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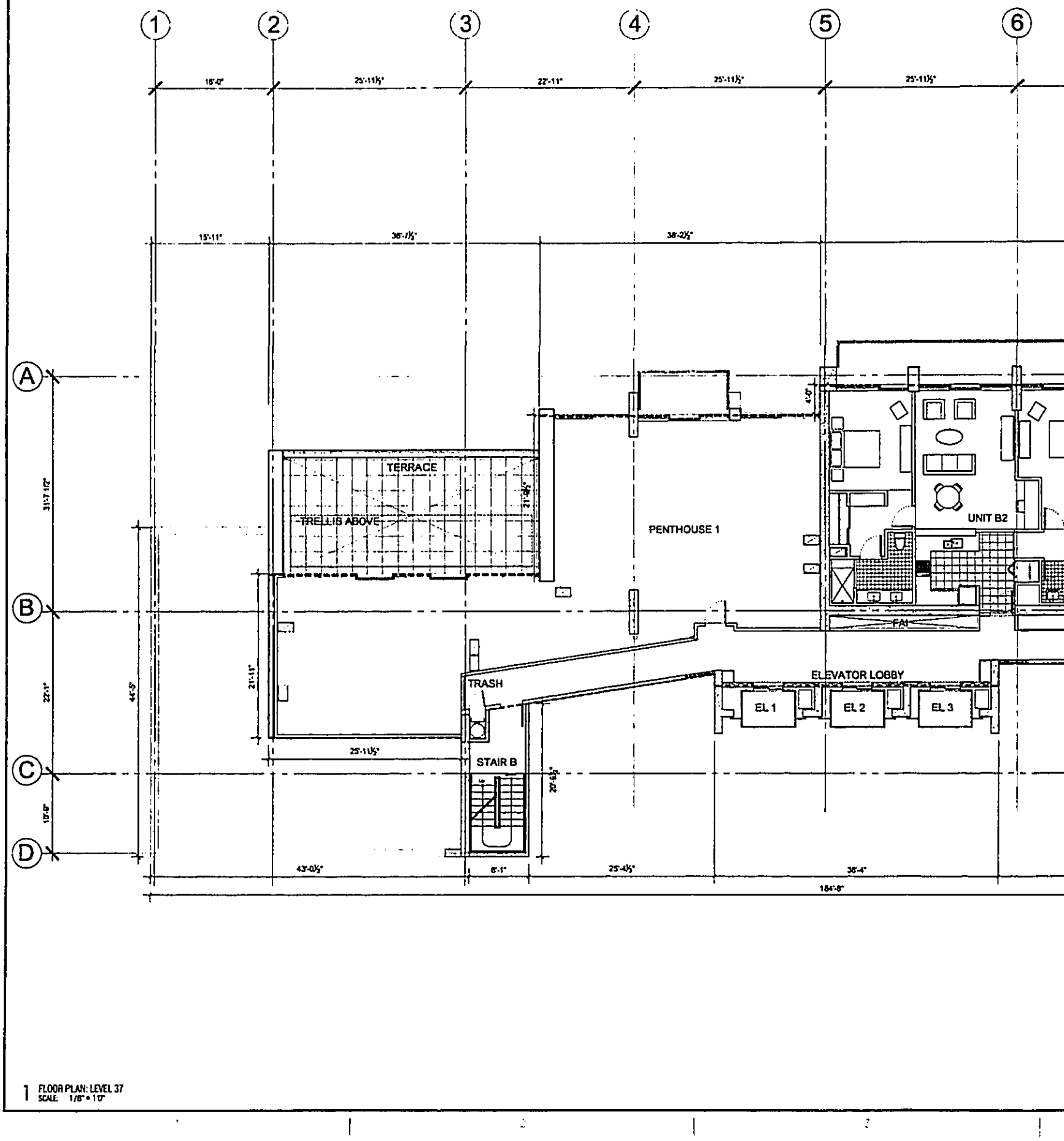
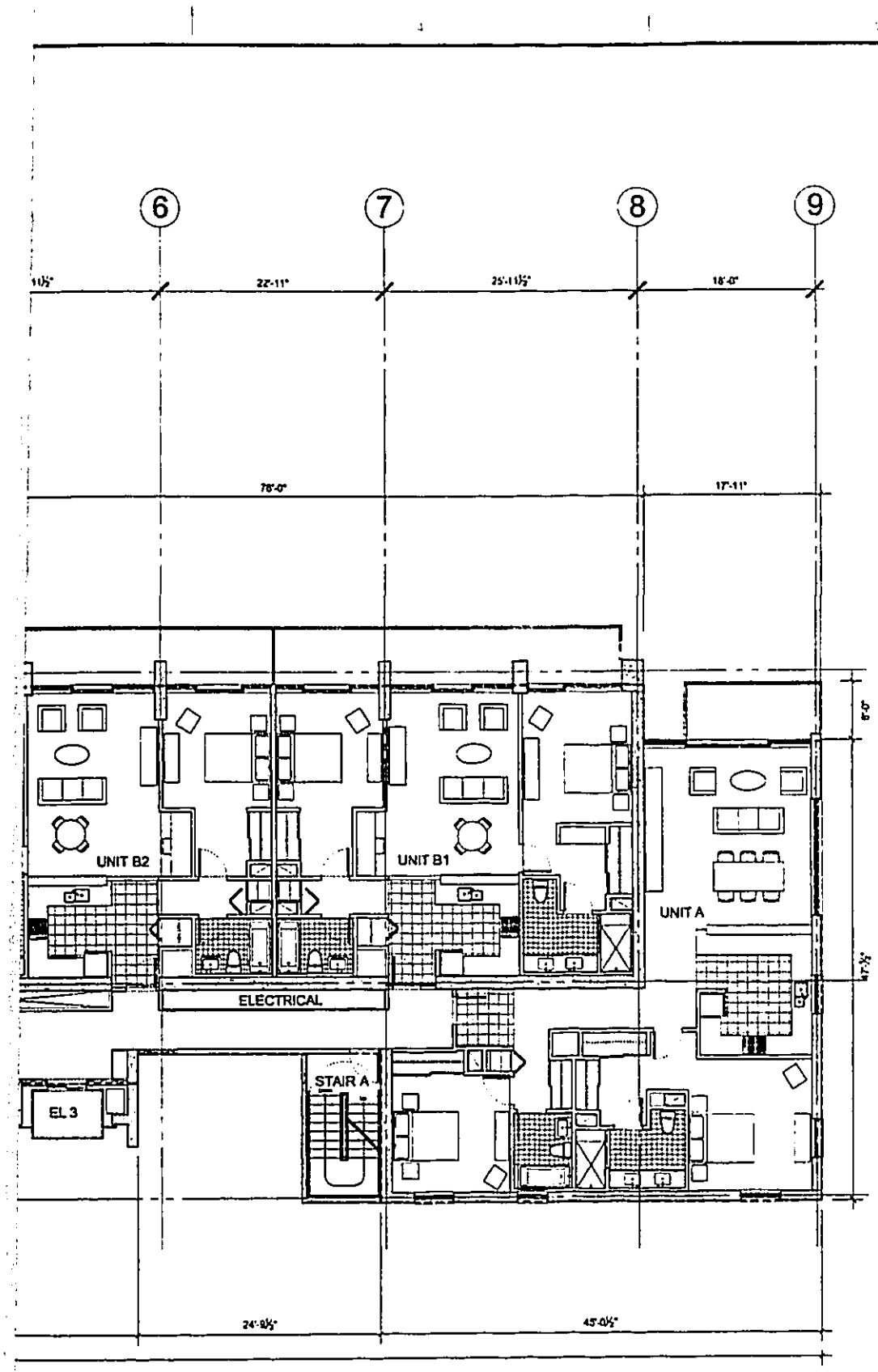


1 FLOOR PLAN: LEVEL 37
SCALE: 1/8" = 1'0"



FLOOR AREA TABULATION (LEVEL 37)	
UNIT A	1,284 SQ FT
UNIT B1	1,021 SQ FT
UNIT B2	1,021 SQ FT
PENTHOUSE 1	1,749 SQ FT
TOTAL LIVING FLOOR	5,215 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

N

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signature — expiration date of the license

NOTE: Contractor to check and verify dimensions of job before proceeding with work.

3	11/15/04
2	10/29/04
1	10/22/04

PROJECT #: 5061 / 0401
JOB LOG FILE
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DATE: 10/22/04
DRAWING NO.

WSD1.14

FLOOR PLAN: LEVEL 37
SCALE: 1/8" = 1'-0"

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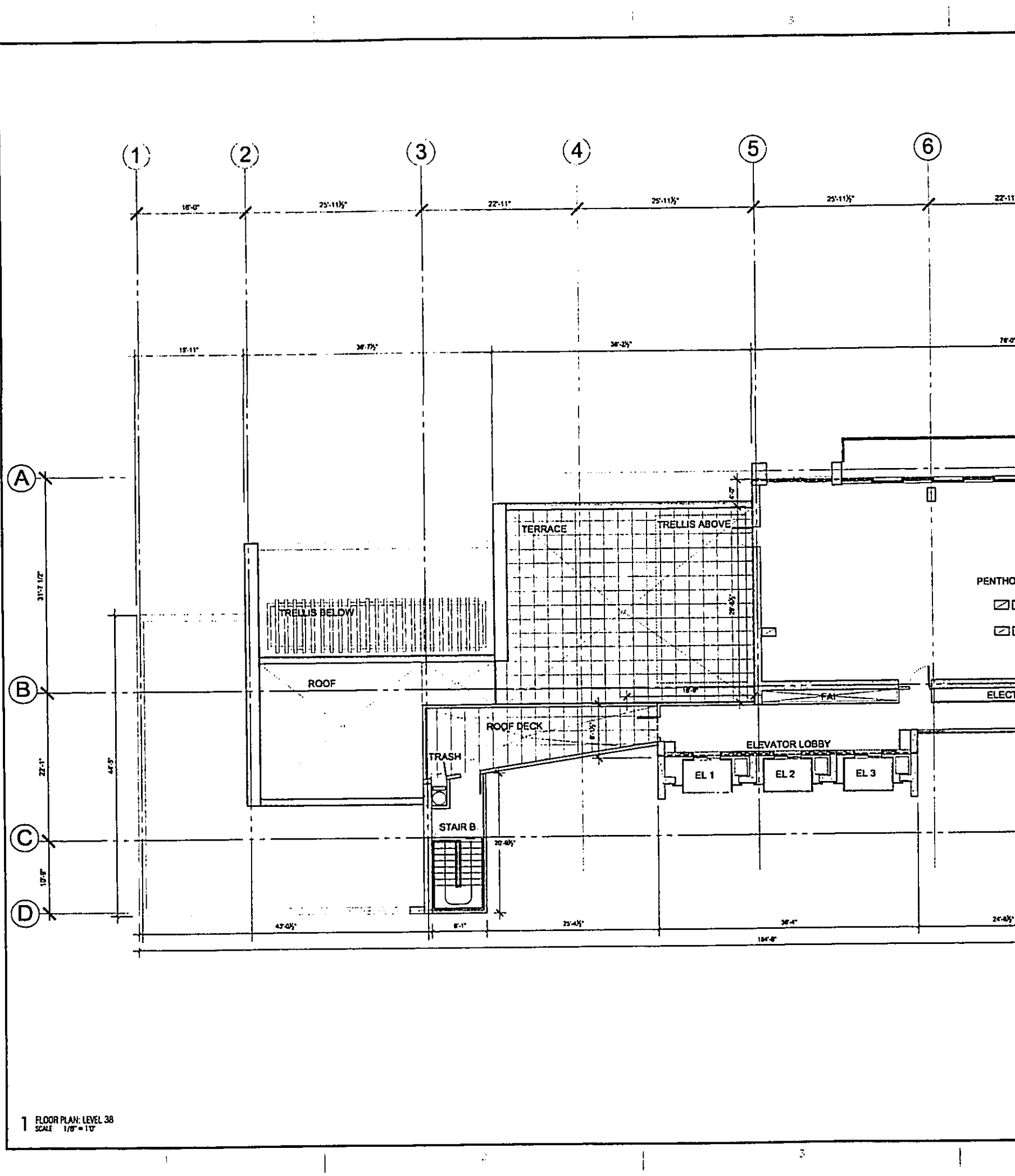
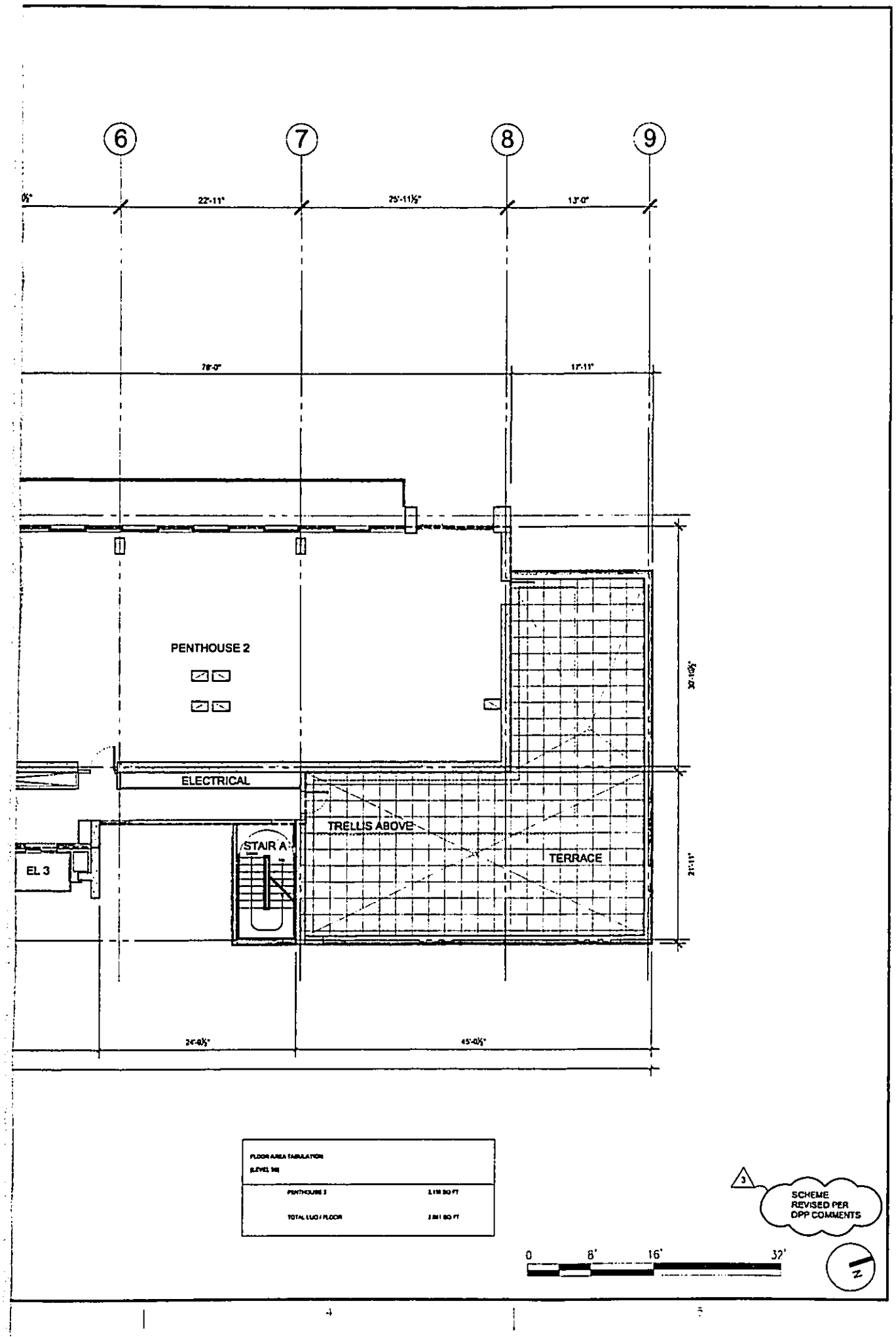


1 FLOOR PLAN: LEVEL 38
SCALE 1/8" = 1'-0"



FLOOR AREA TABULATION (LEVEL 38)	
PENTHOUSE 2	2,118 SQ FT
TOTAL LUO / FLOOR	2,861 SQ FT

3 SCHEME REVISED PER DPP COMMENTS

0 8' 16' 32'

N

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signature — expiration date of the license

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

3	11/15/04
2	10/29/04
1	10/22/04

PROJECT NO: 5061 / 0401
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DATE: 09/15/04
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WSD1.15

FLOOR PLAN: LEVEL 38
SCALE: 1/8" = 1'-0"

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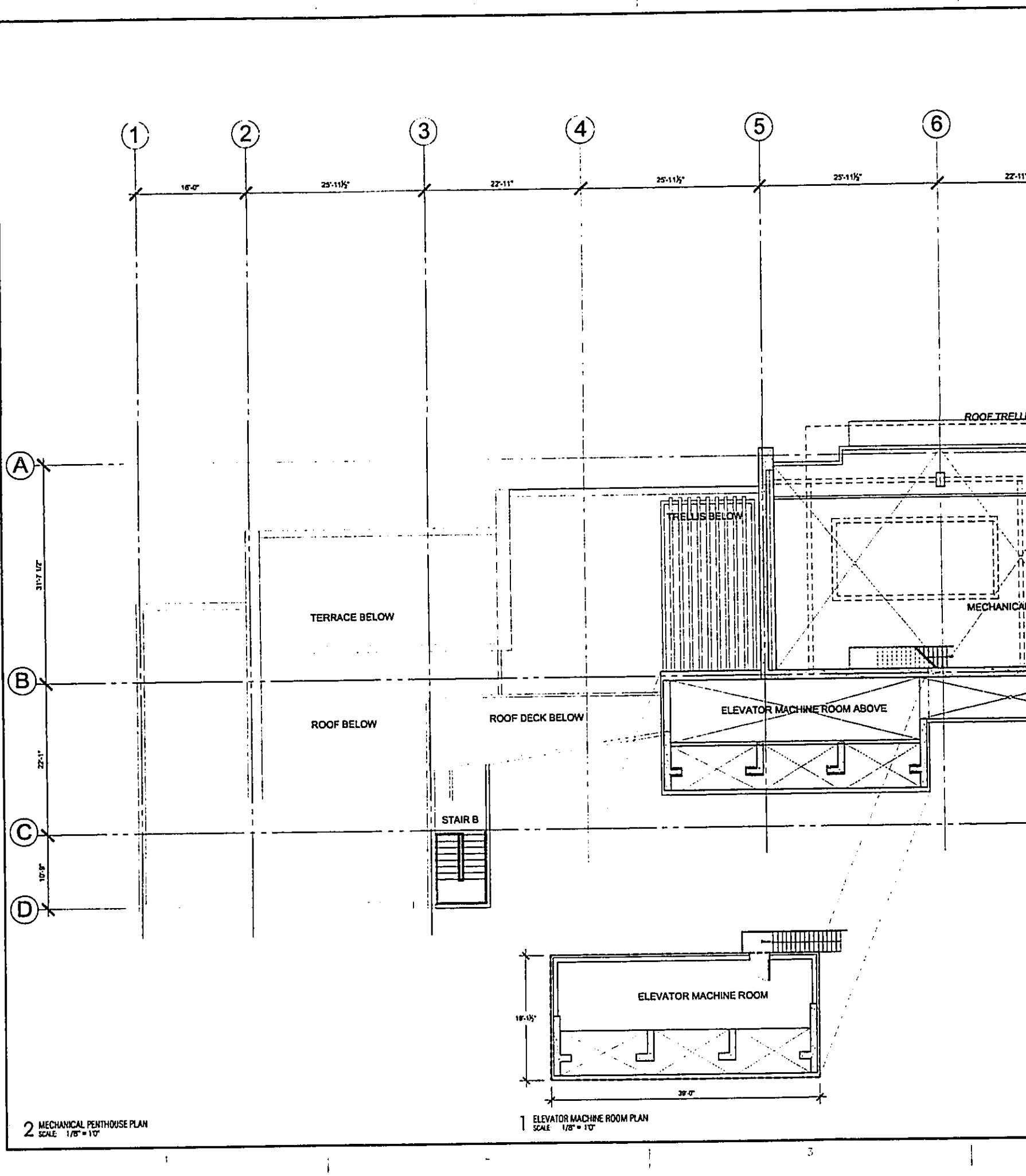
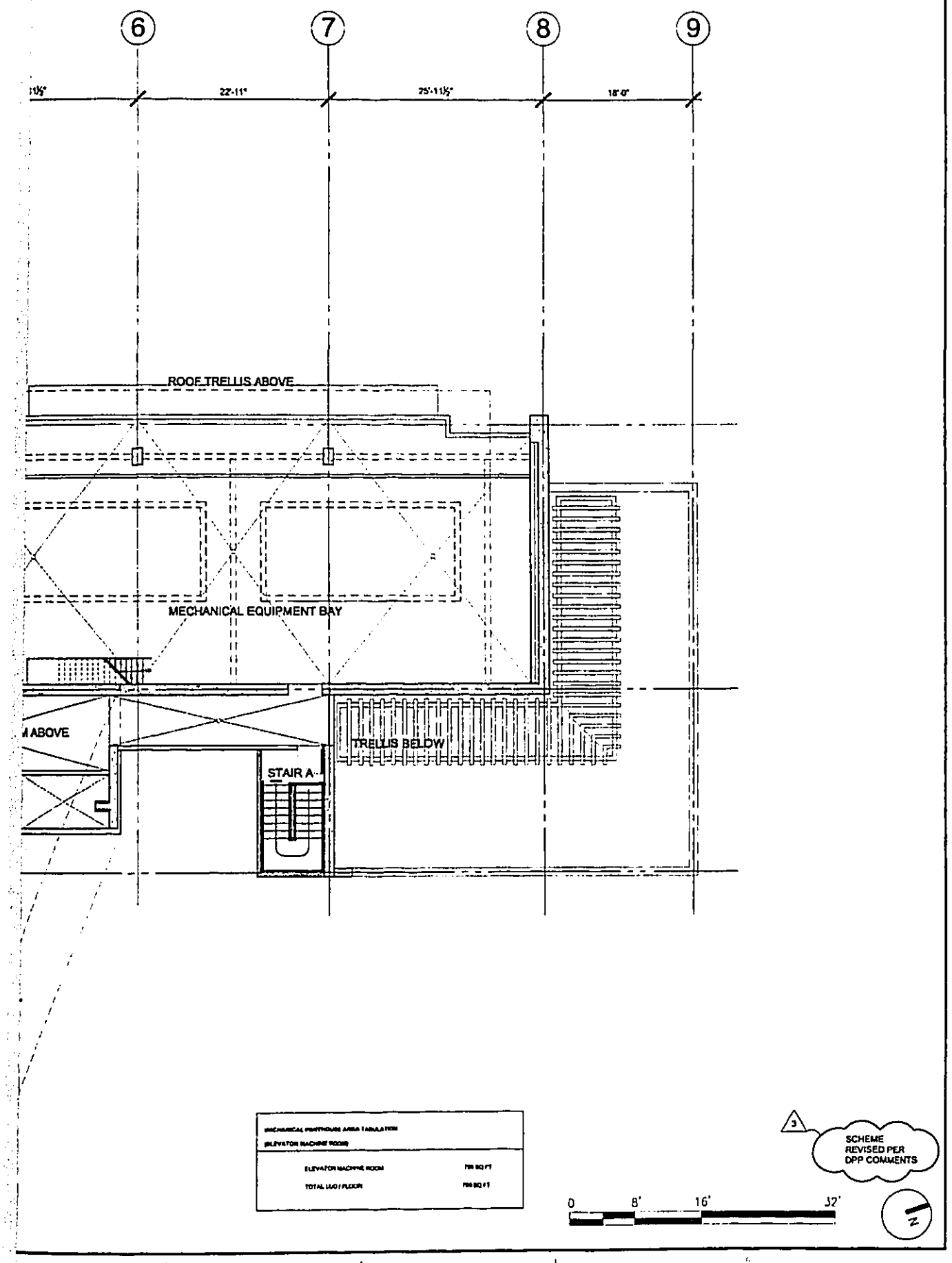


2 MECHANICAL PENTHOUSE PLAN
SCALE: 1/8" = 1'0"

1 ELEVATOR MACHINE ROOM PLAN
SCALE: 1/8" = 1'0"



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NOTE: Contractor to check and verify dimensions at job before proceeding with work.

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WSD1.16

MECHANICAL PENTHOUSE PLAN
SCALE: 1/8" = 1'-0"

19 28

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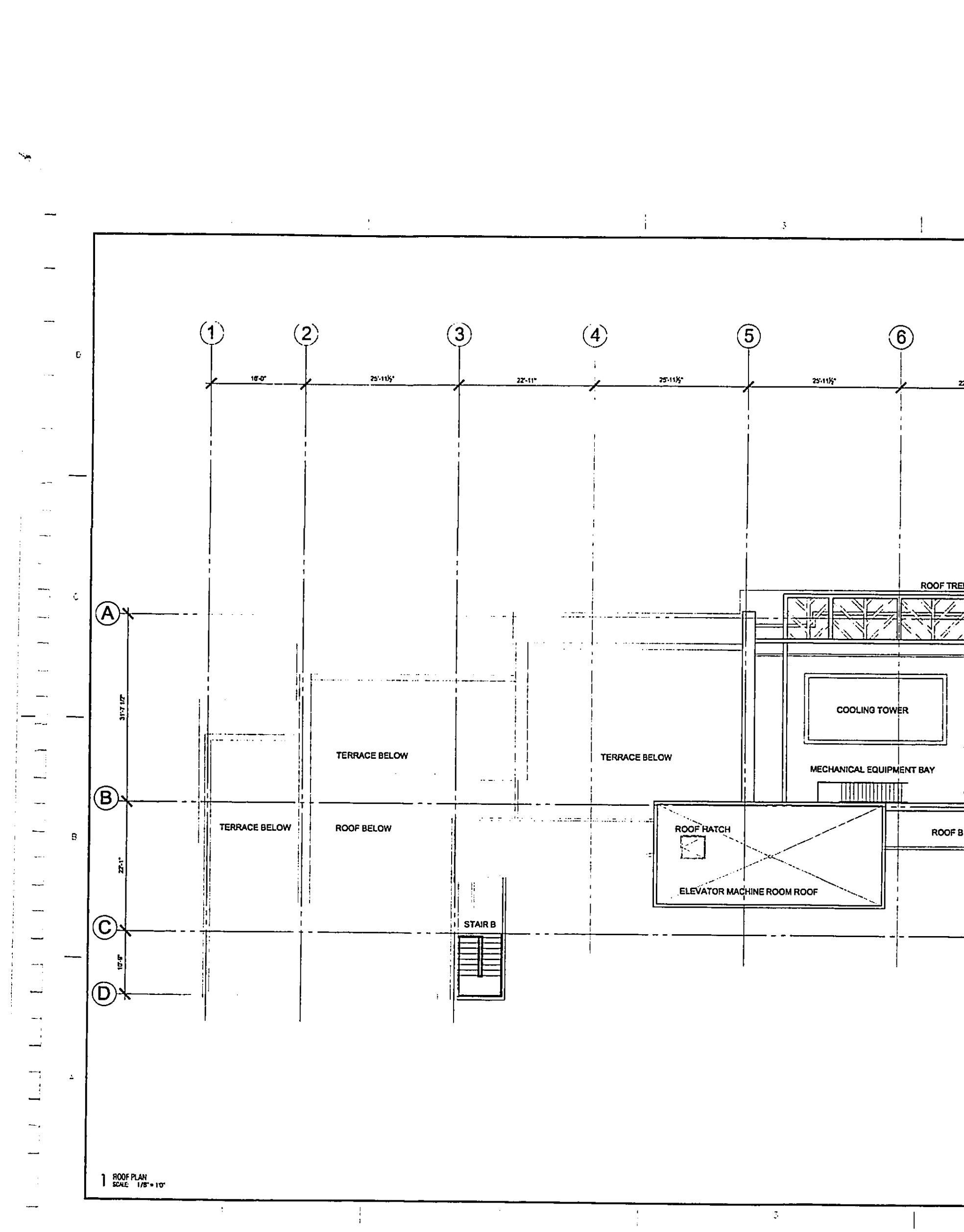
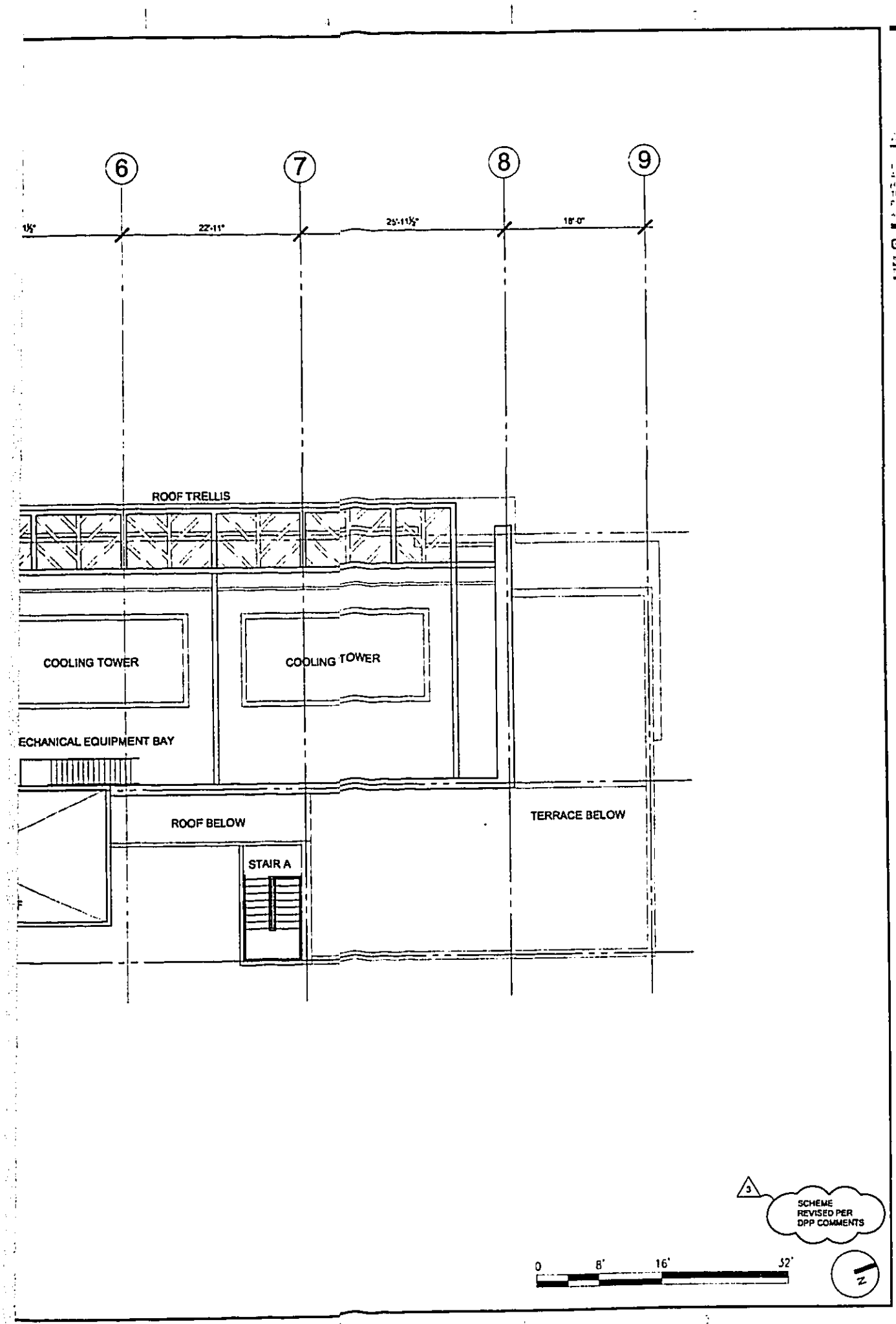


1 ROOF PLAN
SCALE: 1/8" = 1'0"



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NOTE: Contractor to check and verify dimensions at job before proceeding with work.

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1	10/22/04

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ROOF PLAN
SCALE: 1/8" = 1'-0"

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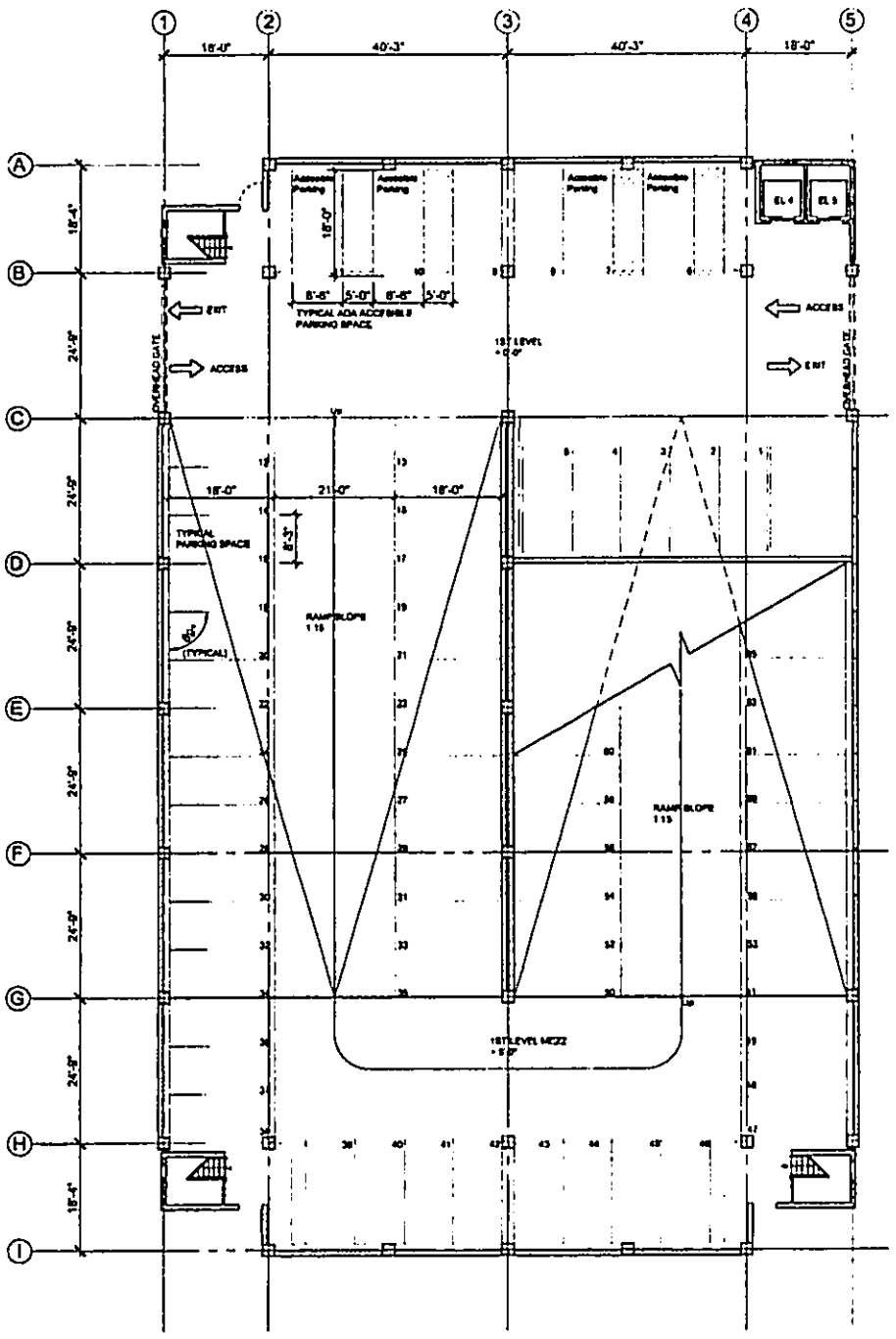
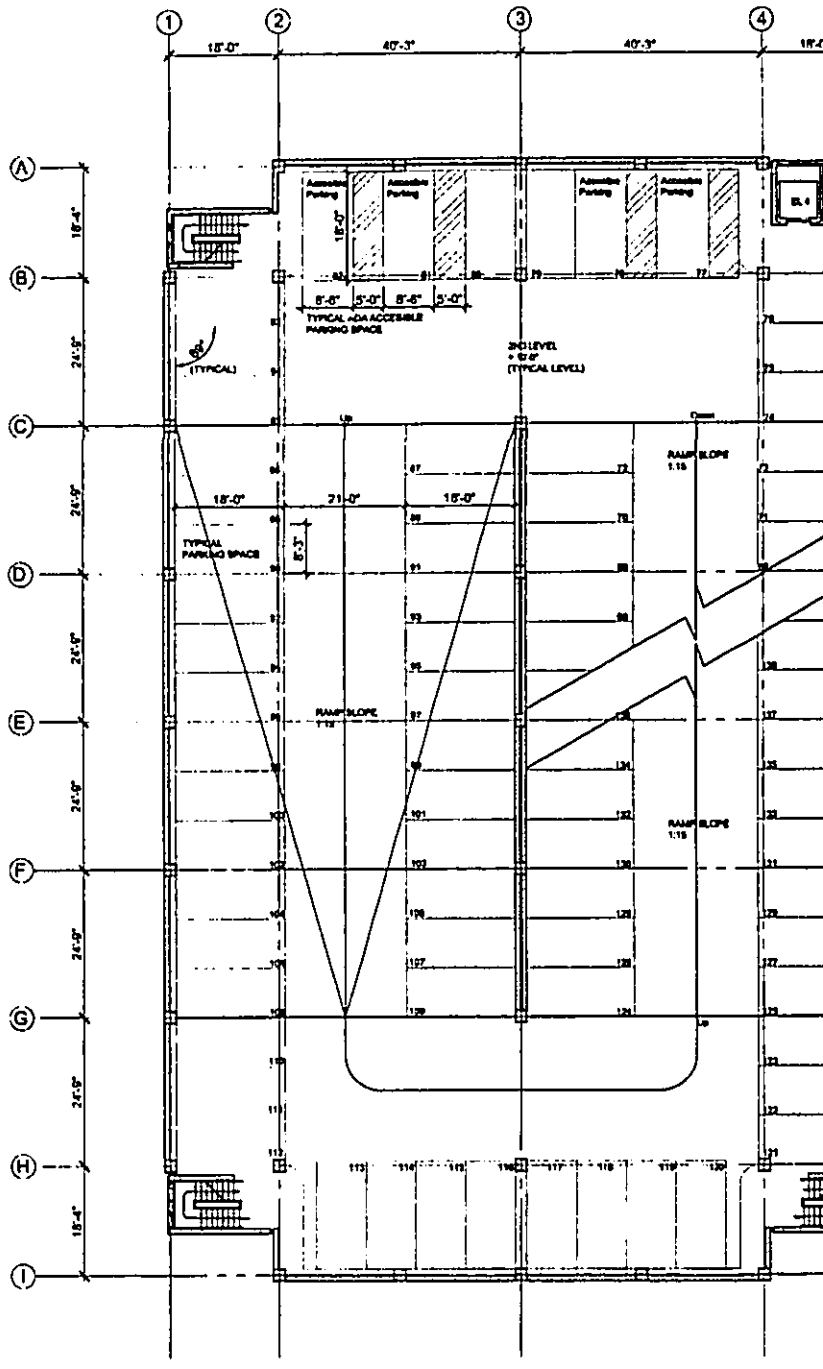
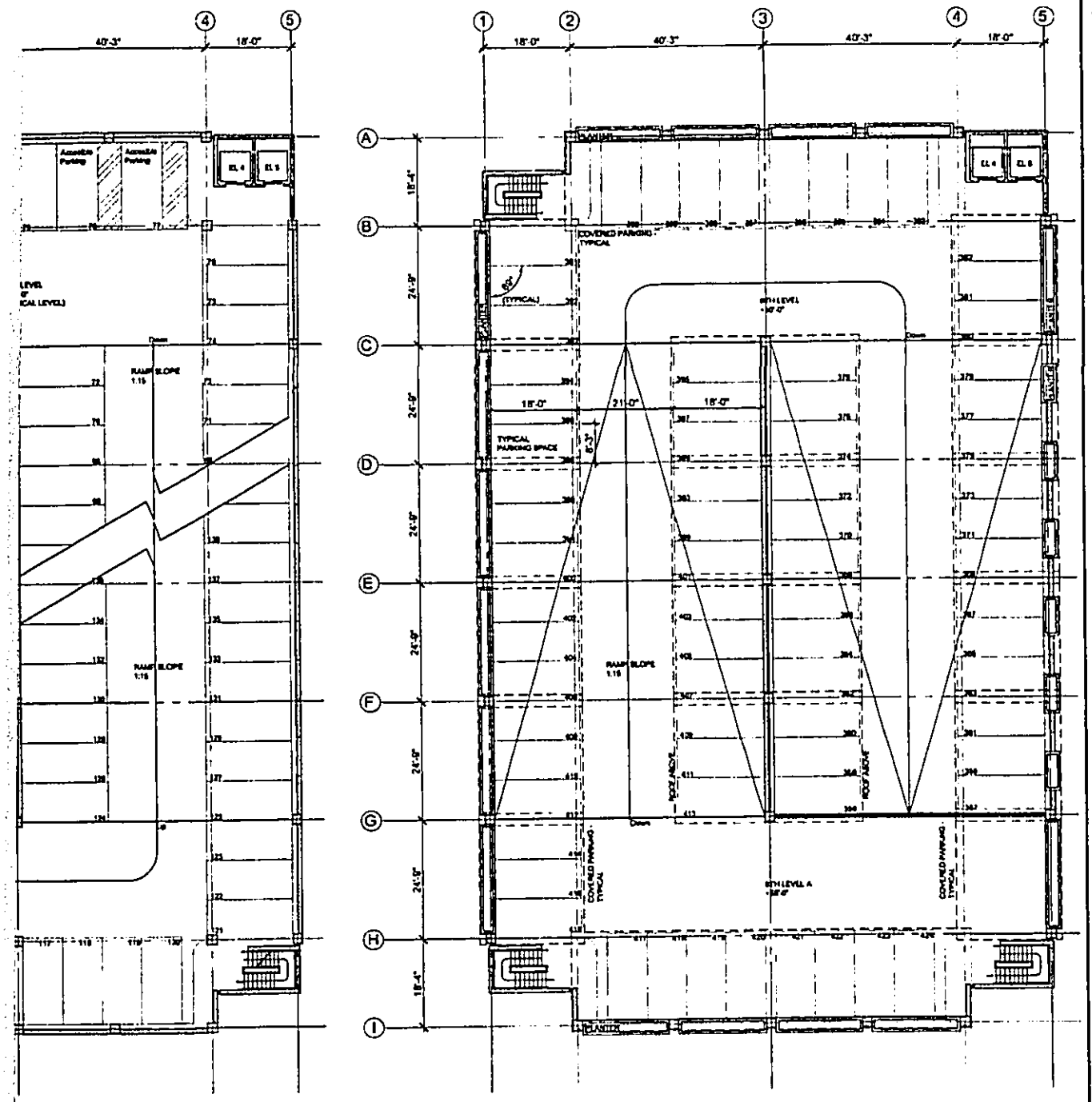


3 PARKING STRUCTURE GROUND FLOOR PLAN
SCALE: 1/16" = 1'0"



2 PARKING STRUCTURE TYPICAL FLOOR PLAN
SCALE: 1/16" = 1'0"



1 PARKING STRUCTURE ROOF PLAN
SCALE: 1/16" = 1'-0"

3 SCHEME REVISED PER DPP COMMENTS

0 16' 32' 64'

N

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ALA WAI BLVD. HONOLULU, HI

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signature expiration date of the license

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

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PROJECT NO. 5051 / 0401
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DATE 10/22/04
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WSD1.18

PARKING STRUCTURE FLOOR PLANS
SCALE: 1/16" = 1'-0"

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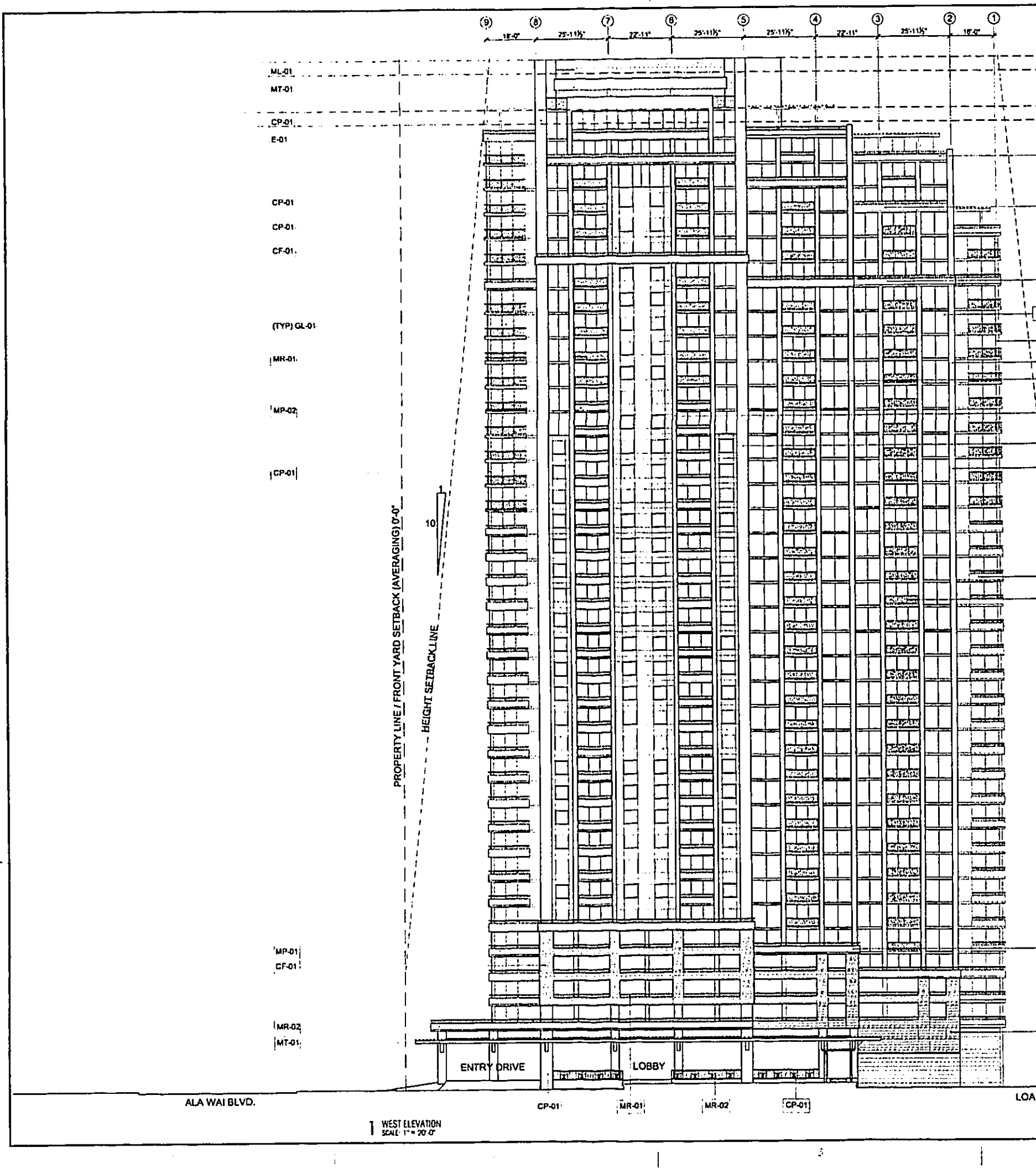
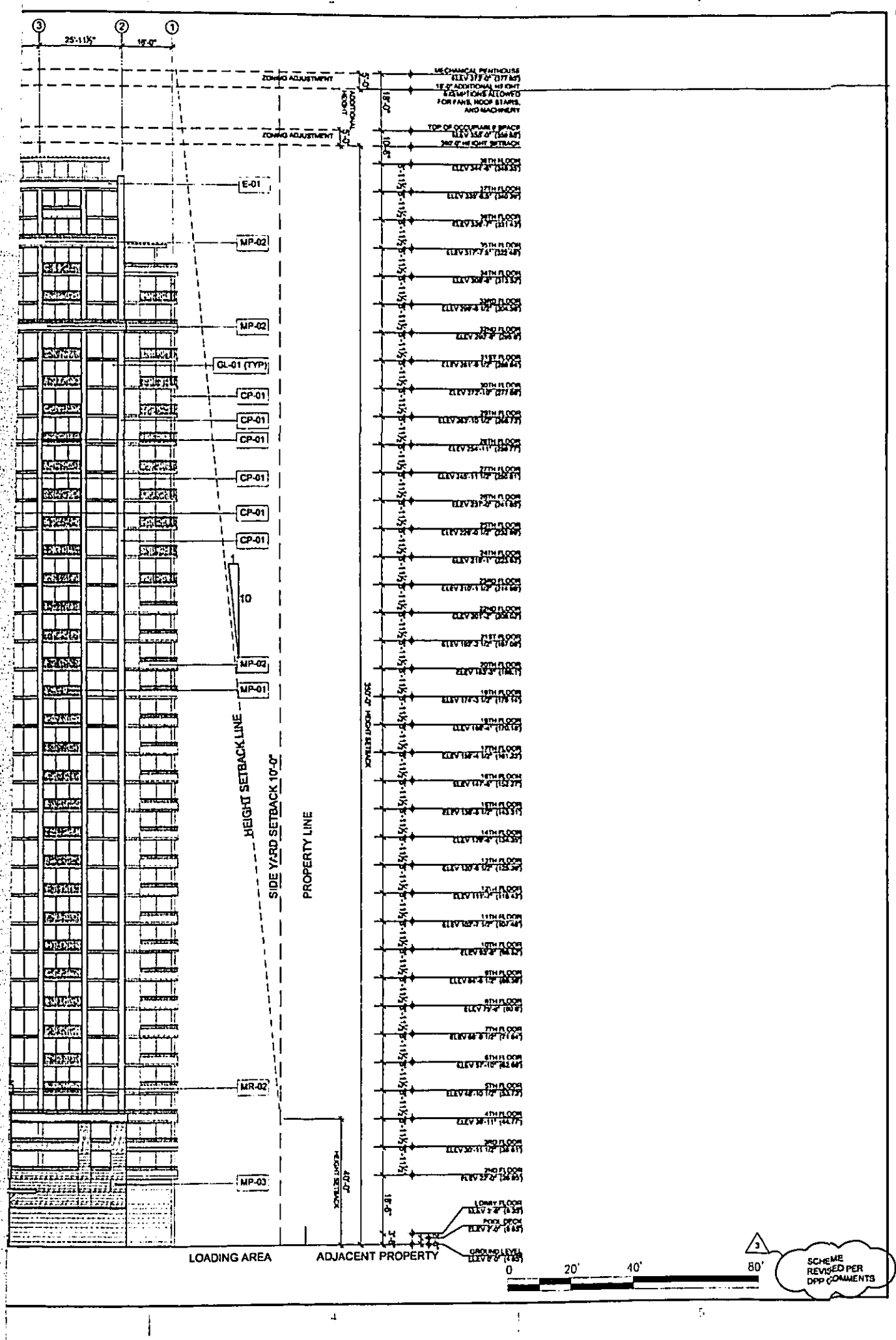


1 WEST ELEVATION
SCALE: 1" = 20'-0"



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ALA WAI BLVD. HONOLULU, HI

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signature — expiration date of this license

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

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PROJECT No. 5061 / 0401

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DATE 09/15/04

WSD2.01

WEST ELEVATION

SCALE: 1" = 20'-0"

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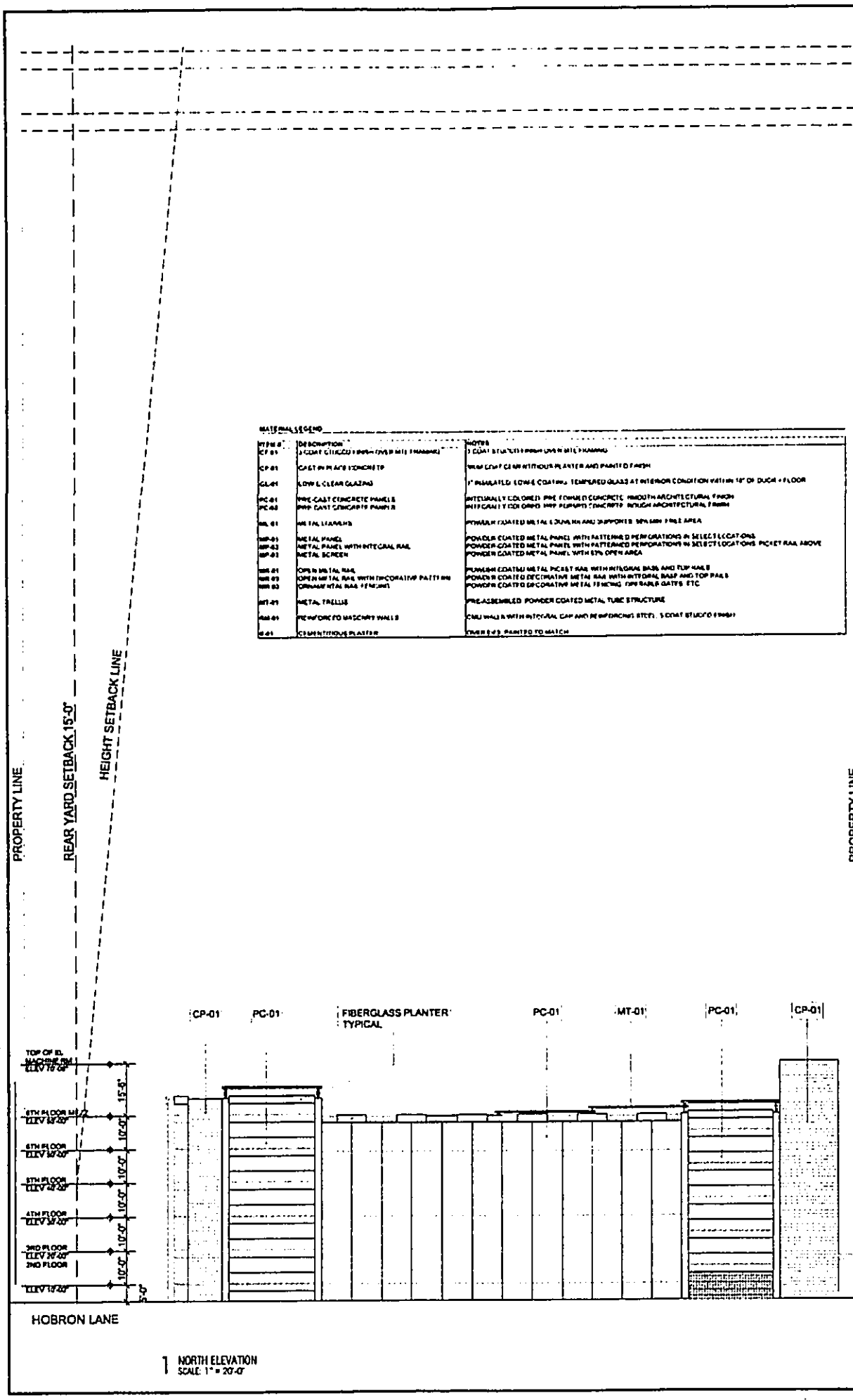
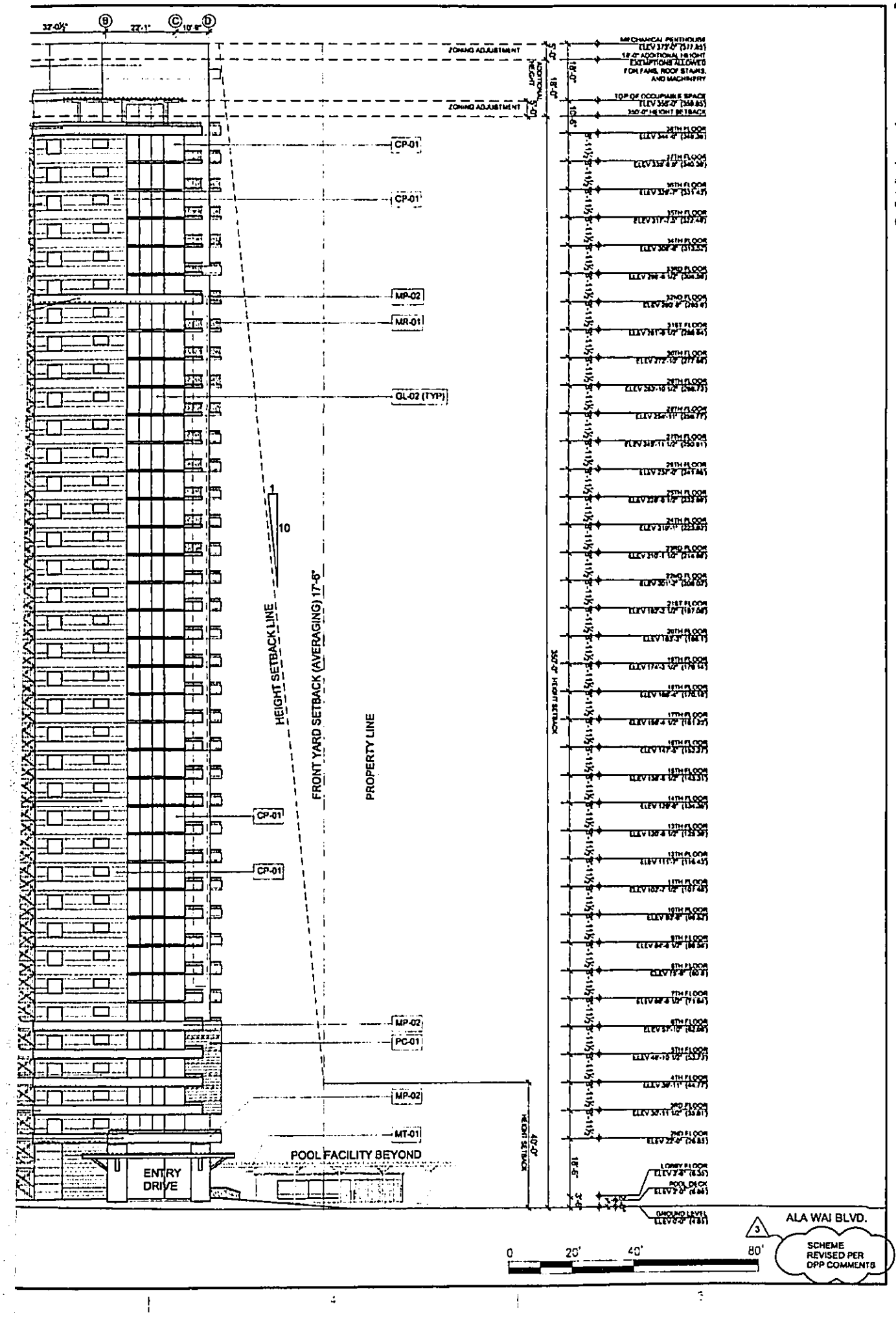
MATERIAL LEGEND

ITEM #	DESCRIPTION	NOTES
CF-01	3 COAT STUCCO FINISH OVER METAL FRAMING	3 COAT STUCCO FINISH OVER METAL FRAMING
CP-01	CAST IN PLACE CONCRETE	MEDIUM SAND FINISH WITHOUT PLASTER AND PAINTED FINISH
GL-01	LOW E CLEAR GLAZING	1" INSULATED LOW-E COATING TEMPERED GLASS AT INTERIOR CONDITION WITHIN 18" OF DOOR + FLOOR
PC-01	PRE-CAST CONCRETE PANELS	INTEGRALLY COLORED PRE FORMED CONCRETE SMOOTH ARCHITECTURAL FINISH
PC-02	PRE CAST CONCRETE PANELS	INTEGRALLY COLORED PRE FORMED CONCRETE ROUGH ARCHITECTURAL FINISH
MIL-01	METAL STANDING SEAM	POWDER COATED METAL STANDING SEAM AND SUPPORTS 30% MIN OPEN AREA
MP-01	METAL PANEL	POWDER COATED METAL PANEL WITH PATTERNED PERFORATIONS IN SELECT LOCATIONS
MP-02	METAL PANEL WITH INTEGRAL RAIL	POWDER COATED METAL PANEL WITH PATTERNED PERFORATIONS IN SELECT LOCATIONS PICKET RAIL ABOVE
MP-03	METAL SCREEN	POWDER COATED METAL PANEL WITH 63% OPEN AREA
MR-01	OPEN METAL RAIL	POWDER COATED METAL PICKET RAIL WITH INTEGRAL BASE AND TOP RAILS
MR-02	OPEN METAL RAIL WITH DECORATIVE PATTERN	POWDER COATED DECORATIVE METAL RAIL WITH INTEGRAL BASE AND TOP RAILS
MR-03	ORNAMENTAL RAIL FENCING	POWDER COATED DECORATIVE METAL FENCING PIPE RAILS GATES ETC
MT-01	METAL TRELLIS	PRE-ASSEMBLED POWDER COATED METAL TUBE STRUCTURE
RM-01	REINFORCED MASONRY WALLS	CMU WALLS WITH INTEGRAL CAP AND REINFORCING STEEL. 3 COAT STUCCO FINISH
W-01	CEMENTITIOUS PLASTER	FINISH #3, PAINTED TO MATCH



1 NORTH ELEVATION
SCALE: 1" = 20'-0"



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ALA WAI BLVD. HONOLULU, HI

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signature — expiration date of the license

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

3	11/15/04
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1	10/22/04

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DATE: 09/15/04
DRAWING NO:

WSD2.02

NORTH ELEVATION
SCALE: 1" = 20'-0"

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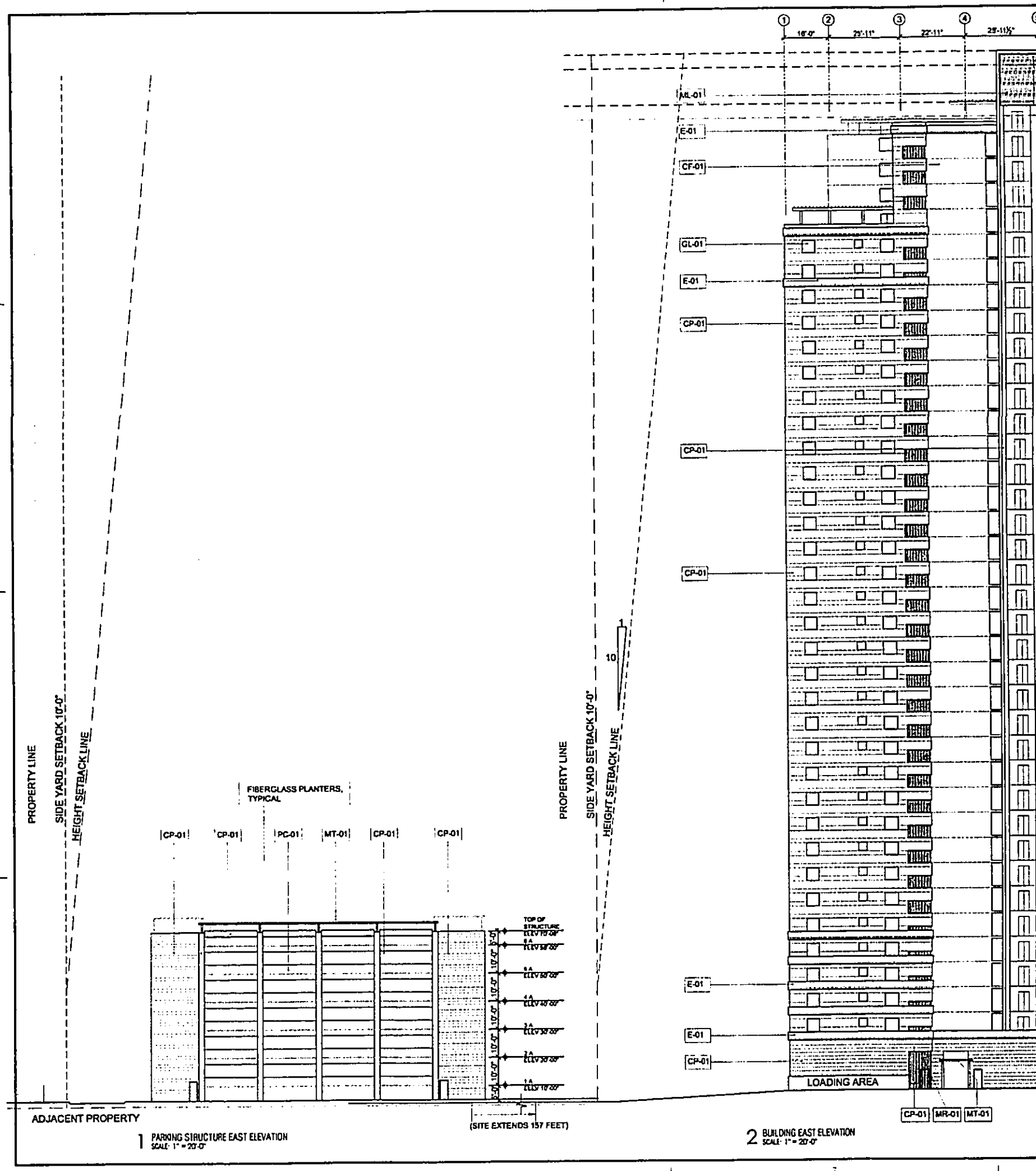
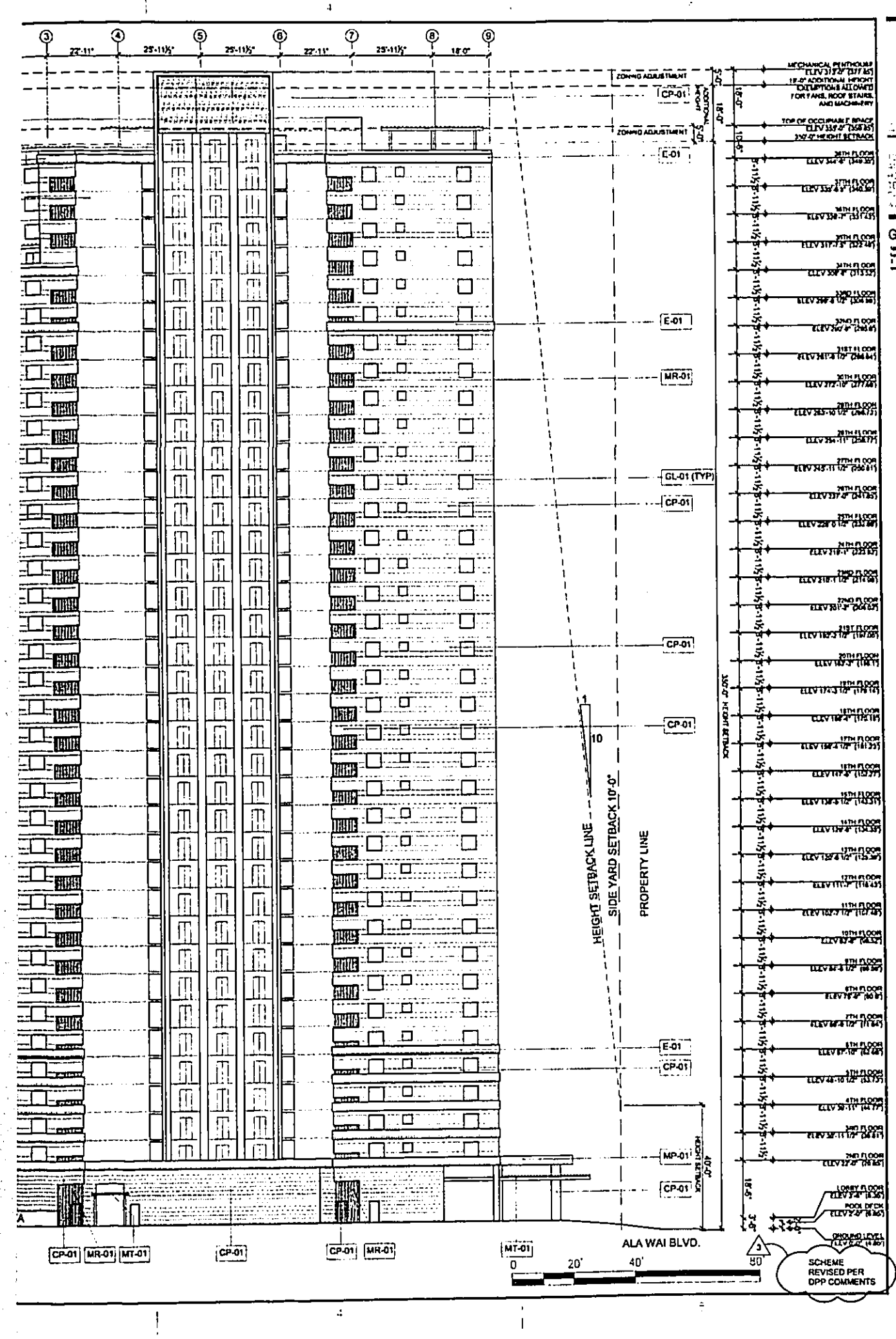

PROPERTY LINE
SIDE YARD SETBACK 10'-0"
HEIGHT SETBACK LINE
FIBERGLASS PLANTERS, TYPICAL
CP-01
CP-01
PC-01
MT-01
CP-01
CP-01
TOP OF STRUCTURE
ELEV 70'-0"
9 A
ELEV 60'-00"
9 A
ELEV 50'-00"
4 A
ELEV 40'-00"
3 A
ELEV 30'-00"
2 A
ELEV 20'-00"
1 A
ELEV 10'-00"
10'-0"
10'-0"
10'-0"
10'-0"
10'-0"
10'-0"
ADJACENT PROPERTY
(SITE EXTENDS 157 FEET)
1 PARKING STRUCTURE EAST ELEVATION
SCALE: 1" = 20'-0"
PROPERTY LINE
SIDE YARD SETBACK 10'-0"
HEIGHT SETBACK LINE
1
10
1
2
3
4
16'-0"
25'-11"
22'-11"
25'-11½"
ML-01
E-01
CF-01
GL-01
E-01
CP-01
CP-01
CP-01
E-01
E-01
CP-01
LOADING AREA
CP-01
MR-01
MT-01
2 BUILDING EAST ELEVATION
SCALE: 1" = 20'-0"



G2 ARCHITECTURE, P.C.

ALA WAI GATEWAY
ALA WAI BLVD. HONOLULU, HI

11/15/04
10/29/04
10/22/04

5061 / 0401

09/15/04

WSD2.03
EAST ELEVATIONS
SCALE: 1" = 20'-0"

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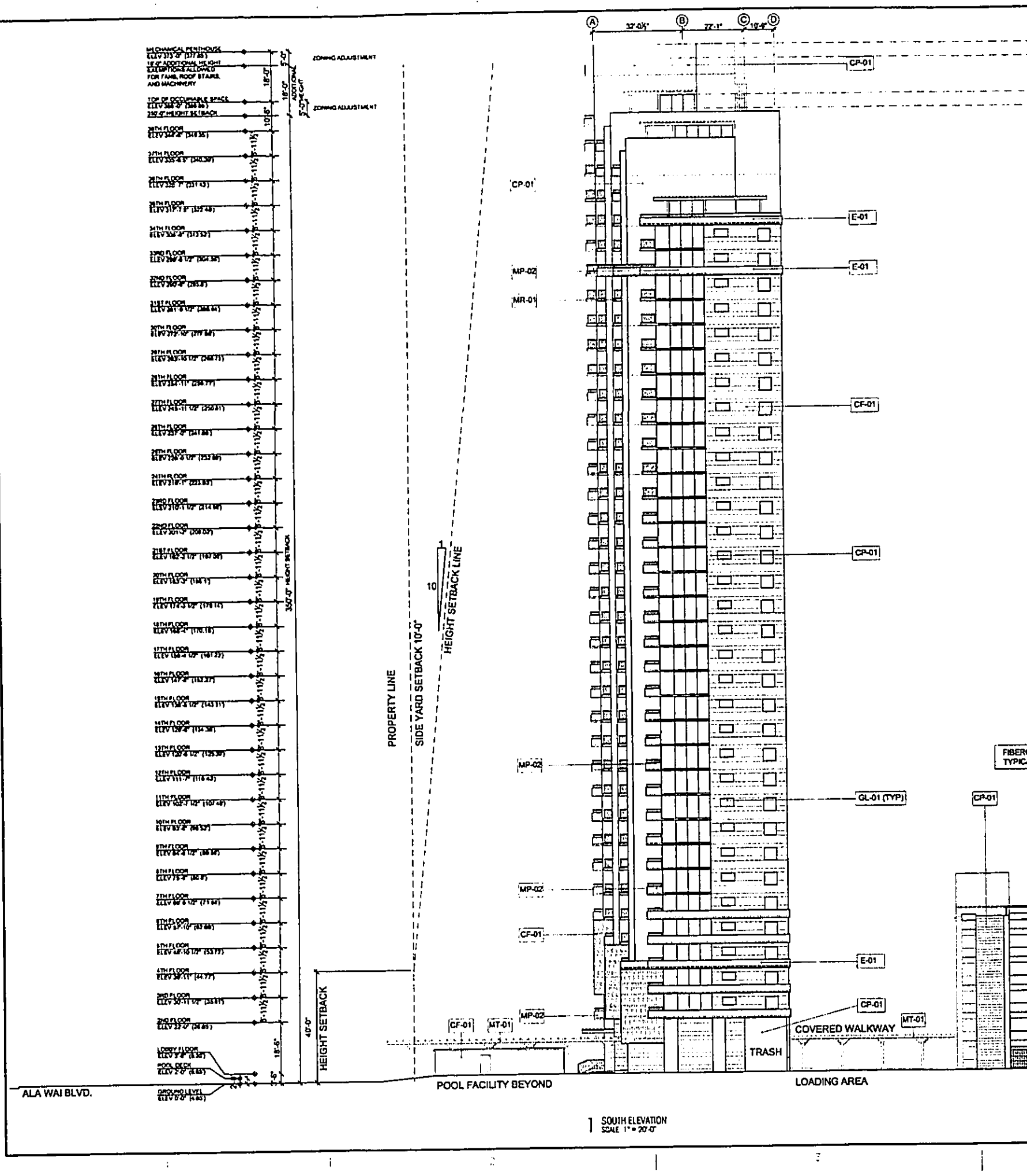
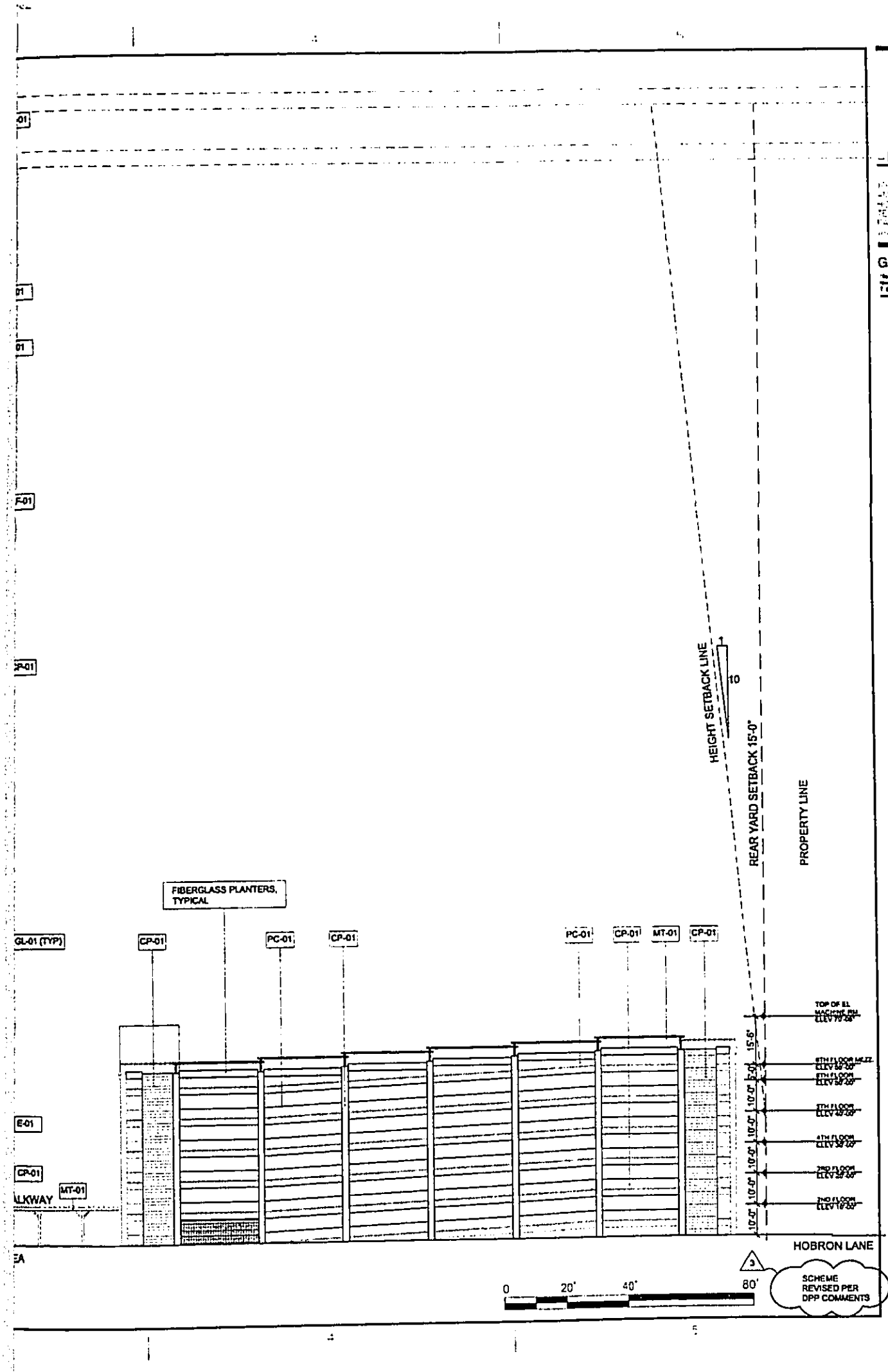

MECHANICAL PENTHOUSE
ELEV 373'-0" (377.88')
18' OF ADDITIONAL HEIGHT EXEMPTIONS ALLOWED FOR FANS, ROOF STAIRS, AND MACHINERY
18'-0"
5'-0"
ZONING ADJUSTMENT
TOP OF OCCUPIABLE SPACE
ELEV 358'-0" (368.88')
350'-0" HEIGHT SETBACK
10'-0"
18'-0" ADDITIONAL
5'-0"x4 CUT
ZONING ADJUSTMENT
38TH FLOOR
ELEV 349'-6" (349.88')
37TH FLOOR
ELEV 339'-6 1/2" (340.38')
36TH FLOOR
ELEV 329'-1" (331.63')
35TH FLOOR
ELEV 317'-7 1/2" (322.48')
34TH FLOOR
ELEV 308'-6" (313.32')
33RD FLOOR
ELEV 298'-6 1/2" (304.38')
32ND FLOOR
ELEV 288'-6" (295.8')
31ST FLOOR
ELEV 281'-9 1/2" (288.64')
30TH FLOOR
ELEV 272'-10" (279.64')
29TH FLOOR
ELEV 262'-10 1/2" (269.71')
28TH FLOOR
ELEV 252'-11" (259.71')
27TH FLOOR
ELEV 243'-11 1/2" (250.81')
26TH FLOOR
ELEV 233'-0" (241.88')
25TH FLOOR
ELEV 223'-6 1/2" (232.98')
24TH FLOOR
ELEV 213'-1" (223.83')
23RD FLOOR
ELEV 203'-11 1/2" (214.98')
22ND FLOOR
ELEV 193'-1" (204.03')
21ST FLOOR
ELEV 182'-3 1/2" (193.38')
20TH FLOOR
ELEV 172'-3" (183.11')
19TH FLOOR
ELEV 162'-3 1/2" (173.15')
18TH FLOOR
ELEV 152'-4" (163.18')
17TH FLOOR
ELEV 142'-4 1/2" (153.27')
16TH FLOOR
ELEV 132'-4" (143.23')
15TH FLOOR
ELEV 122'-6 1/2" (133.31')
14TH FLOOR
ELEV 112'-6" (124.38')
13TH FLOOR
ELEV 102'-6 1/2" (115.39')
12TH FLOOR
ELEV 93'-7" (106.43')
11TH FLOOR
ELEV 83'-7 1/2" (97.48')
10TH FLOOR
ELEV 73'-8" (88.53')
9TH FLOOR
ELEV 64'-8 1/2" (79.58')
8TH FLOOR
ELEV 54'-9" (70.63')
7TH FLOOR
ELEV 45'-9 1/2" (61.64')
6TH FLOOR
ELEV 35'-10" (52.68')
5TH FLOOR
ELEV 26'-10 1/2" (43.73')
4TH FLOOR
ELEV 16'-11" (34.77')
3RD FLOOR
ELEV 6'-11 1/2" (25.81')
2ND FLOOR
ELEV 0'-0" (18.85')
LOBBY FLOOR
ELEV 0'-0" (8.85')
POOL DECK
ELEV 2'-0" (8.85')
GROUND LEVEL
ELEV 0'-0" (4.85')
18'-6"
5'
40'-0"
HEIGHT SETBACK
ALA WAI BLVD.
PROPERTY LINE
SIDE YARD SETBACK 10'-0"
HEIGHT SETBACK LINE
10
CF-01
MT-01
MP-02
POOL FACILITY BEYOND
A
B
C
D
33'-0½"
27'-1"
10'-6"
CP-01
E-01
E-01
CF-01
CP-01
MP-02
MR-01
MP-02
GL-01 (TYP)
CP-01
MP-02
CF-01
E-01
MP-02
CP-01
MT-01
COVERED WALKWAY
TRASH
LOADING AREA
SOUTH ELEVATION
SCALE: 1" = 20'-0"



IHI

G2 ARCHITECTURE, P.C.

ALA WAI GATEWAY
ALA WAI BLVD. HONOLULU, HI

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signature expiration date of the license

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1	10/22/04

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DATE: 09/15/04
DRAWING NO:

WSD2.04

SOUTH ELEVATION
SCALE: 1" = 20'-0"

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OPEN STORAGE

97'-1½"

UNIT 1 | UNIT 2 | UNIT 3 | UNIT 4 | UNIT 5 | UNIT 6

29'-6"

ACCESS ACCESS ACCESS

BUILDING 1

LUO = 2,850 SQ. FT.

VEHICLE CIRCULATION TO PARKING AREA

OPEN STORAGE

UNIT 1

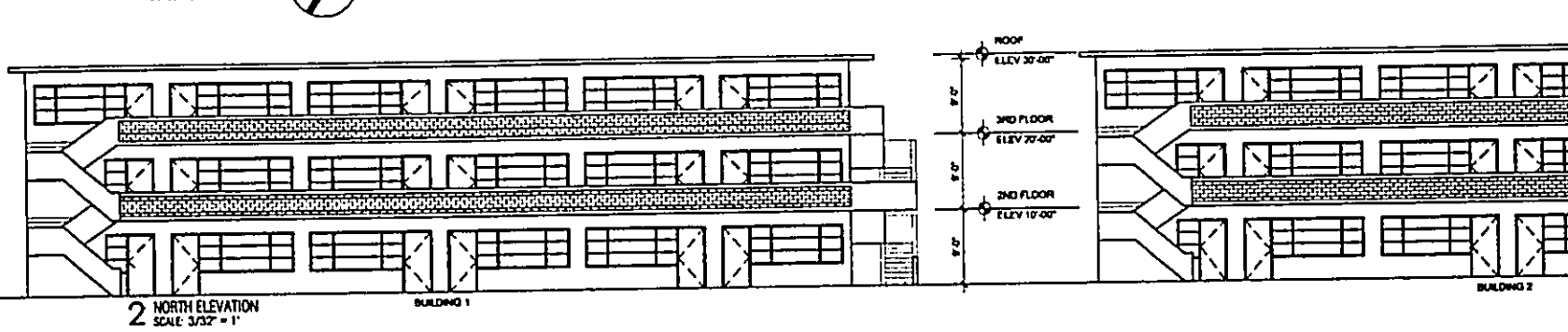
ACCESS

29'-6"

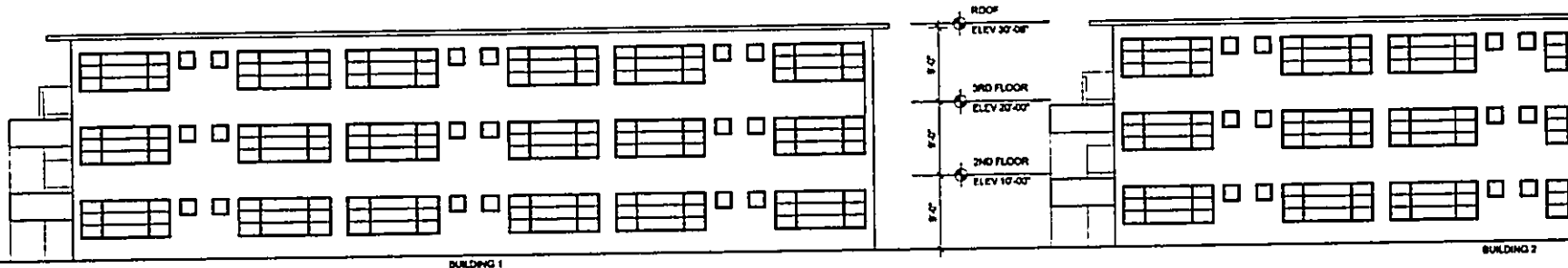
8'-6" 18'-0" 8'-6" 18'-0"

13 12 11 10 9

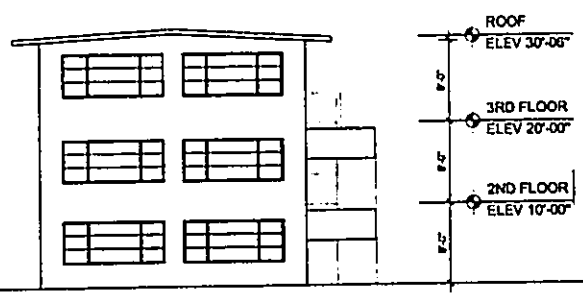
1 GROUND FLOOR PLAN
SCALE: 1/8" = 1'-0"



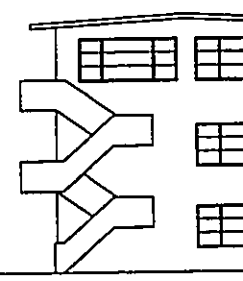
2 NORTH ELEVATION
SCALE: 3/32" = 1'



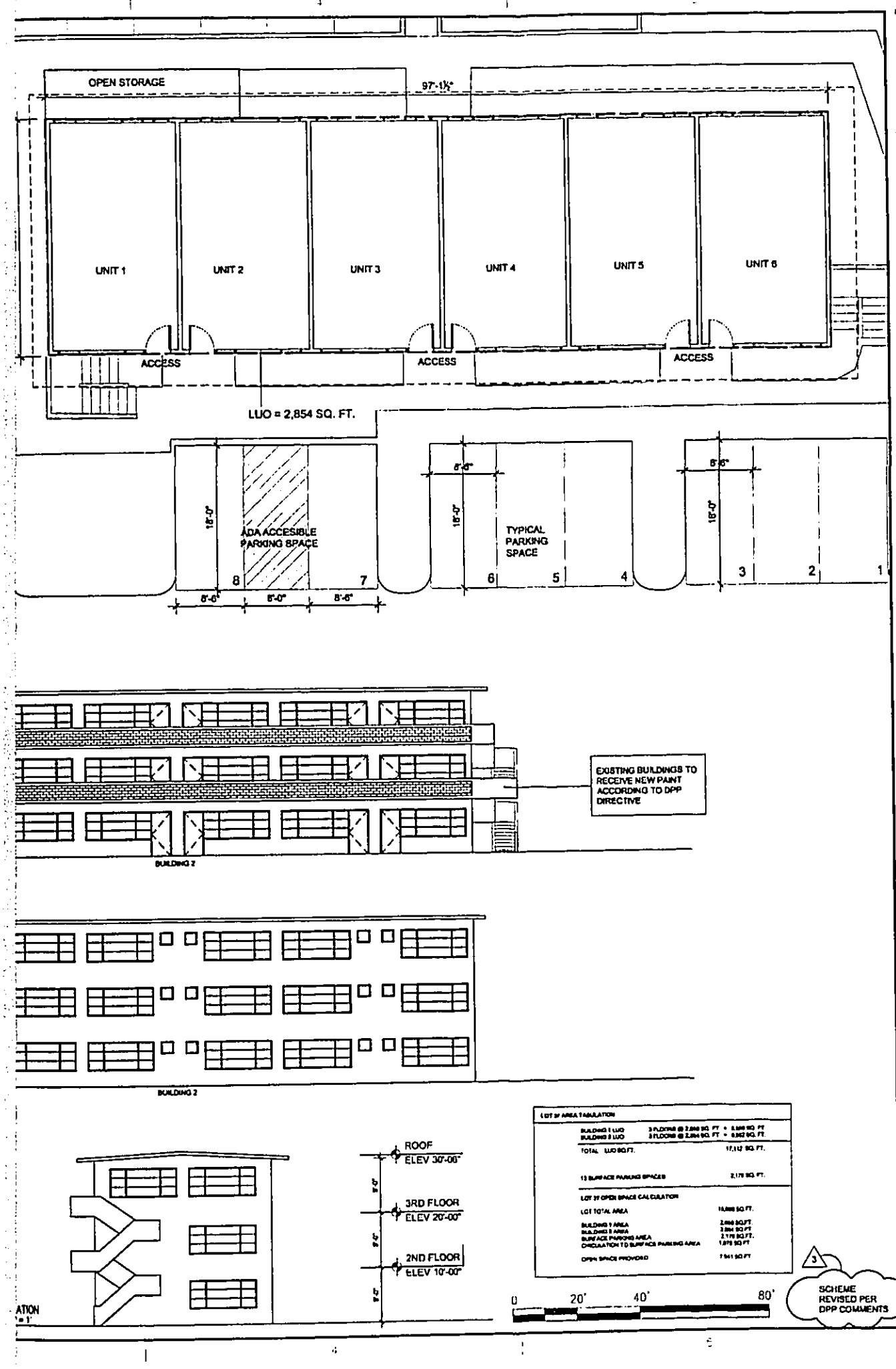
3 SOUTH ELEVATION
SCALE: 3/32" = 1'



4 EAST ELEVATION
SCALE: 3/32" = 1'



5 WEST ELEVATION
SCALE: 3/32" = 1'



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ALA WAI GATEWAY
ALA WAI BLVD. HONOLULU, HI

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LOT 37 TYPICAL PLAN & ELEVATIONS
SCALE: 1" = 20'-0"

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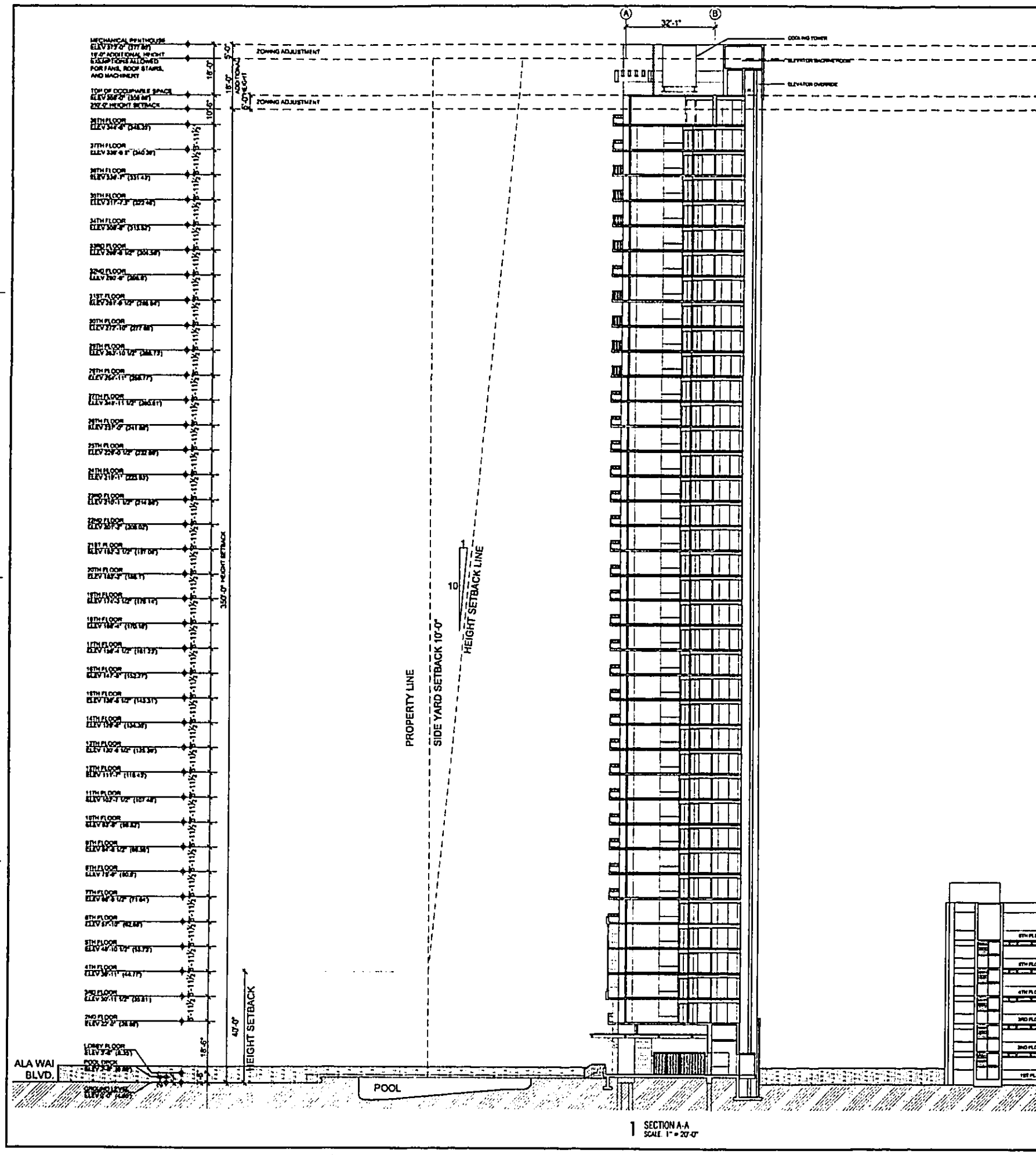
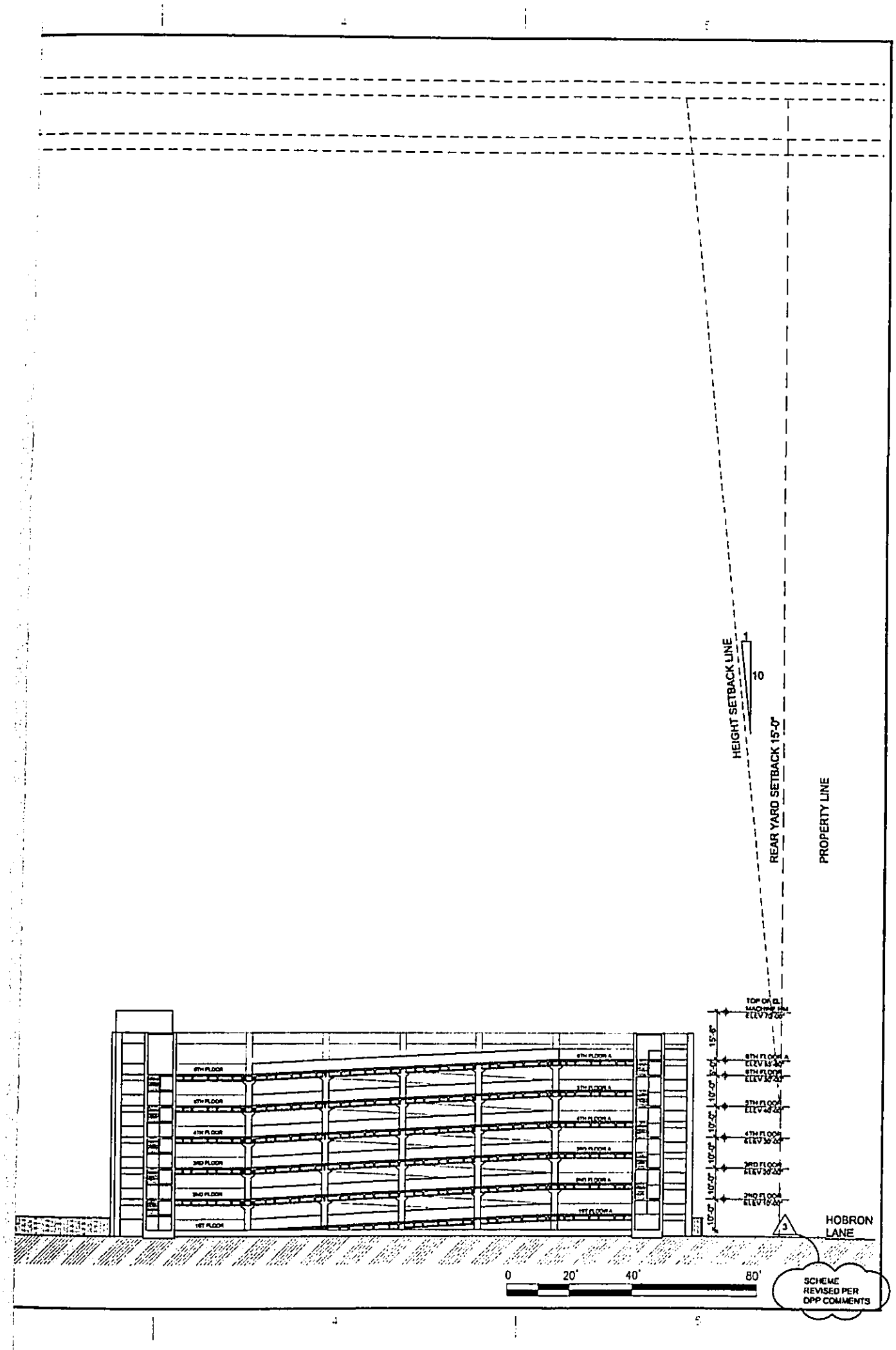


1 SECTION A-A
SCALE: 1" = 20'-0"



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ALA WAI GATEWAY
ALA WAI BLVD. HONOLULU, HI

3	11/15/04
2	10/29/04
1	10/22/04

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WSD2.06

TRANSVERSAL SECTION A-A
SCALE: 1" = 20'-0"

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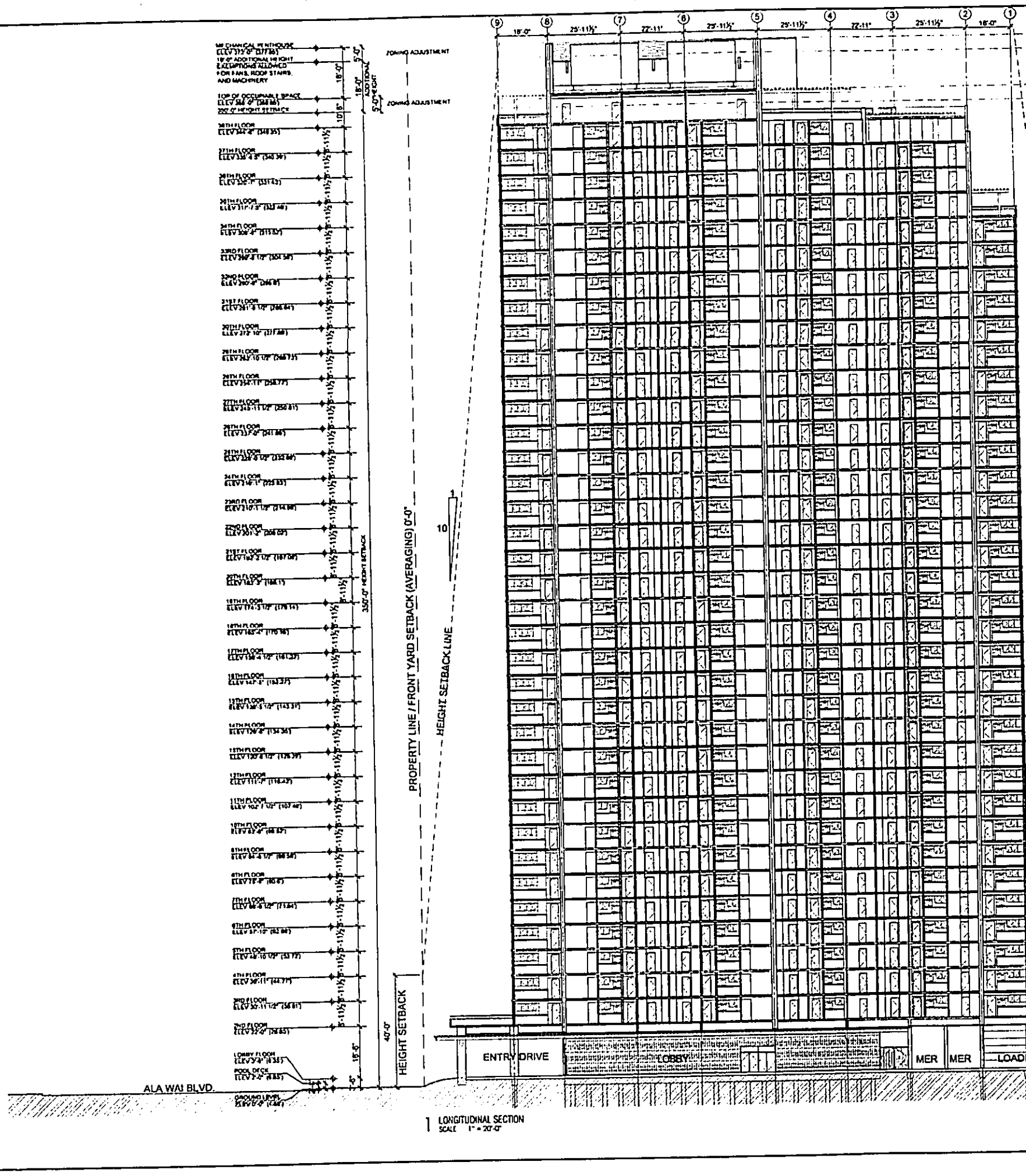
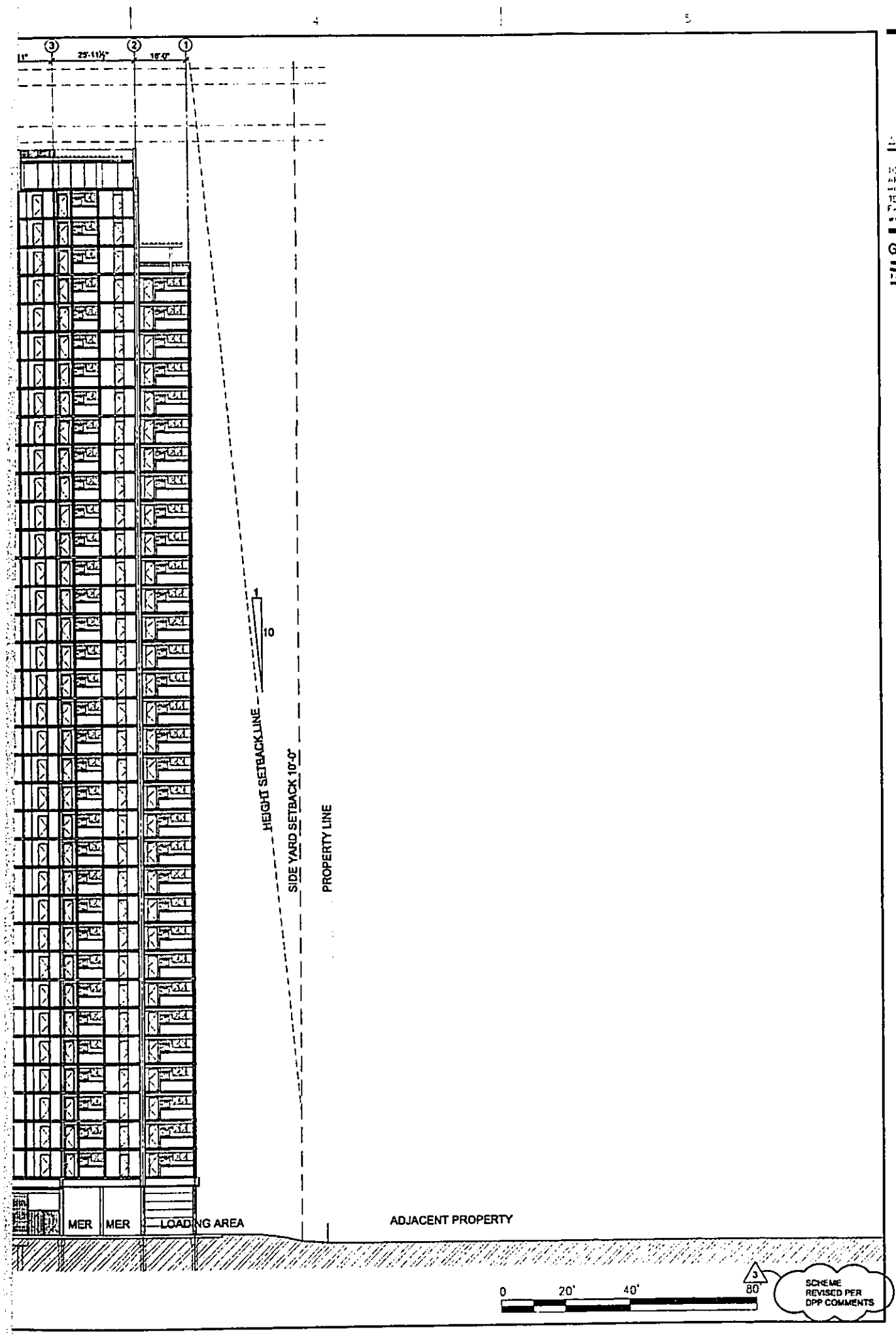


1 LONGITUDINAL SECTION
SCALE 1" = 20'-0"



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3	11/15/04
2	10/29/04
1	10/22/04

PROJECT NO. 5061 / 0401
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DRAWING NO.

WSD2.07

LONGITUDINAL SECTION
SCALE: 1" = 20'-0"

26 of 28 Sheets

NAME: ah2234.dwg DATE: NOV 10, 2003

1 2 3

A L A W A I C A N A L

A L A W A I B O U L E V A R D

NEW SMH
TOP=4.00

NEW SMH
TOP=4.00

4.00

4.50

4.50

5.00

6.00

5.20

NEW SPA
WS ELEV=5.00

6.50

L O T 2

L O T 1

D

C

B

A

GRAPHIC SCALE:

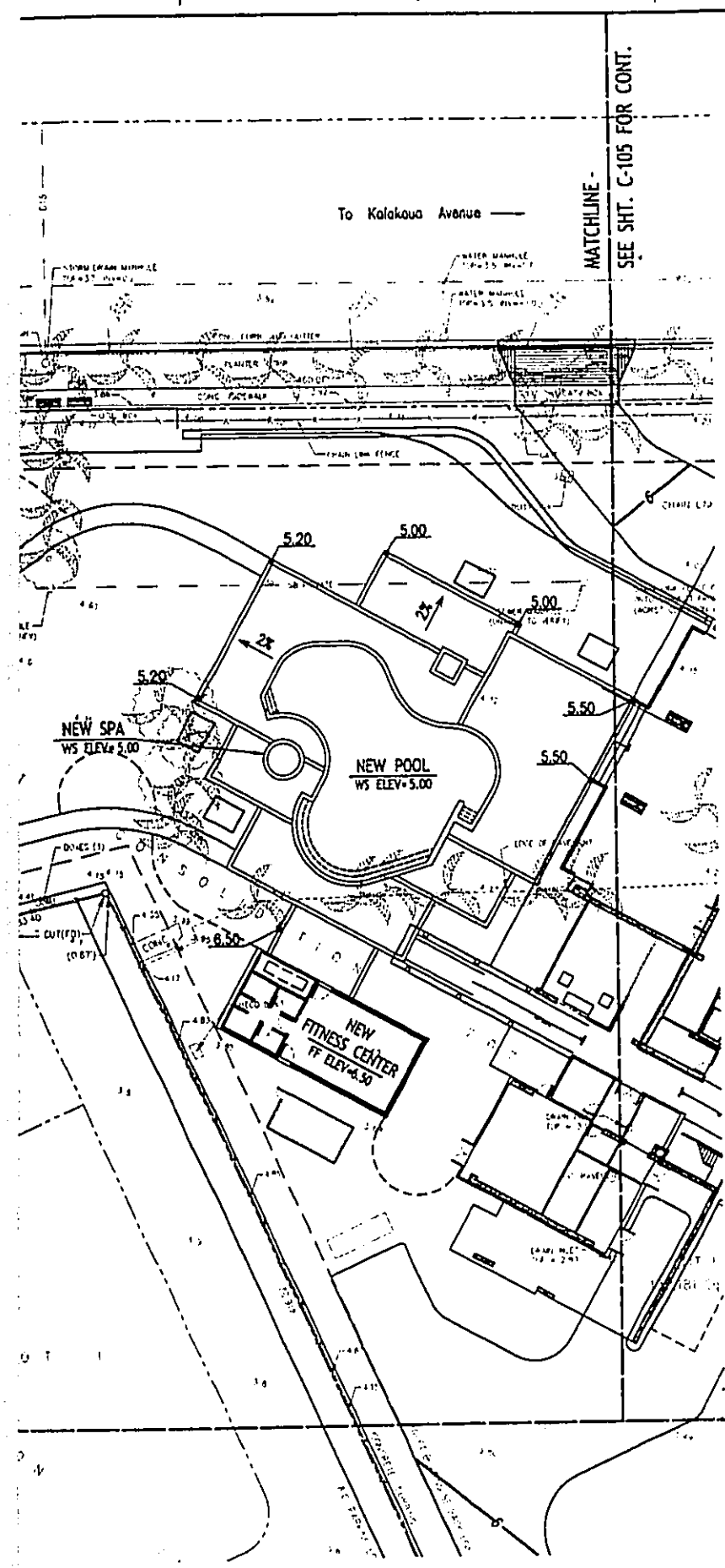
20' 10' 0 20' 40'

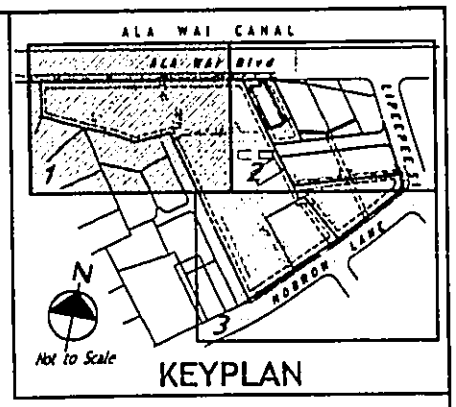
SCALE: 1" = 20'

SITE GRADING PLAN 1

SCALE: 1" = 20'

1 2 3





True North
Scale: 1 in. = 20 ft.

LEGEND

16	EXISTING CONTOUR
10.58?	EXIST. SPOT ELEVATION
22	FINISHED CONTOUR
10.50	FINISHED SPOT ELEVATION
TC	TOP OF CURB
BC	BOTTOM OF CURB
TW	TOP OF WALL
BW	BOTTOM OF WALL
HP	HIGH POINT
	NEW MANHOLE
	NEW DRAIN INLET
	DRAINAGE FLOW DIRECTION
	LIMITS OF GRADING
	CRM RETAINING WALL
	CONCRETE WALL

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ALA WAI GATEWAY
ALA WAI BLVD.
HONOLULU, HI

SITE GRADING PLAN

SCALE: AS NOTED

MICHAEL M. FUJITA LICENSED PROFESSIONAL ENGINEER NO. 6909-C HAWAII, U.S.A.

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Michael M. Fujita April 2005
signature expiration date of the license

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DATE:	NOV. 15, 2004
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C-104

of Sheets

NAME: ah72234.dwg DATE: NOV 10, 2003

ALA WAI CANAL

ALA WAI BOULEVARD

MATCHLINE
SEE SHT. C-104 FOR CONT.

20' - 5% MAX SLOPE

20' - 5% MAX SLOPE

5% MAX SLOPE

5% MAX SLOPE

8.35

NEW BUILDING TF=8.35

NEW SMH TOP=

6.50 TW
3.60 BW

NEW RETAINING WALL

LOT 8 (VARIOUS OWNERS)
7,654 Sq Ft

6.50 TC
6.00 BC

6.50

6.50 TW
3.40 BW

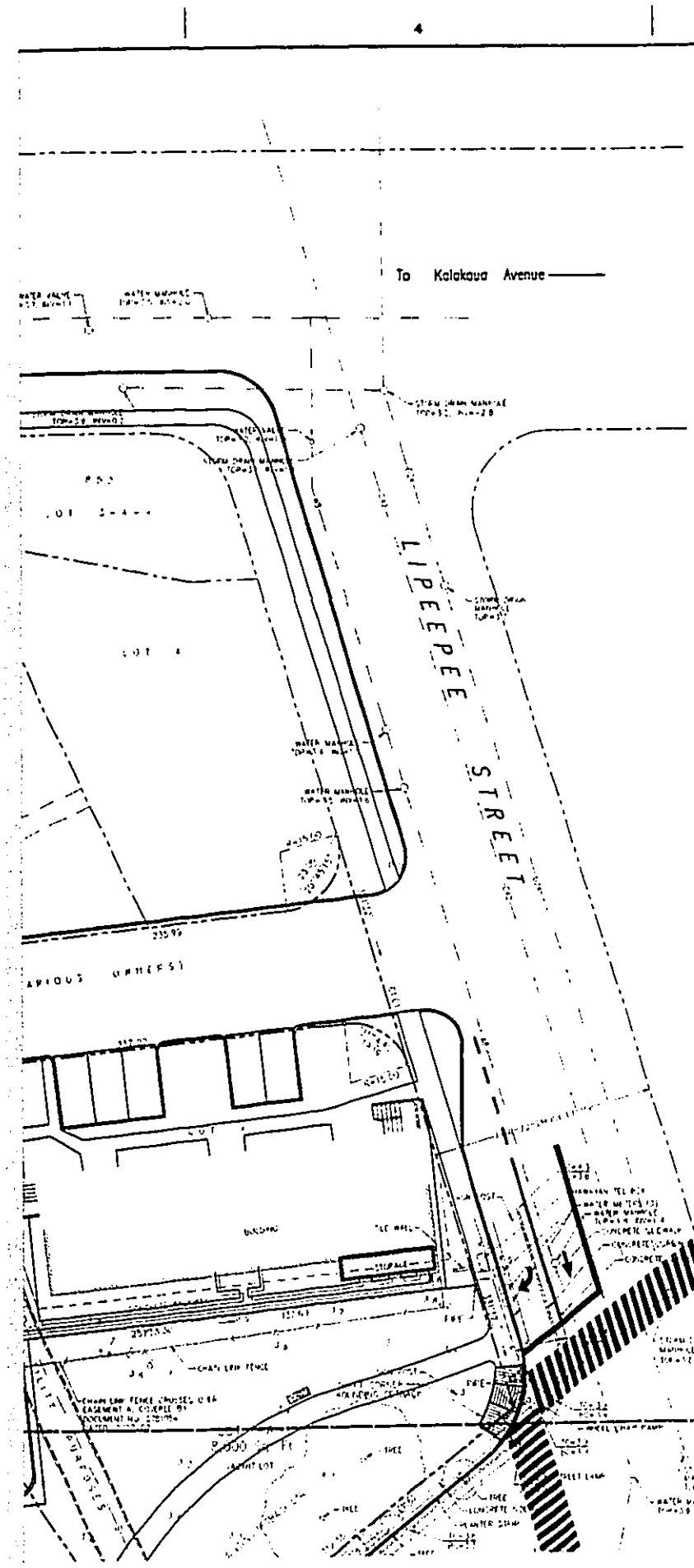
7.00 TC
6.50 BC

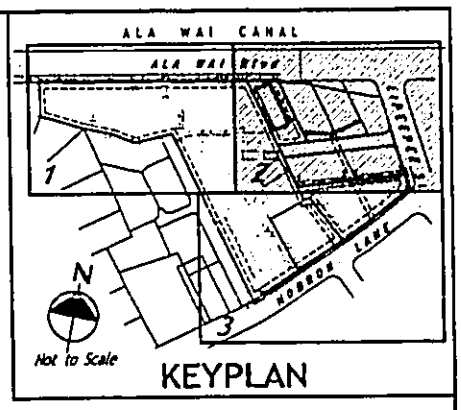
MATCHLINE
SEE SHT. C-106 FOR CONT.

GRAPHIC SCALE:
20' 10' 0 20' 40'
SCALE: 1" = 20'

SITE GRADING PLAN 2

SCALE: 1" = 20'





True North
Scale: 1 in. = 20 ft

LEGEND

——— 6 ———	EXISTING CONTOUR
10.68'	EXIST. SPOT ELEVATION
——— 22 ———	FINISHED CONTOUR
10.50	FINISHED SPOT ELEVATION
TC	TOP OF CURB
BC	BOTTOM OF CURB
TW	TOP OF WALL
BW	BOTTOM OF WALL
HP	HIGH POINT
◎	NEW MANHOLE
⊟	NEW DRAIN INLET
~~	DRAINAGE FLOW DIRECTION
— — — —	LIMITS OF GRADING
▬▬▬	CRM RETAINING WALL
═══	CONCRETE WALL

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ALA WAI GATEWAY
ALA WAI BLVD.
HONOLULU, HI

SITE GRADING PLAN

SCALE: AS NOTED

MICHAEL M. FUJITA
LICENSED PROFESSIONAL ENGINEER
NO. 8808-C
HAWAII, U.S.A.

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Michael M. Fujita
signature — expiration date of the license

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C-105

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MATCHLINE
SEE SHT. C-105 FOR CONT.

7.00 TC
6.50 BC

NEW PARKING STRUCTURE
FF = 8.50

NEW SMH
TOP=

4.50 TC
4.00 BC

5.00 TC
4.50 BC

2% SLOPE

NEW SMH
TOP=

20' MIN. 5% MAX. SLOPE

HOBRON

KAIOO DRIVE

NEW SMH
TOP=

TEMP. BENCH MARK

"Y" CUT ON TOP CURB
"HOBRON 1"
ELEV = 3.49 MSL

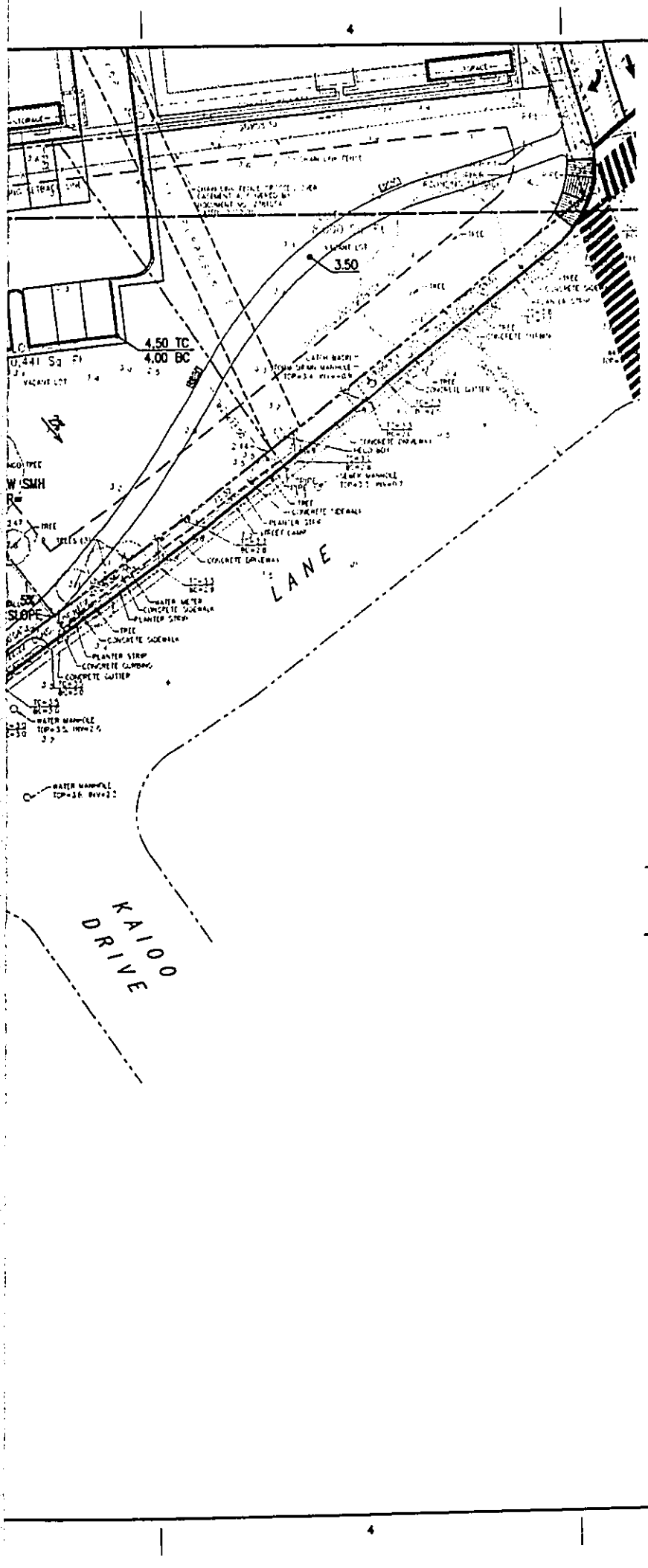
GRAPHIC SCALE:

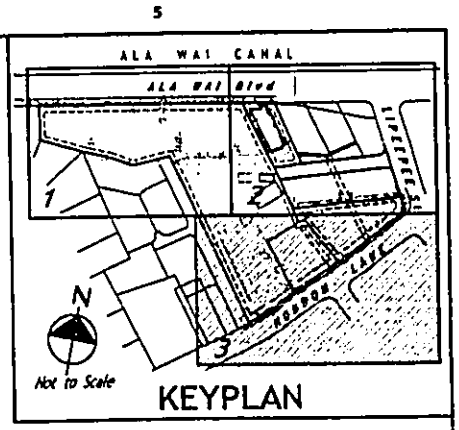
20' 10' 0 20' 40'

SCALE: 1" = 20'

SITE GRADING PLAN 3

SCALE: 1" = 20'





True North
Scale: 1 in = 20 ft

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ALA WAI GATEWAY
ALA WAI BLVD.
HONOLULU, HI

SITE GRADING PLAN

SCALE: AS NOTED

MICHAEL M. FUJITA
LICENSED PROFESSIONAL ENGINEER
NO. 6808-C
HAWAII, U.S.A.

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Michael M. Fujita
signature — expiration date of this license

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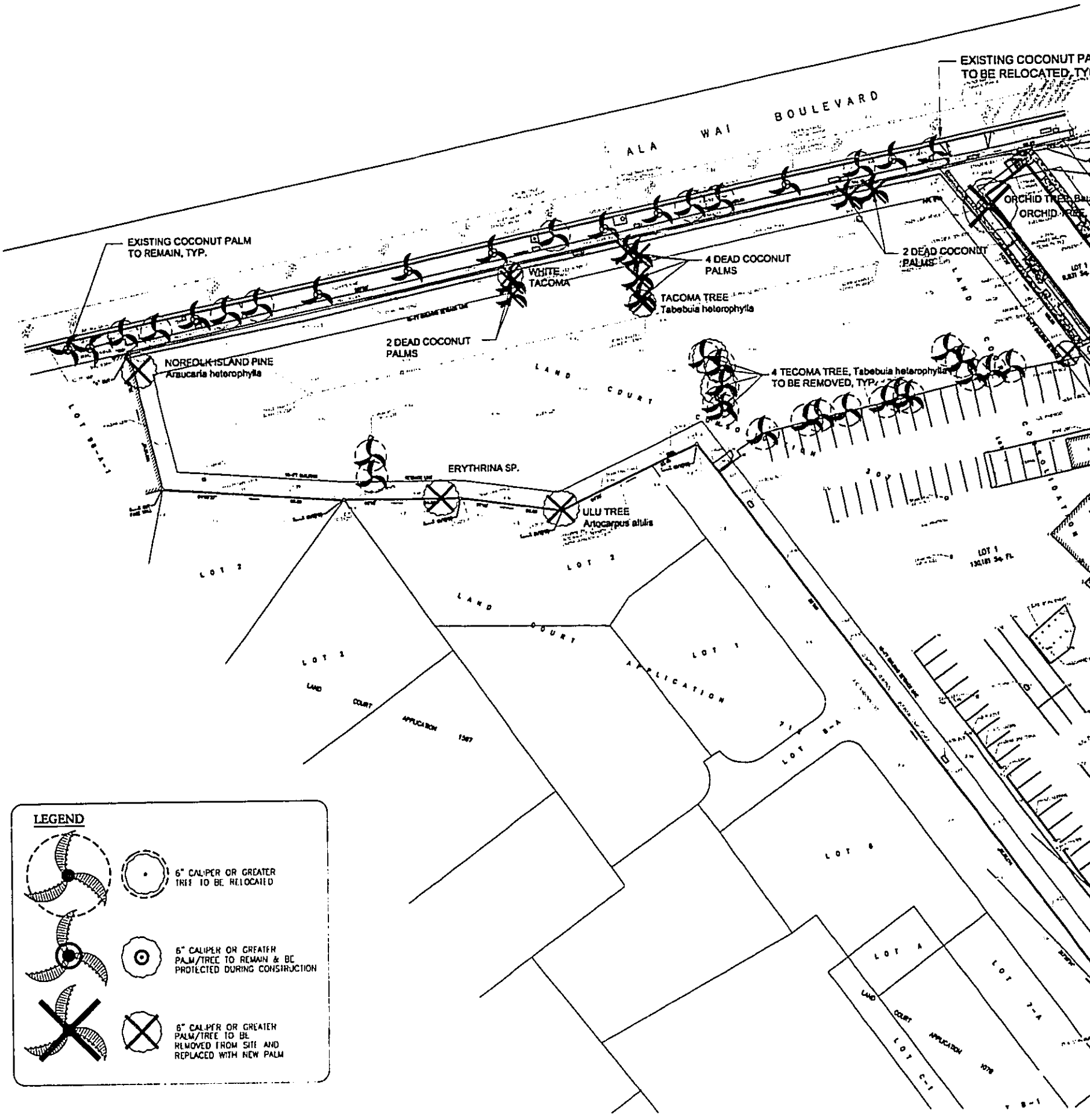
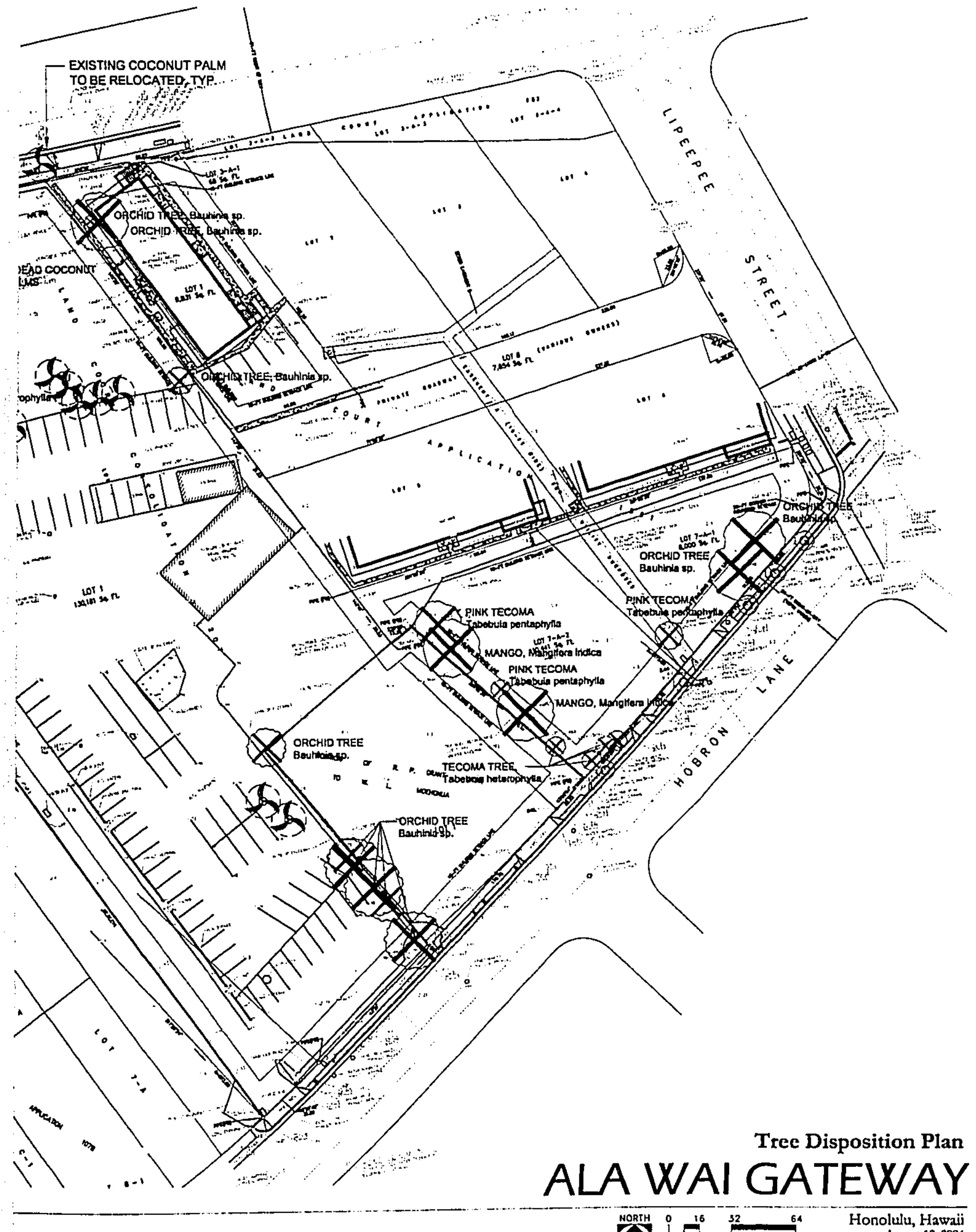

ALA WAI BOULEVARD
EXISTING COCONUT PALM TO REMAIN, TYP.
EXISTING COCONUT PA
TO BE RELOCATED, TY
WHITE TACOMA
4 DEAD COCONUT PALMS
2 DEAD COCONUT PALMS
TACOMA TREE
Tabebuia heterophylla
2 DEAD COCONUT PALMS
NORFOLK ISLAND PINE
Araucaria heterophylla
4 TECOMA TREE, Tabebuia heterophylla
TO BE REMOVED, TYP.
ERYTHRINA SP.
ULU TREE
Artocarpus altilis
LAND COURT
APPLICATION
LOT 2
LOT 1
LOT B-A
LOT A
LOT A-1
LOT C-1
LOT B-1
LEGEND
6" CALIPER OR GREATER TREE TO BE RELOCATED
6" CALIPER OR GREATER PALM/TREE TO REMAIN & BE PROTECTED DURING CONSTRUCTION
6" CALIPER OR GREATER PALM/TREE TO BE REMOVED FROM SITE AND REPLACED WITH NEW PALM

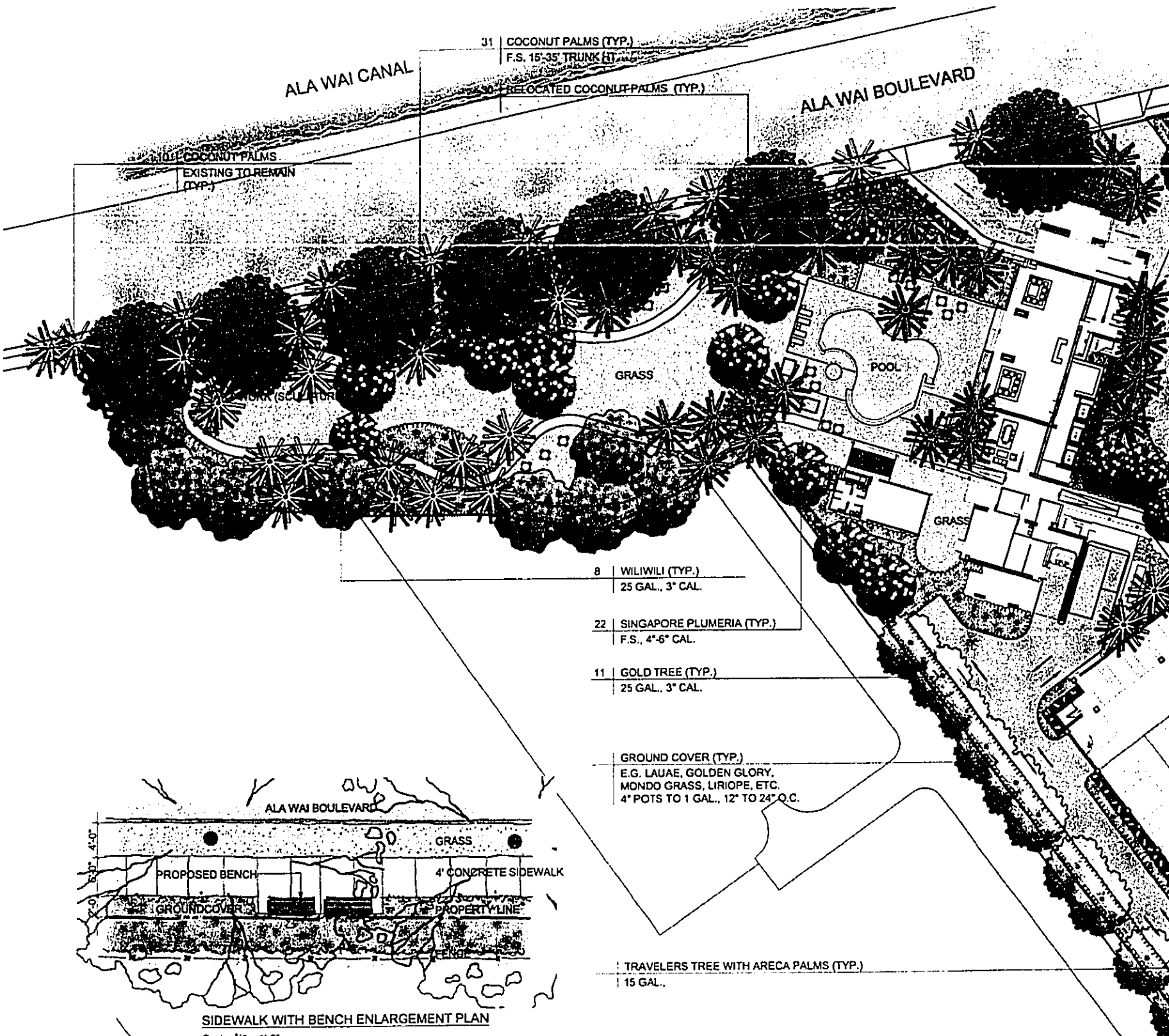
PBR



Tree Disposition Plan

ALA WAI GATEWAY

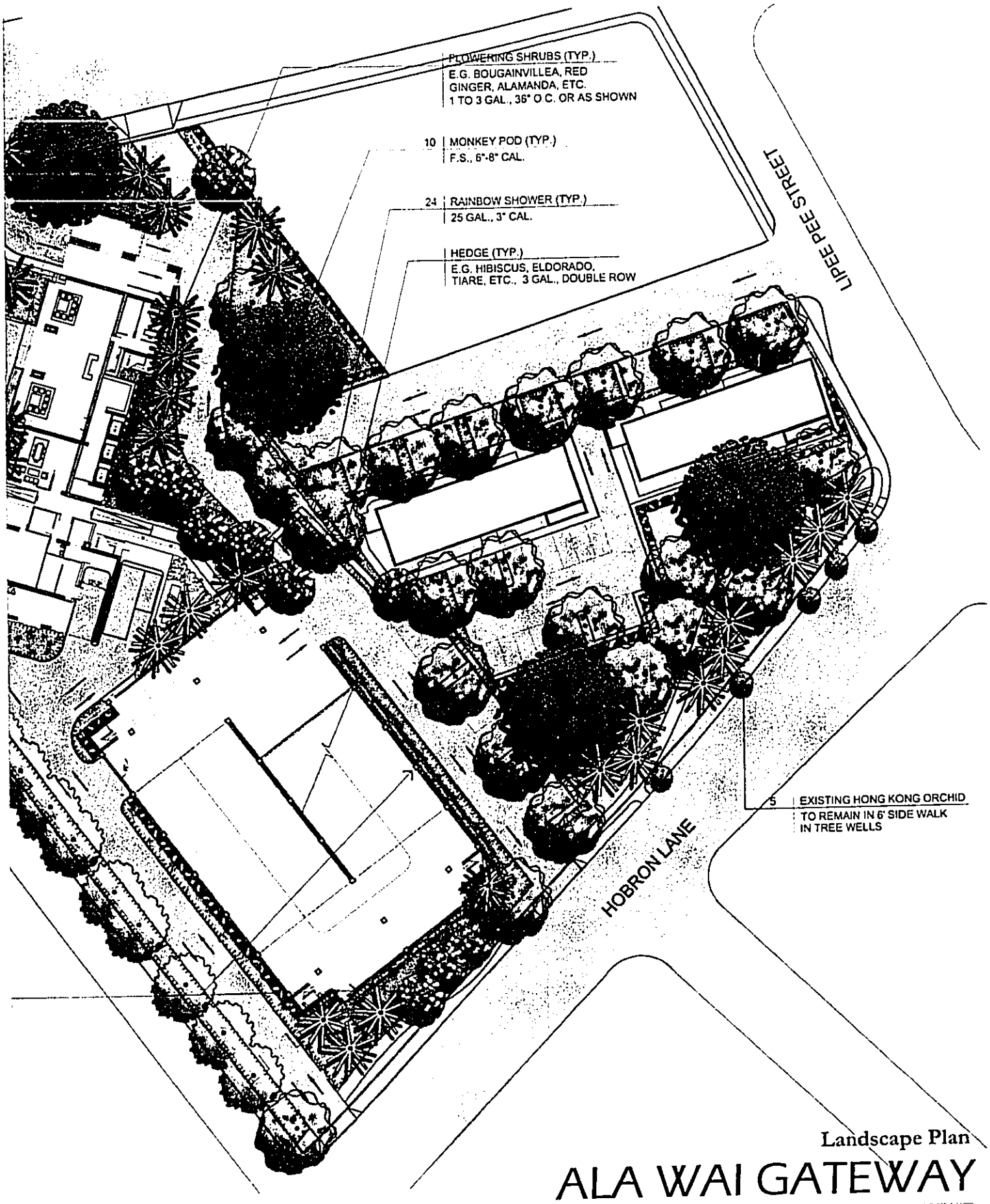
Honolulu, Hawaii
August 12, 2004
Revised October 29, 2004
Revised November 15, 2004



SIDEWALK WITH BENCH ENLARGEMENT PLAN

Scale: 1/8" = 1'-0"

PBR HAWAII

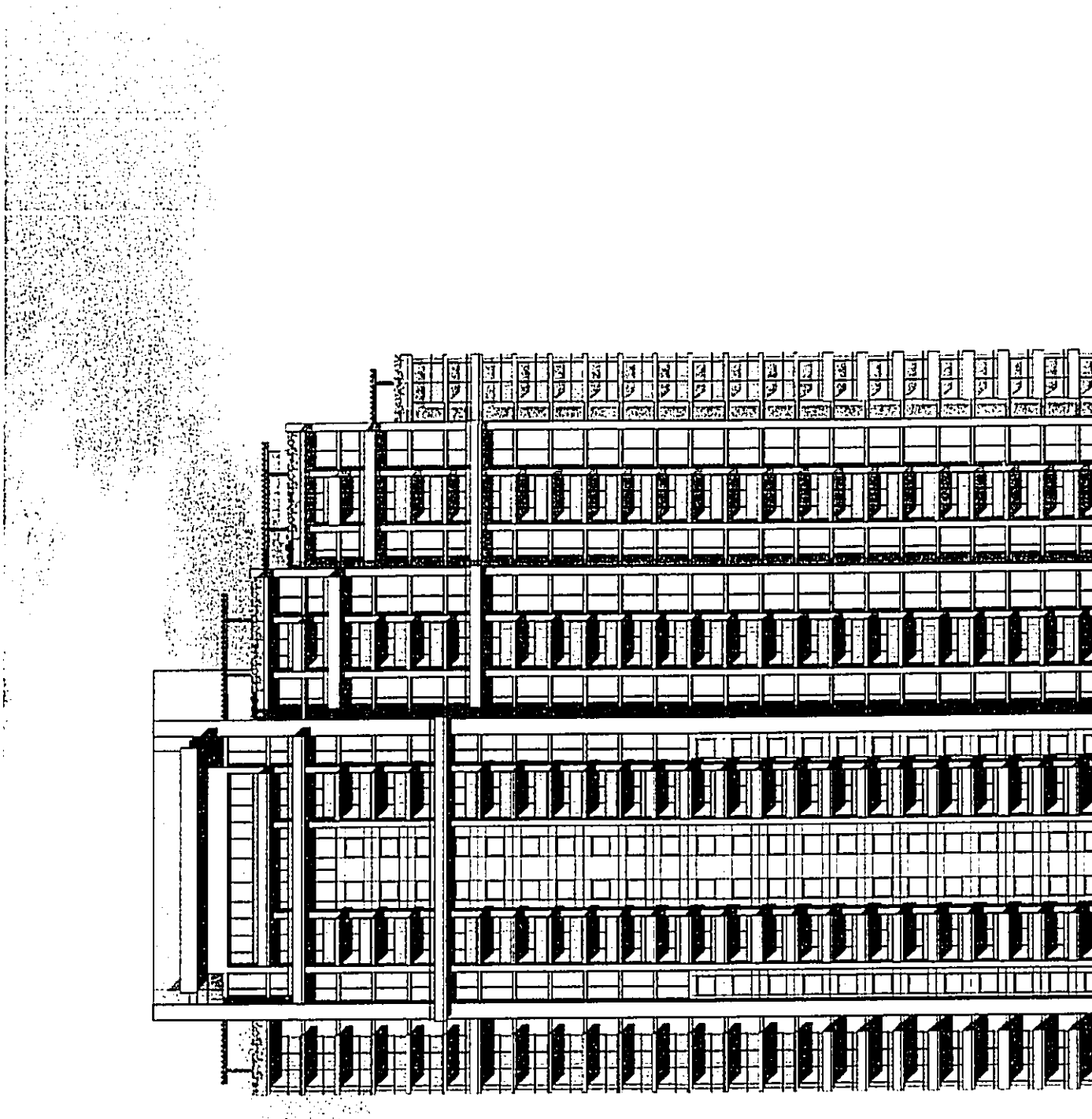


Landscape Plan

ALA WAI GATEWAY

NORTH 0 15 30 60 FEET

Honolulu, Hawaii
August 12, 2004
Revised October 29, 2004
Revised November 15, 2004



West Elevation

0 20 40 80 FT

ALA WAI GATEWAY
NOVEMBER 15, 2004

WSD SUBMITTAL

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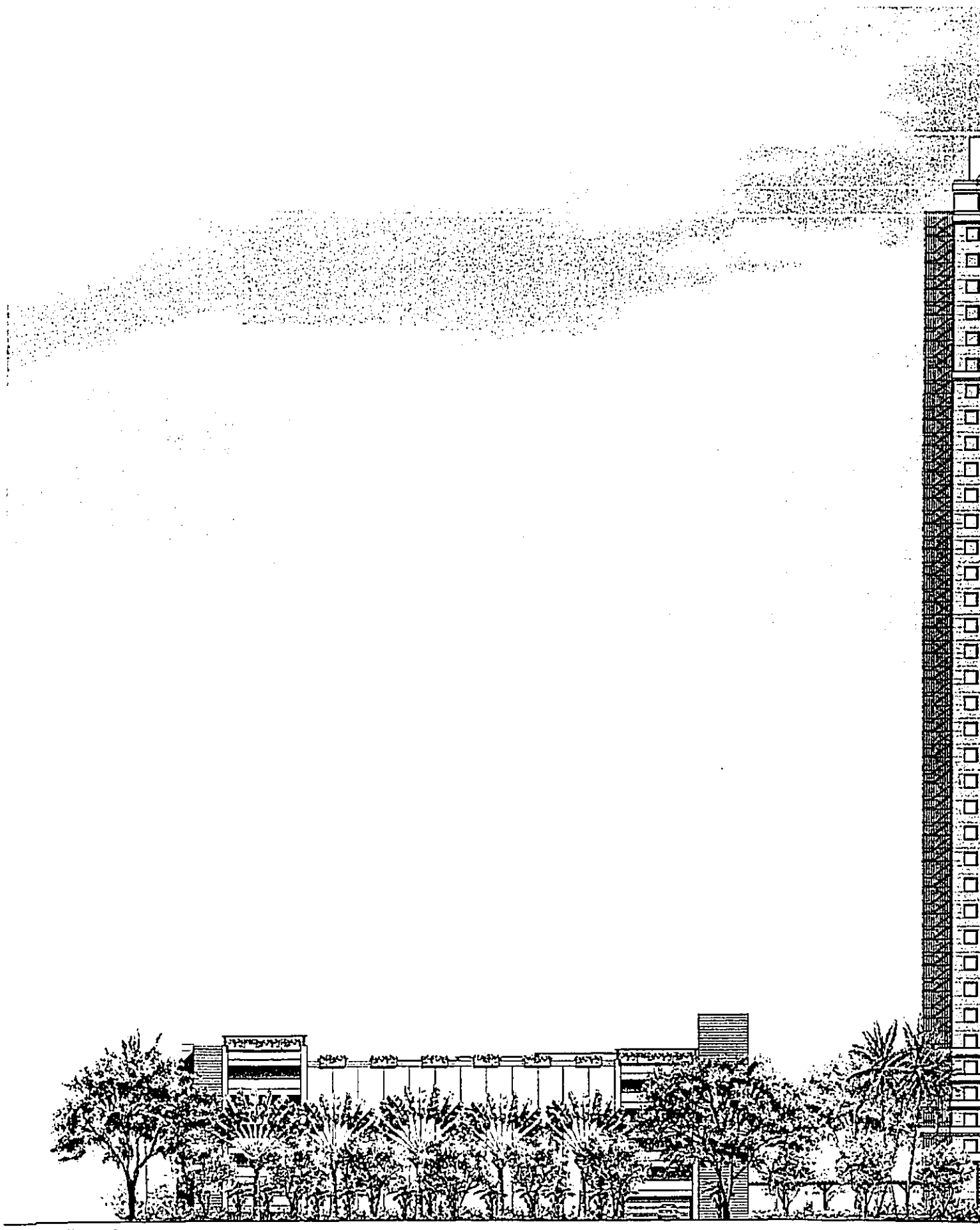

North Elevation

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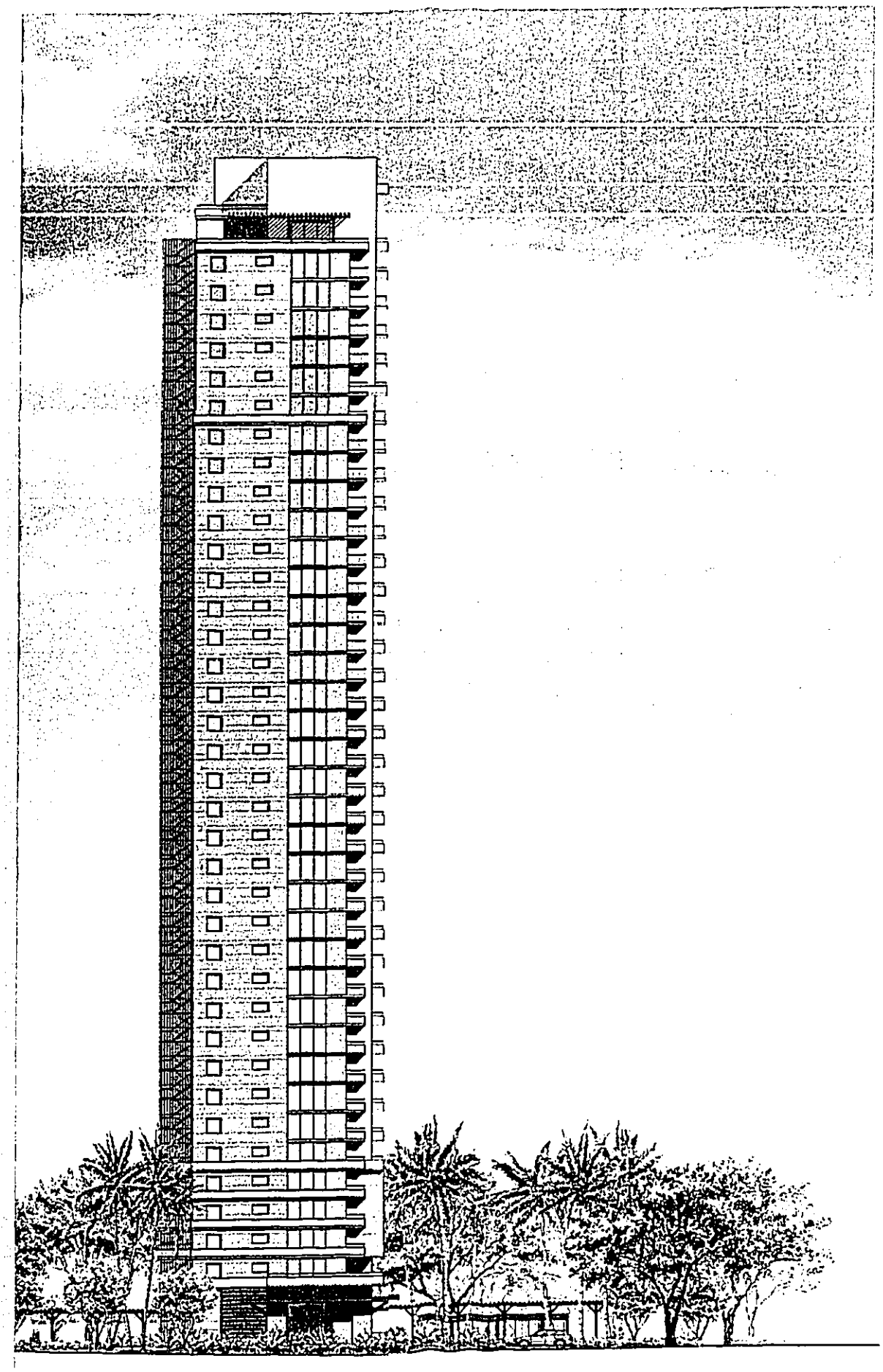
ALA WAI GATEWAY
NOVEMBER 15, 2004

WSD SUBMITTAL



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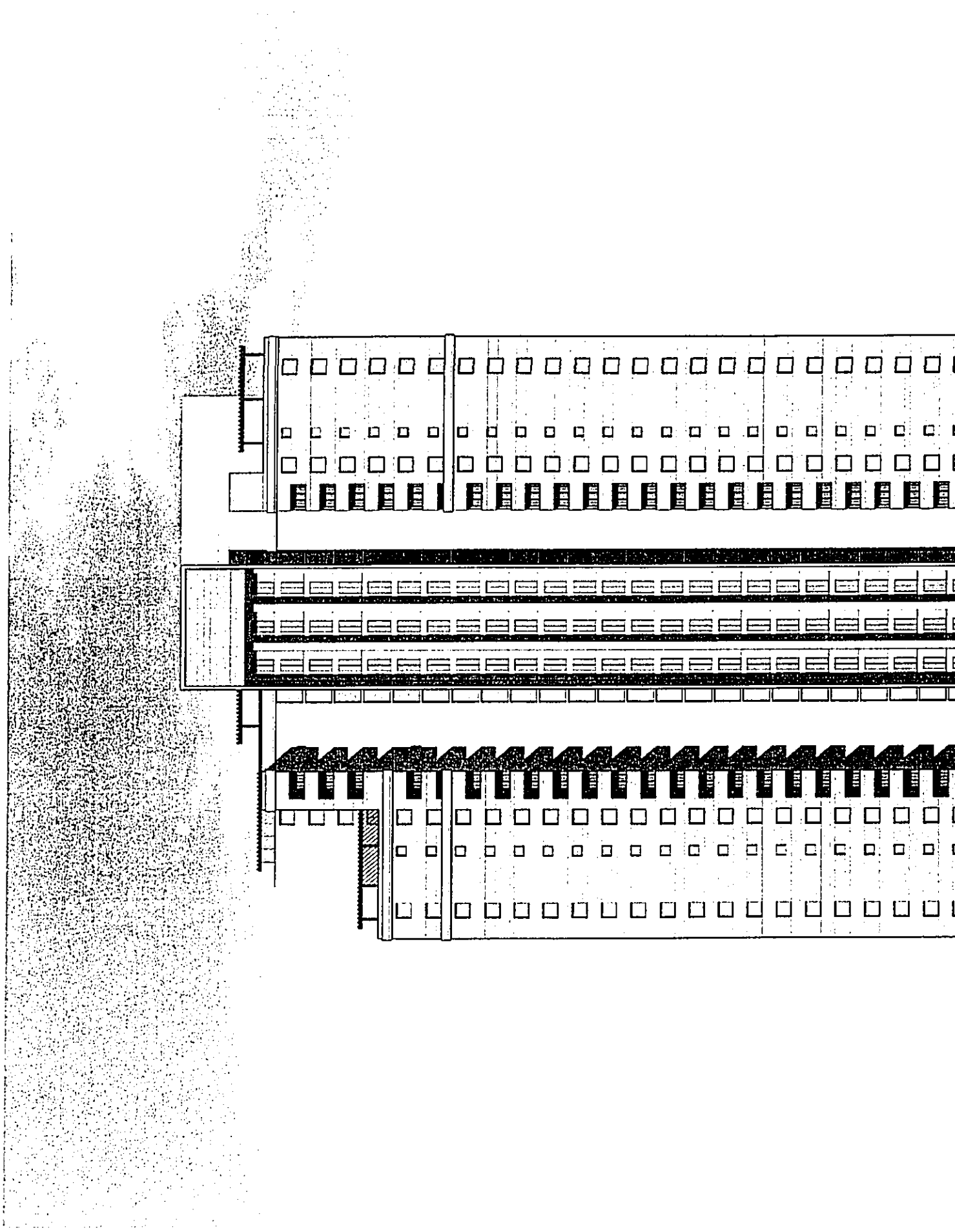

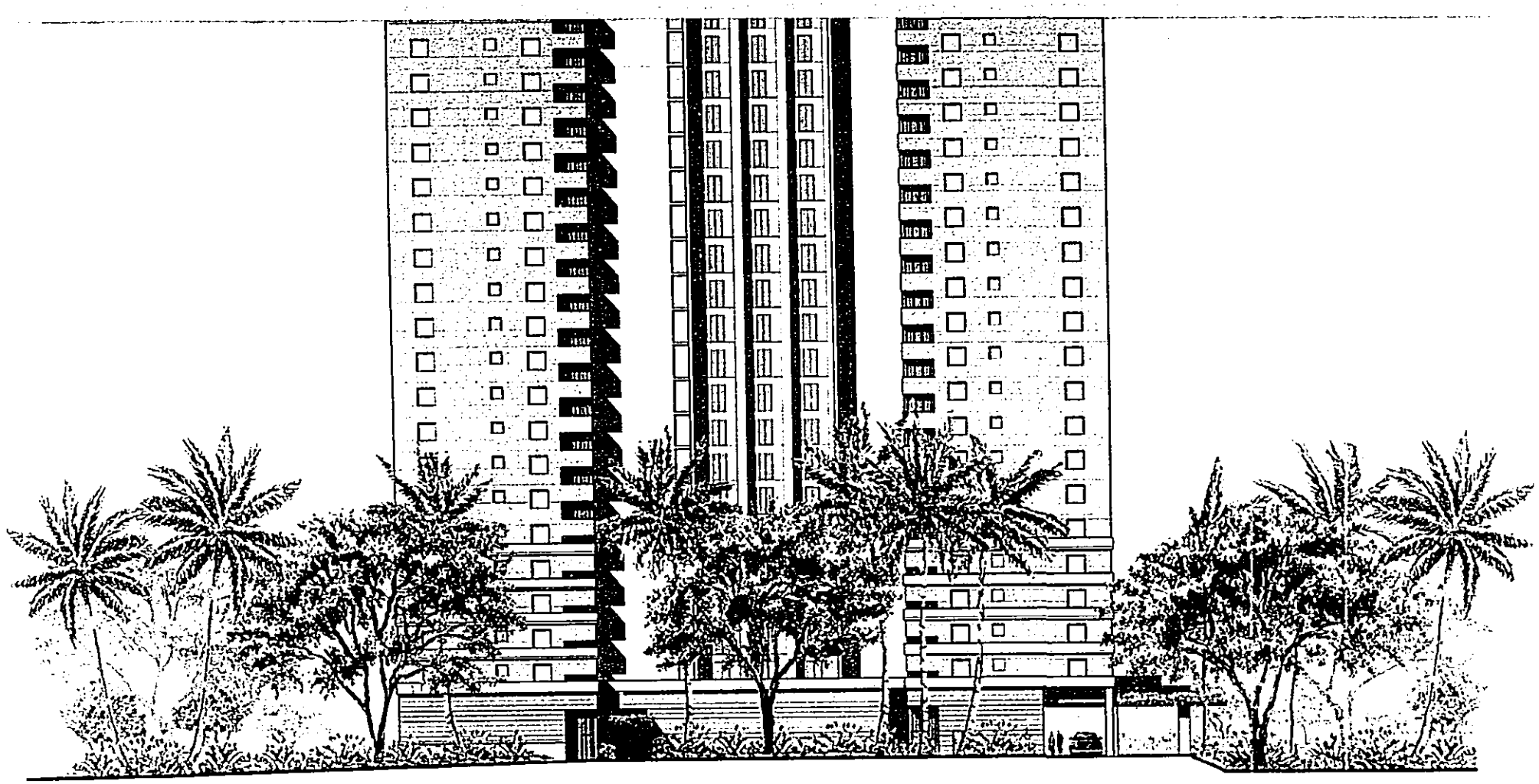

East Elevation

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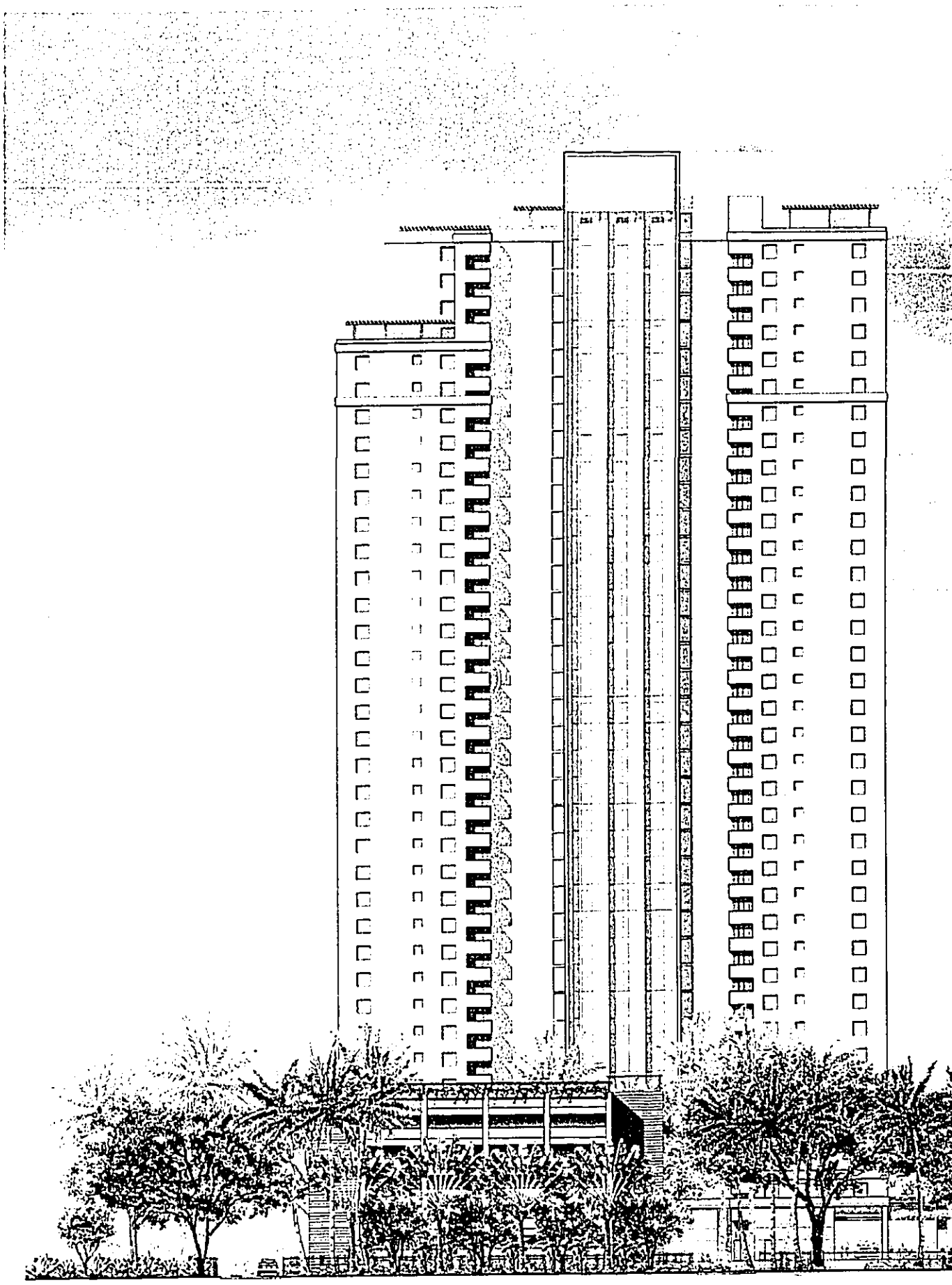
ALA WAI GATEWAY
NOVEMBER 15, 2004

WSD SUBMITTAL

ARCHITECTS HAWAII LTD.
G2 ARCHITECTURE, P.C.



East Elevation (Hobron Lane)

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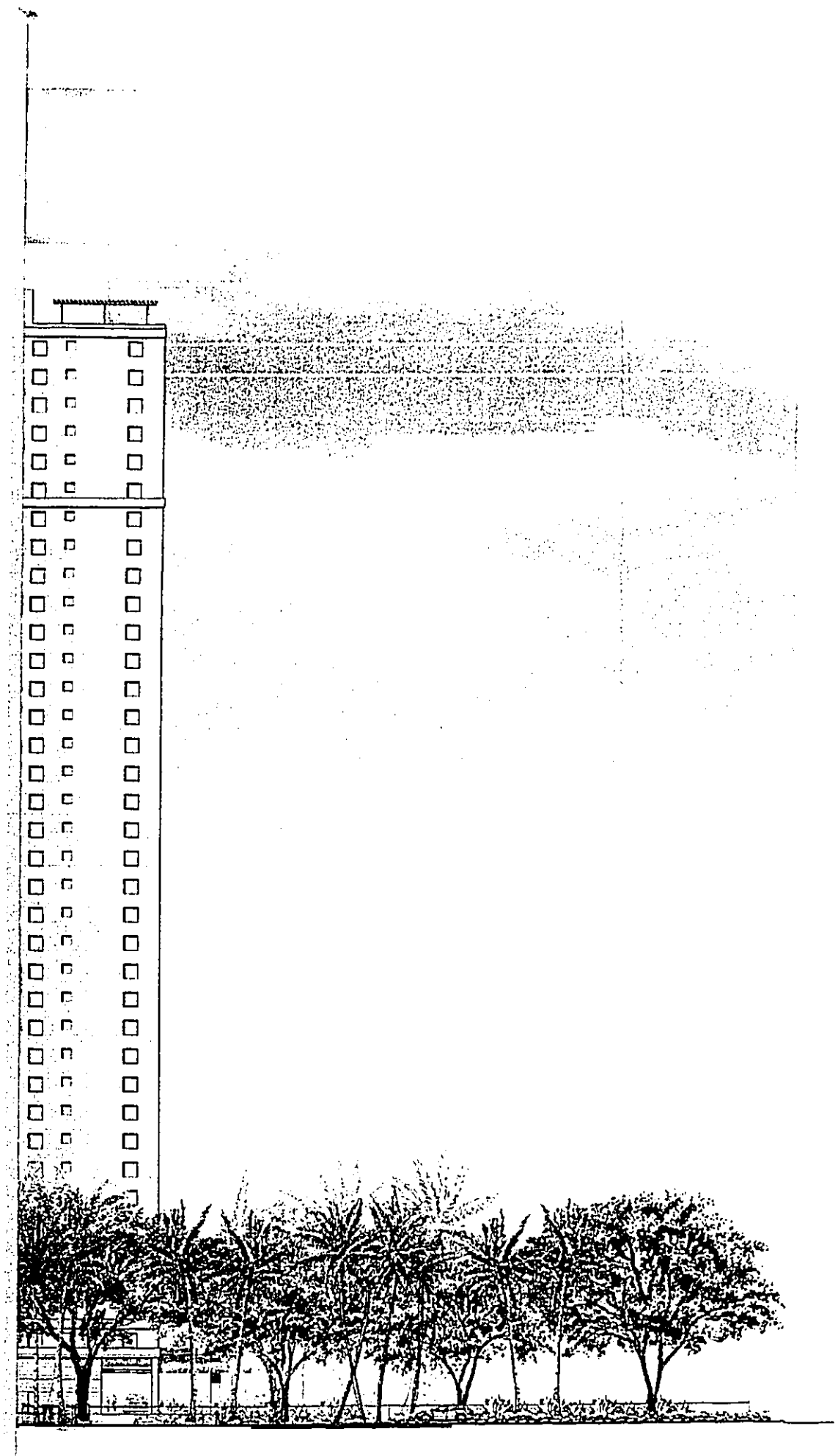
ALA WAI GATEWAY
NOVEMBER 15, 2004

WSD SUBMITTAL



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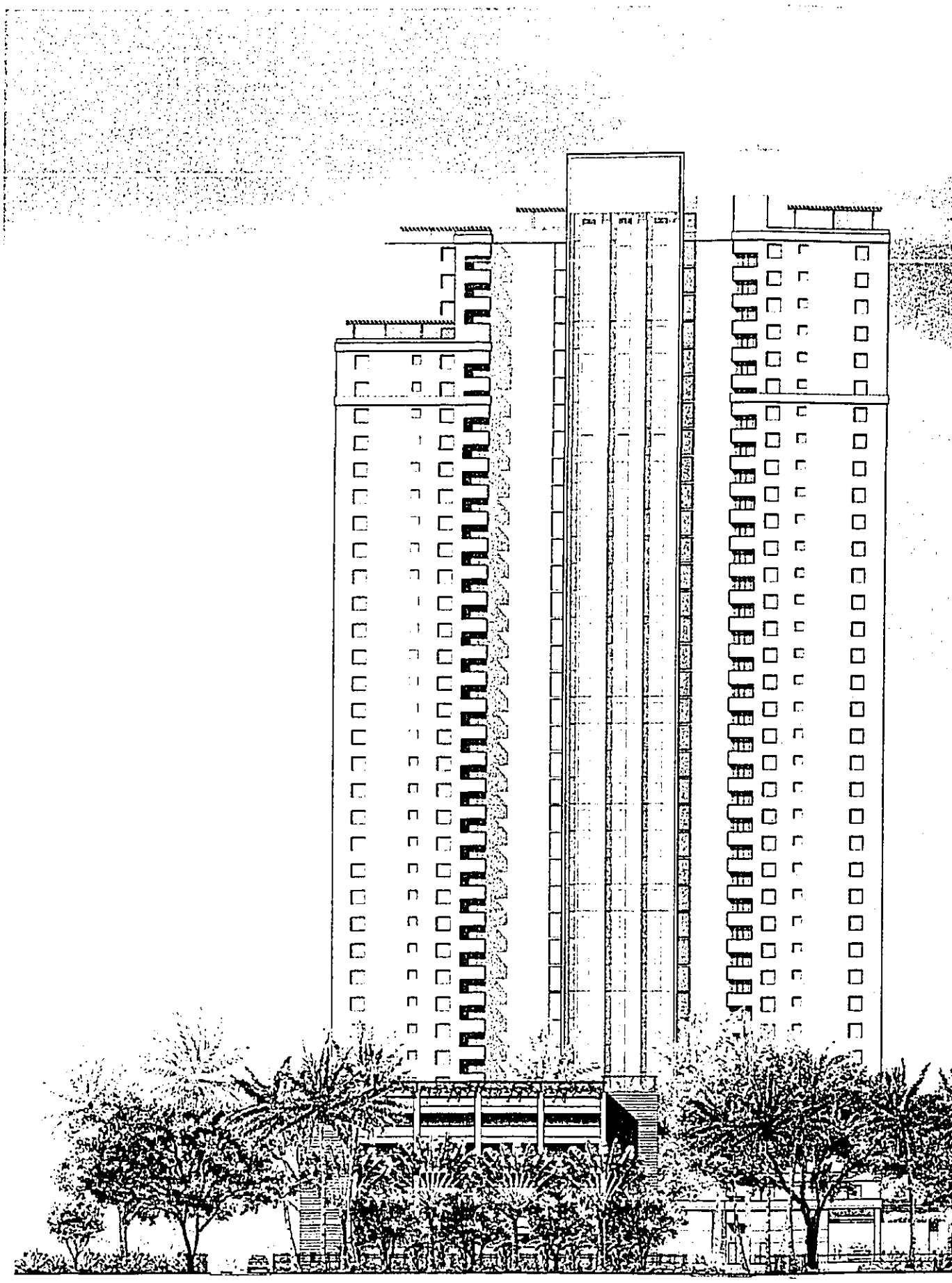
CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING



East Elevation (Hobron Lane)

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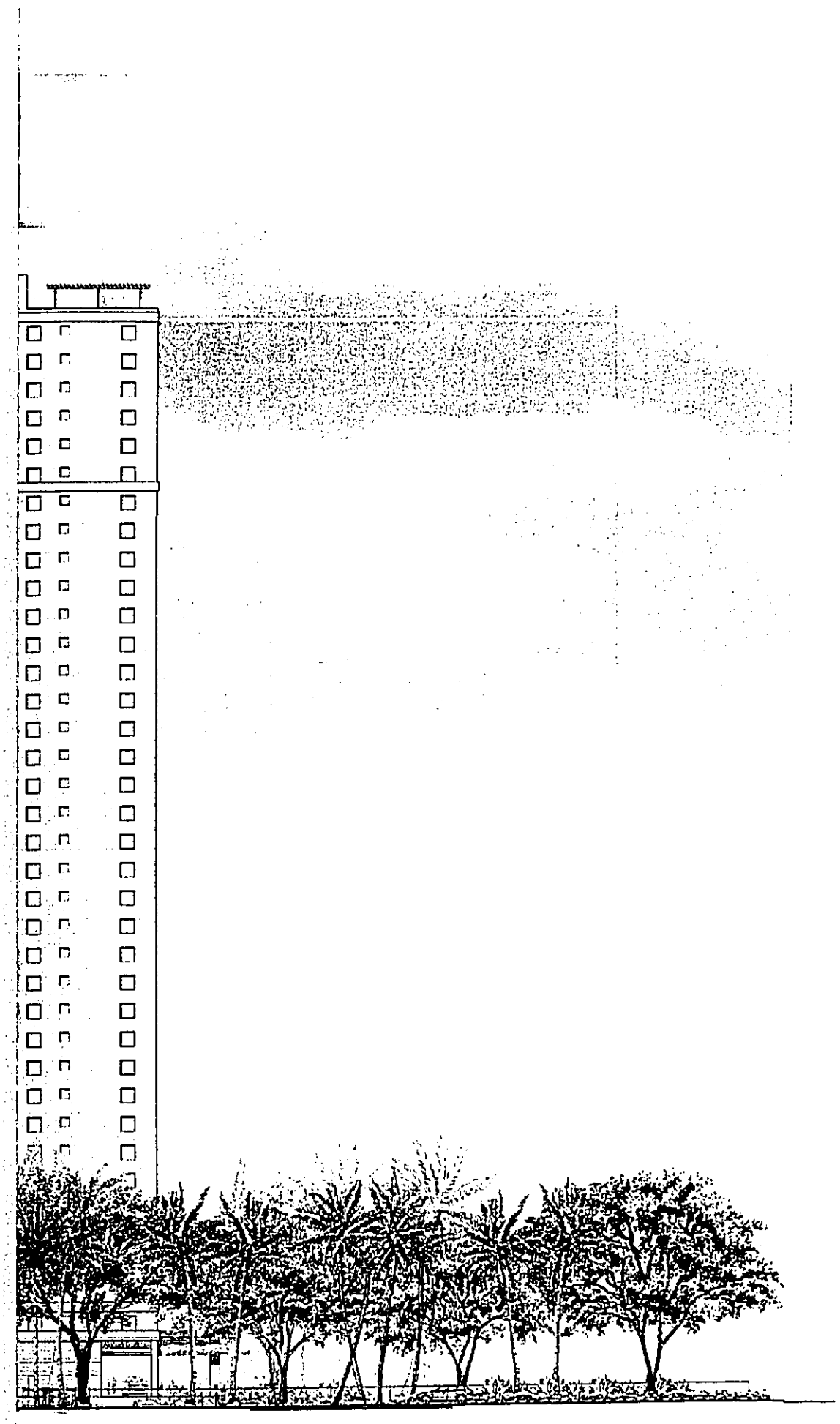
ALA WAI GATEWAY
NOVEMBER 15, 2004

WSD SUBMITTAL



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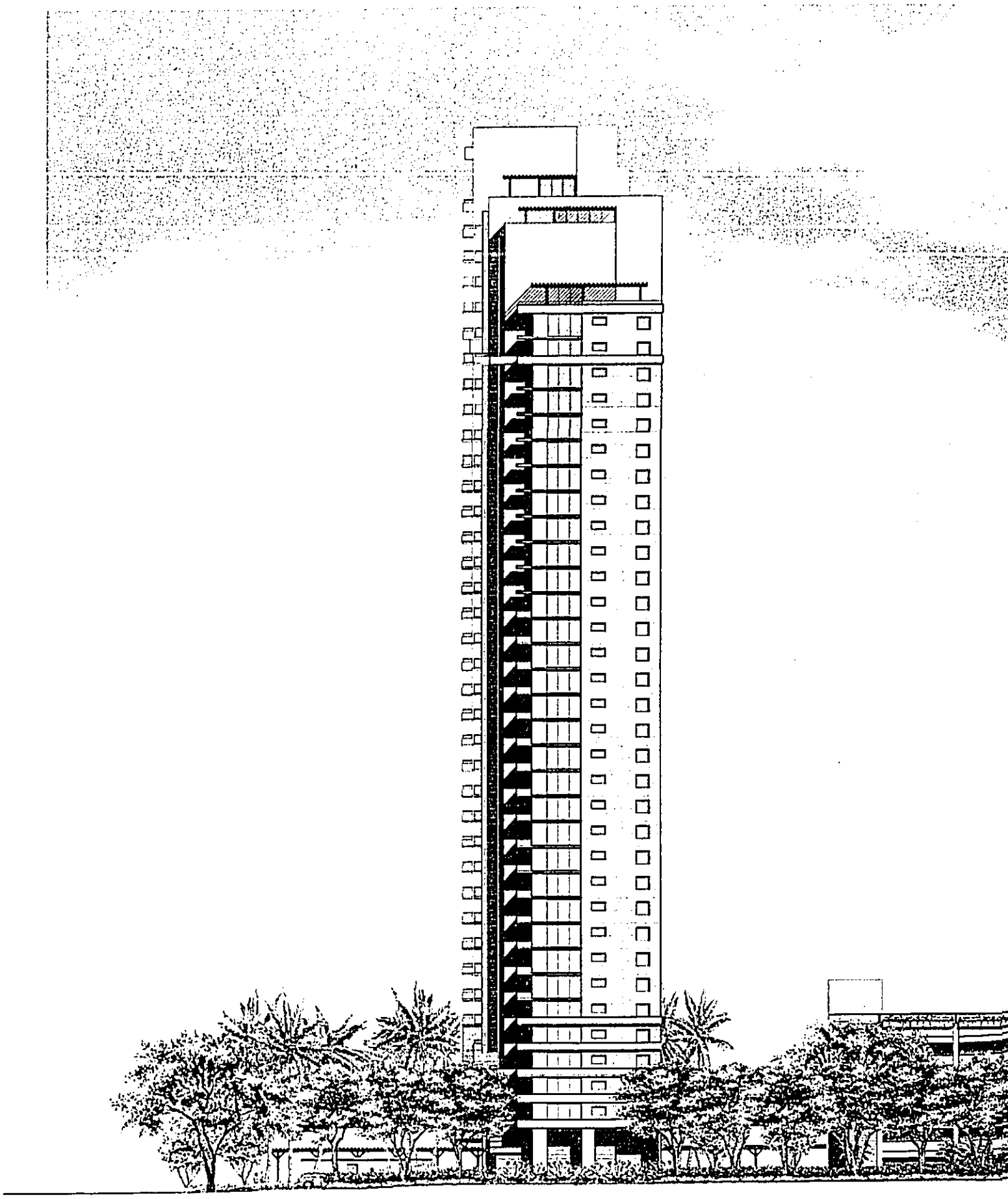
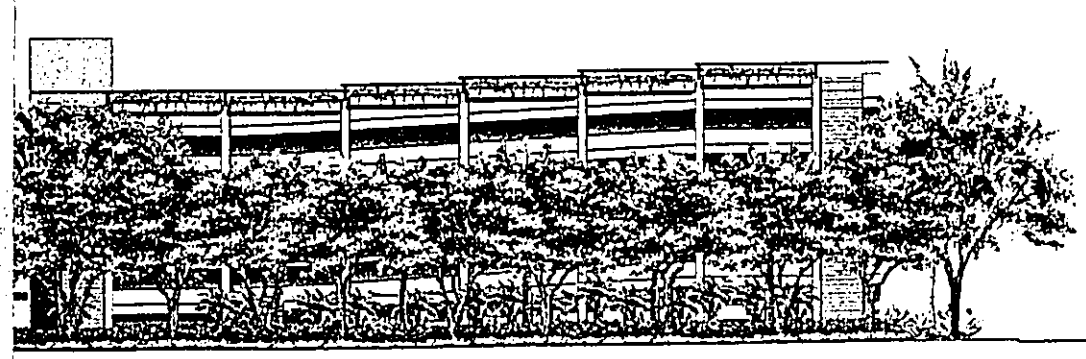


South Elevation

0 20 40 80 FT

ALA WAI GATEWAY
SEPTEMBER 15, 2004

WSD SUBMITTAL



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ARCHITECTS HAWAII LTD.
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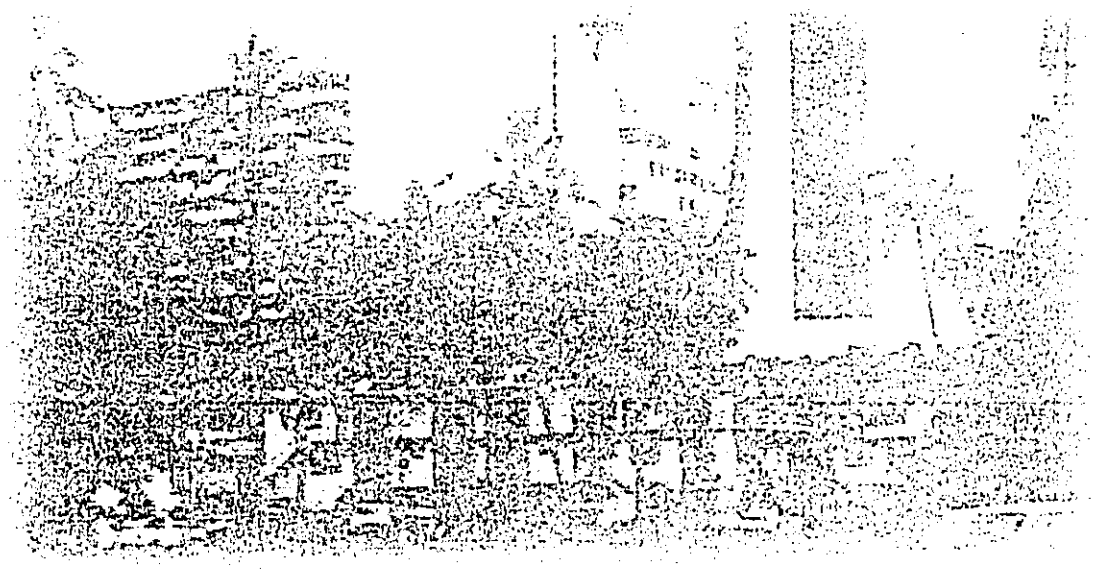
APPENDIX II

TRAFFIC IMPACT REPORT

Traffic Impact Report

Ala Wai Gateway



Prepared for:
CM&D, Inc.

Prepared by:
Wilson Okamoto Corporation

August 2004

TRAFFIC IMPACT REPORT

FOR THE PROPOSED

ALA WAI GATEWAY

Prepared for:
CM&D, Inc.
239 Merchant Street, Suite 100
Honolulu, HI 96813

Prepared by:

Wilson Okamoto Corporation
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826

August 2004

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I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the traffic impacts resulting from the proposed Ala Wai Gateway development in Waikiki on the island of Oahu. The project site for the proposed residential condominiums is located between Ala Wai Boulevard and Hobron Lane approximately 500 feet north of Ala Moana Boulevard.

B. Scope of Study

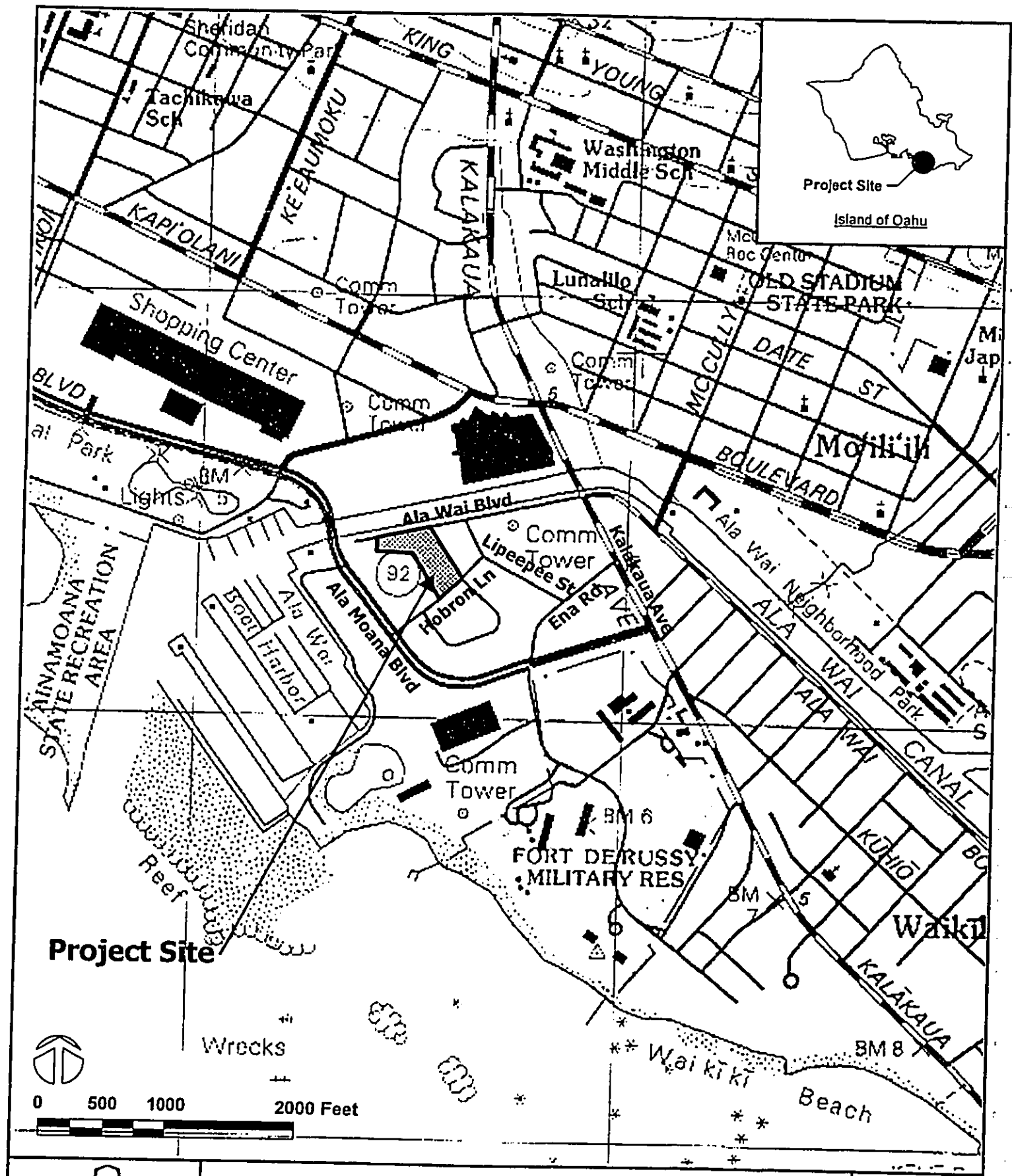
This report presents the findings and conclusions of the traffic study, the scope of which includes:

1. Description of the proposed project.
2. Evaluation of existing roadway and traffic operations in the vicinity.
3. Analysis of future roadway and traffic conditions without the proposed project.
4. Analysis and development of trip generation characteristics for the proposed project.
5. Superimposing site-generated traffic over future traffic conditions.
6. The identification and analysis of traffic impacts resulting from the proposed project.
7. Recommendations of improvements, if appropriate, that would mitigate the traffic impacts resulting from the proposed project.

II. PROJECT DESCRIPTION

A. Location

The project site is located in Waikiki on the island of Oahu (see Figure 1) and is further identified as Tax Map Keys: 2-6-11: 002 and 004. The existing parcel is bound by Ala Wai Boulevard to the west and Hobron Lane to the south and is surrounded by low-rise residential apartments to the north and south. Primary access to the project site would be via two new driveways off of Ala Wai Boulevard and Hobron Lane.



WILSON OKAMOTO CORPORATION ENGINEERS - PLANNERS	ALA WAI GATEWAY Location Map and Vicinity Map	FIGURE 1

B. Project Characteristics

The proposed Ala Wai Gateway development will be built on an approximately 130,181 square foot lot located approximately 500 feet north of Ala Moana Boulevard and bound by Ala Wai Boulevard to the west and Hobron Lane to the east. The proposed project is expected to be completed and occupied by the Year 2007 and will include approximately 228 units with a gated parking area that will accommodate approximately 450 parking stalls, as well as other amenities (ie, pool). Access to the project site would be via two proposed new driveways, one off of Ala Wai Boulevard and one off of Hobron Lane. Figure 2 shows the project site plan.

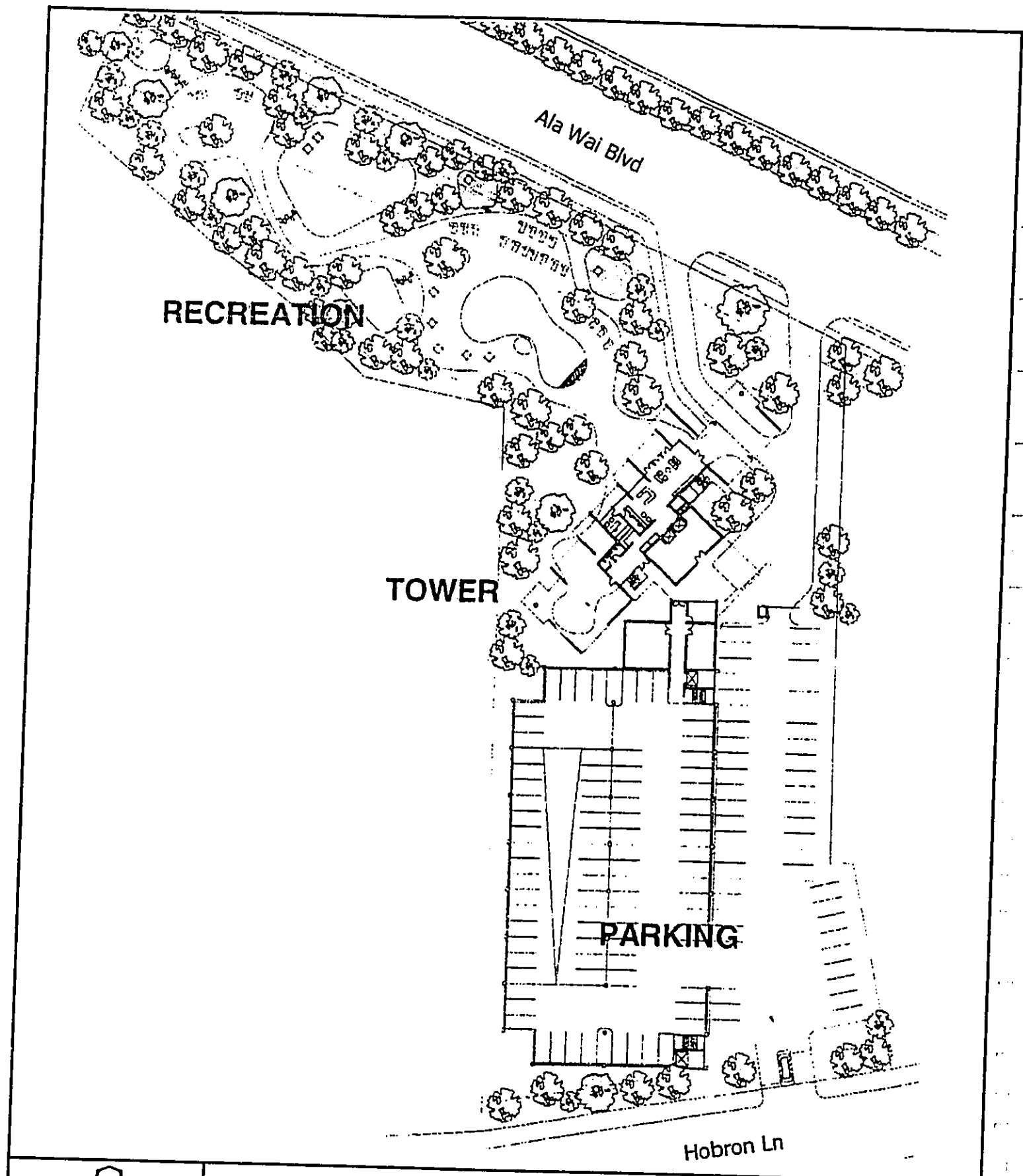
III. EXISTING TRAFFIC CONDITIONS

A. General

Located approximately 500 feet south of the proposed project site, Ala Moana Boulevard serves as major arterial providing access along the southeast coast of Oahu between its connection to Nimitz Highway near the central business district and its termination at Kalakaua Avenue at the west end of Waikiki. Kalakaua Avenue is generally a one-way roadway that forms a couplet system with Ala Wai Boulevard to provide access through Waikiki. In recent years, traffic volumes along these major arterials within the project vicinity have steadily increased due to growth in the tourism industry.

B. Area Roadway System

Ala Moana Boulevard is a predominantly four-lane, two-way State of Hawaii roadway which intersects Hobron Lane approximately 500 feet southeast of the project site. At this signalized intersection, both approaches of Ala Moana Boulevard have four lanes that serve left-turn, through, and right-turn traffic movements. Hobron Lane is predominantly two-lane, two-way City and County of Honolulu roadway that serves as a local connector roadway between Holomoana Street along the Ala Wai Yacht Harbor and Ena Road. At the intersection with Ala Moana Boulevard, both approaches of Hobron Lane have two lanes that serve all traffic movements.



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ALA WAI GATEWAY

Project Site Plan

FIGURE 2

Approximately 950 feet north of the intersection with Ala Moana Boulevard, Hobron Lane intersects Lipeepee Street and the driveway for an adjacent apartment complex. At this unsignalized intersection, the northbound and westbound approaches of Hobron Lane have one lane that serves left-turn, through, and right-turn traffic movements. Lipeepee Street is a short two-lane, two-way City and County of Honolulu roadway that connects Ala Wai Boulevard and Hobron Lane. At the intersection with Hobron Lane, Lipeepee Street has one eastbound lane that serves all traffic movements. The southbound approach of the intersection is comprised of the driveway for an adjacent apartment complex and has one lane that serves all traffic movements.

Approximately 325 feet west of the intersection with Hobron Lane, Lipeepee Street intersects Ala Wai Boulevard. At this unsignalized intersection, Lipeepee Street has one lane that serves all traffic movements. Ala Wai Boulevard originates at Kapahulu Avenue as a predominantly one-way (westbound), four-lane City and County roadway and converts to a two-way, two-lane roadway south of Kalakaua Avenue until its termination at a dead end just north of Ala Moana Boulevard. At the intersection with Lipeepee Street, the northbound approach of Ala Wai Boulevard has one lane that serves through and right-turn traffic movements while the southbound approach has one lane that serves left-turn and through traffic movements.

Approximately 950 feet northeast of the intersection with Lipeepee Street, Ala Wai Boulevard intersects Kalakaua Avenue. At this signalized intersection, the northbound approach of Ala Wai Boulevard has one lane that serves only right-turn traffic movements while the southbound approach has three lanes that serve all traffic movements. Kalakaua Avenue originates as a predominantly two-way, five-lane City and County of Honolulu roadway at Beretania Street and converts to a predominantly one-way (eastbound), four-lane roadway at Ala Wai Boulevard through Waikiki. At the intersection with Ala Wai Boulevard, the eastbound approach of Kalakaua Avenue has three lanes that serve through and right-turn traffic movements while the westbound approach has two lanes that serve only through traffic movements.

C. Traffic Volumes and Conditions

1. General

a. Field Investigation

A field investigation was conducted on July 14 and 15, 2004 and consisted of manual turning movement count surveys and a 24-hour mechanical count survey along Hobron Lane. The manual turning movement count surveys were conducted between the morning peak hours between 7:00 AM and 9:00 AM, and the afternoon peak hours between 3:30 PM and 6:30 PM at the following intersections:

- Ala Moana Boulevard and Hobron Lane
- Hobron Lane and Lipeepee Street
- Ala Wai Boulevard and Lipeepee Street
- Ala Wai Boulevard and Kalakaua Avenue

Appendix A includes the existing traffic count data.

b. Capacity Analysis Methodology

The highway capacity analysis performed in this study is based upon procedures presented in the "Highway Capacity Manual", Transportation Research Board, 2000, and the "Highway Capacity Software", developed by the Federal Highway Administration. The analysis is based on the concept of Level of Service (LOS) to identify the traffic impacts associated with traffic demands during the peak hours of traffic.

LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F"; LOS "A" representing ideal or free-flow traffic operating conditions and LOS "F" unacceptable or potentially congested traffic operating conditions.

"Volume-to-Capacity" (v/c) ratio is another measure indicating the relative traffic demand to the road carrying capacity. A v/c ratio of one (1.00) indicates that the roadway is operating at or near capacity.

A v/c ratio of greater than 1.00 indicates that the traffic demand exceeds the road's carrying capacity. The LOS definitions are included in Appendix B.

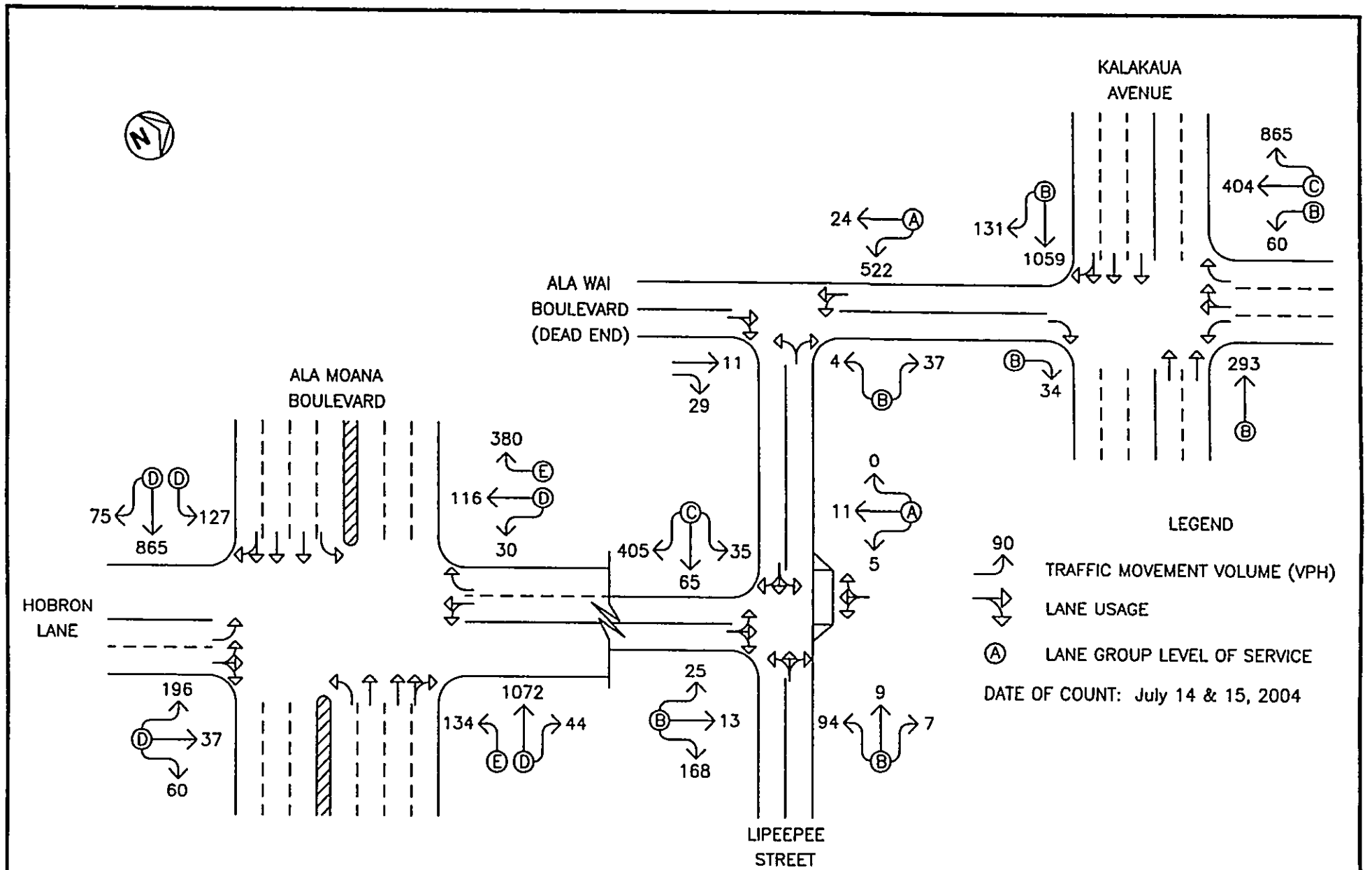
c. Other Considerations

Capacity analysis of traffic conditions is typically performed using traffic survey data obtained during periods when schools in the vicinity are in session since traffic volumes are often significantly higher than during non-session periods. As such, when traffic surveys are conducted during non-session periods, a factor is often applied to the data to simulate traffic volumes during periods when school is in session. However, comparisons between the available State DOT, Highways Division traffic data at a survey station located at the intersection of Ala Moana Boulevard and Hobron Lane, and the traffic data collected on July 14-15, 2004 indicate that traffic volumes in the project vicinity are approximately the same and, as such, are not significantly influenced by school traffic in the surrounding area.

2. Existing Peak Hour Traffic

a. General

Figures 3 and 4 show the existing AM and PM peak hour traffic volumes and operating traffic conditions. The AM peak hour of traffic generally occurs between 7:15 AM and 8:15 AM in the vicinity of the proposed project. In the afternoon, the PM peak hour of traffic generally occurs between the hours of 4:45 PM and 5:45 PM. Although the peak hours of traffic generally occur around the same time periods at each of the study intersections, the absolute commuter peak hour time periods for each intersection may differ slightly as shown in Table 1.



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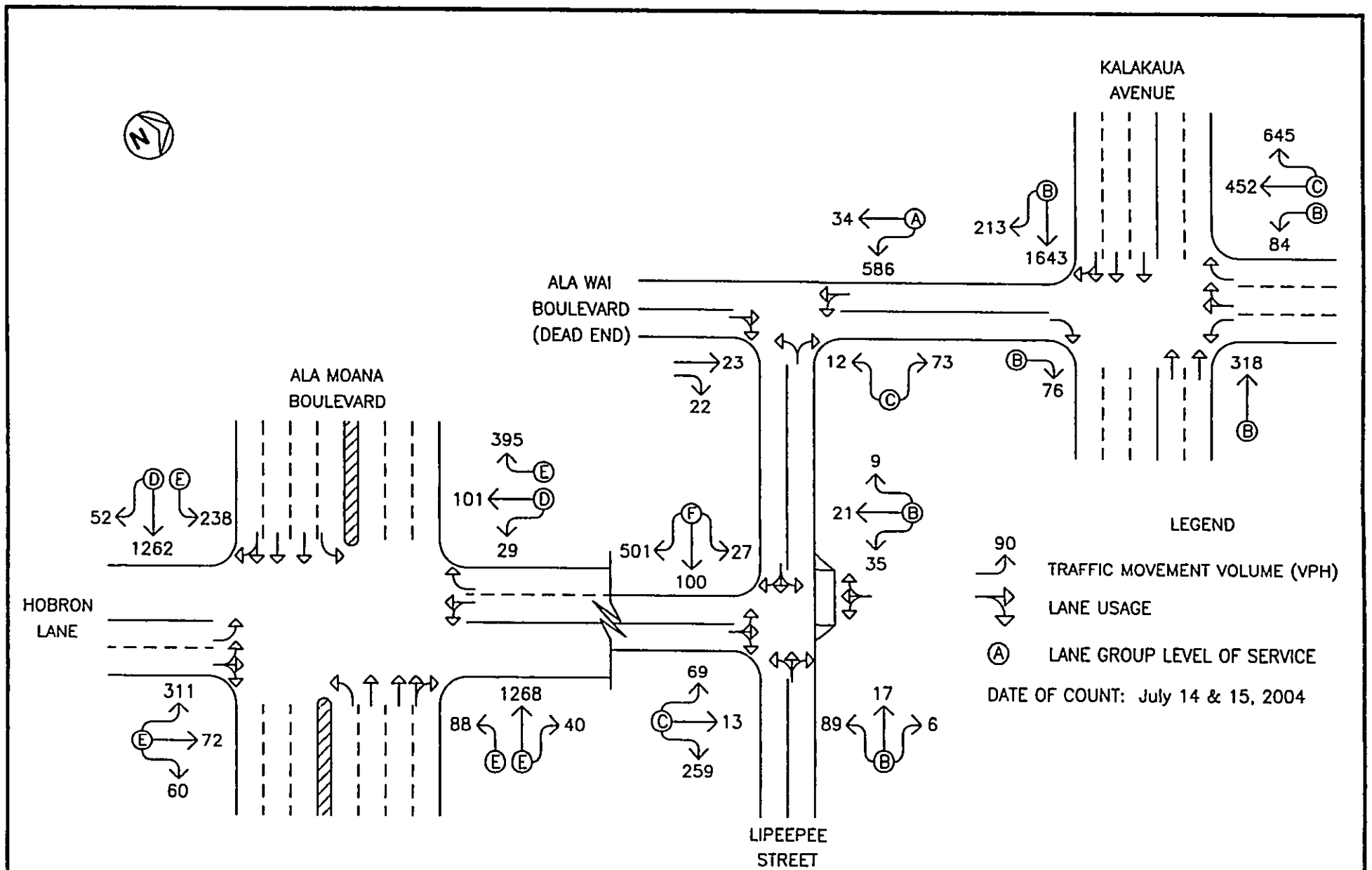
ALA WAI GATEWAY

EXISTING AM PEAK HOUR OF TRAFFIC

FIGURE 3



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ALA WAI GATEWAY

EXISTING PM PEAK HOUR OF TRAFFIC

FIGURE 4

Table 1: Peak Hours of Traffic

Intersection	AM Peak	PM Peak
Ala Moana Blvd/ Hobron Ln	7:15 AM-8:15 AM	3:30 PM-4:30 PM
Hobron Ln/Lipeepee St	7:30 AM-8:30 AM	4:45 PM-5:45 PM
Ala Wai Blvd/ Lipeepee St	7:45 AM-8:45 AM	4:15 PM-5:15 PM
Ala Wai Blvd/ Kalakaua Ave	7:30 AM-8:30 AM	4:45 PM-5:45 PM

The analysis is based on these absolute commuter peak hour time periods for each intersection to identify the traffic impacts resulting from the proposed project. LOS calculations are included in Appendix C.

b. Ala Moana Boulevard and Hobron Lane

At the intersection with Hobron Lane, Ala Moana Boulevard carries 1,067 vehicles eastbound and 1,250 vehicles westbound during the AM peak hour of traffic. During the PM peak hour of traffic, the traffic volume is higher with 1,552 vehicles traveling eastbound and 1,396 vehicles traveling westbound. The critical movements of the Ala Moana Boulevard approaches is the eastbound left-turn and westbound through and right-turn traffic movement which both operate at LOS "D" and LOS "E" during the AM and PM peak hours of traffic, respectively.

The Hobron Lane approaches of this intersection carry 293 vehicles northbound and 526 vehicles southbound during the AM peak hour of traffic. During the PM peak hour, the overall traffic volume is slightly higher with 443 vehicles traveling northbound and 525 vehicles traveling southbound. The critical movement of the Hobron Lane approaches is the southbound right-turn traffic movement which operates at LOS "E" during both peak hours of traffic.

Overall, the intersection of Ala Moana Boulevard and Hobron Lane operates at LOS "D" and LOS "E" during the AM and PM peak hours of traffic, respectively. These levels of service are consistent with field observations at the intersection which indicate that traffic operates poorly during both peak hours of traffic with traffic queues forming periodically on all approaches. The most significant queuing occurred during the PM peak period on the eastbound approach where vehicles would often have to wait more than one traffic signal cycle length to clear the intersection.

c. Hobron Lane and Lipeepee Street

At the intersection with Lipeepee Street, Hobron Lane carries 206 vehicles northbound and 110 vehicles westbound. During the PM peak hour of traffic, the traffic volume is slightly higher with 341 vehicles traveling northbound and 112 vehicles traveling westbound. The critical movement of the Hobron Lane approaches is the northbound left-turn, through, and right-turn traffic movement which operates at LOS "B" and LOS "C" during the AM and PM peak hours of traffic, respectively.

The Lipeepee Street approach of this intersection carries 505 vehicles eastbound and operates at LOS "C" during the AM peak hour of traffic. During the PM peak hour, although the traffic volumes are slightly higher with 628 vehicles traveling eastbound, traffic operates poorly at LOS "F" due to the high volume of right-turning vehicles. Field observations indicate there are consistent traffic queues on the Lipeepee Street approach with maximum lengths of approximately 10 vehicles.

A driveway for an adjacent apartment complex comprises the southbound approach of this intersection which currently carries a low volume of traffic throughout the day. During the AM peak hour of traffic only 16 vehicles travel southbound from the driveway. Traffic

volumes are higher during the PM peak hour of traffic with 65 vehicles traveling southbound.

d. Ala Wai Boulevard and Lipeepee Street

At the intersection with Lipeepee Street, Ala Wai Boulevard carries 40 vehicles northbound and 546 vehicles southbound during the AM peak hour of traffic. During the PM peak hour of traffic, the traffic volumes are slightly higher with 45 vehicles traveling northbound and 620 vehicles traveling southbound. The critical movement of the Ala Wai Boulevard approaches is the southbound left-turn and through traffic movement which operates at LOS "A" during both peak periods of traffic.

The Lipeepee Street approach of this intersection carries 41 westbound during the AM peak hour of traffic. During the PM peak hour, the traffic volume is higher with 85 vehicles traveling westbound. This approach operates at LOS "B" and LOS "C" during the AM and PM peak hours of traffic, respectively.

e. Ala Wai Boulevard and Kalakaua Avenue

At the intersection with Kalakaua Avenue, Ala Wai Boulevard carries 85 vehicles northbound and 1,329 vehicles southbound during the AM peak hour of traffic. During the PM peak hour of traffic, the overall traffic volume is slightly lower with 76 vehicles traveling northbound and 1,181 vehicles traveling southbound. The critical traffic movement of the Ala Wai Boulevard approaches is the southbound through and right-turn traffic movement that operates at LOS "C" during the both peak periods.

The Kalakaua Avenue approaches of this intersection carry 1,190 vehicles eastbound and 293 vehicles westbound during the AM peak hour of traffic. During the PM peak hour, the traffic volume is significantly higher with 1,856 vehicles traveling eastbound and 318 vehicles traveling westbound. The critical movement of the Kalakaua

Avenue approaches is the westbound through and right-turn traffic movement which operates at LOS "B" during both peak periods.

Overall, the intersection of Ala Wai Boulevard and Kalakaua Avenue operates at LOS "B" during both peak hours of traffic. These levels of service are consistent with field observations at the intersection which indicate that traffic operates smoothly during both peak hours of traffic. Traffic queues would periodically form on the approaches to the intersection, but most of these queues would clear the intersection after each traffic signal cycle change.

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

1. Trip Generation Methodology

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 7th Edition," 2003. The ITE trip generation rates are developed empirically by correlating the vehicle trip generation data with various land use characteristics such as the number of vehicle trips generated per dwelling unit. Table 2 summarizes the project site trip generation characteristics applied to the AM and PM peak hours of traffic.

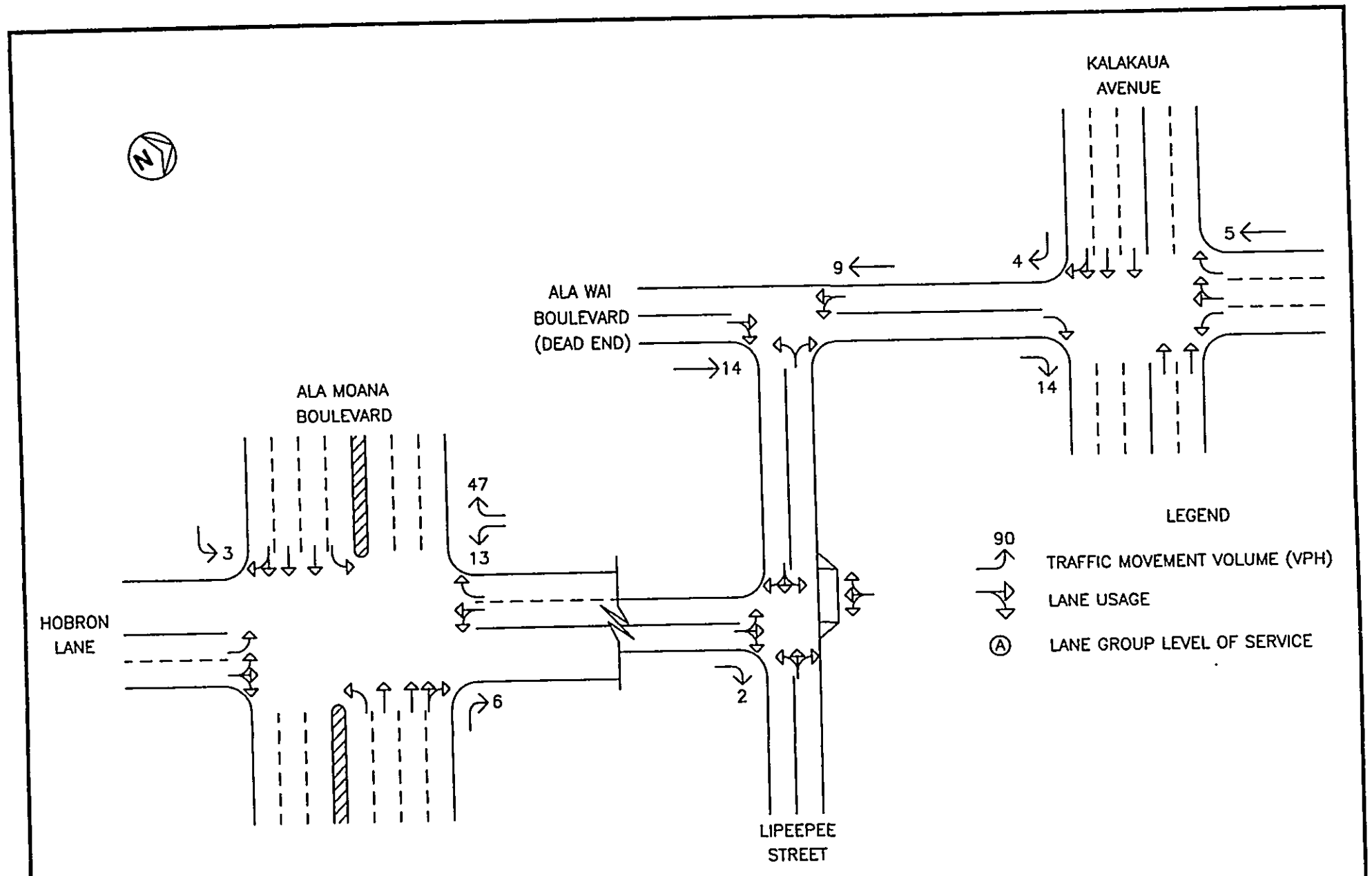
Table 2: Peak Hour Trip Generation

HIGH-RISE RESIDENTIAL CONDOMINIUM/TOWNHOUSE		
INDEPENDENT VARIABLE: Dwelling Units = 228		
		PROJECTED TRIP ENDS
AM PEAK	ENTER	18
	EXIT	77
	TOTAL	95
PM PEAK	ENTER	58
	EXIT	35
	TOTAL	93

2. Trip Distribution

Figures 5 and 6 show the distribution of site-generated traffic during the AM and PM peak periods. Access to the project site will be provided via two driveways, one along Ala Wai Boulevard and one along Hobron Lane. The directional distribution of site-generated vehicles between these two driveways was based the assumed direction of travel and route for all site-generated trips. The direction of travel for site-generated trips was based upon the prevailing directional distribution of traffic along Ala Moana Boulevard. As such, 39.3% of the vehicles were assumed to be traveling westbound during the AM peak period while 60.7% were assumed to be traveling eastbound. During the PM peak period, 44.0% were assumed to be traveling westbound while 56.0% were assumed to be traveling eastbound.

The route for all site-generated trips was based upon the relative distribution of traffic between the four roadways providing access to and from the project site. As such, for westbound exiting vehicles, all trips were assumed to utilize Ala Moana Boulevard during the AM peak period while eastbound exiting vehicles were distributed between Ala Moana Boulevard (42.8%), Hobron Lane (9.5%), and Kalakaua Avenue (47.7%). Similarly, for westbound entering vehicles, 53.4% were assumed to utilize Ala Moana Boulevard, 3.6% to utilize Hobron Lane, and 43.0% to utilize Ala Wai Boulevard while eastbound entering vehicles were split between Ala Moana Boulevard (47.3%) and Kalakaua Avenue (52.7%). During the PM peak period, for westbound exiting vehicles, all trips were assumed to utilize Ala Moana Boulevard while eastbound exiting vehicles were distributed between Ala Moana Boulevard (40.8%), Hobron Lane (10.4%), and Kalakaua Avenue (48.8%). Similarly, for westbound entering vehicles, 60.4% were assumed to utilize Ala Moana Boulevard, 3.4% to utilize Hobron Lane, and 36.2% to utilize Ala Wai Boulevard while eastbound entering vehicles were split between Ala Moana Boulevard (45.5%) and Kalakaua Avenue (54.5%).



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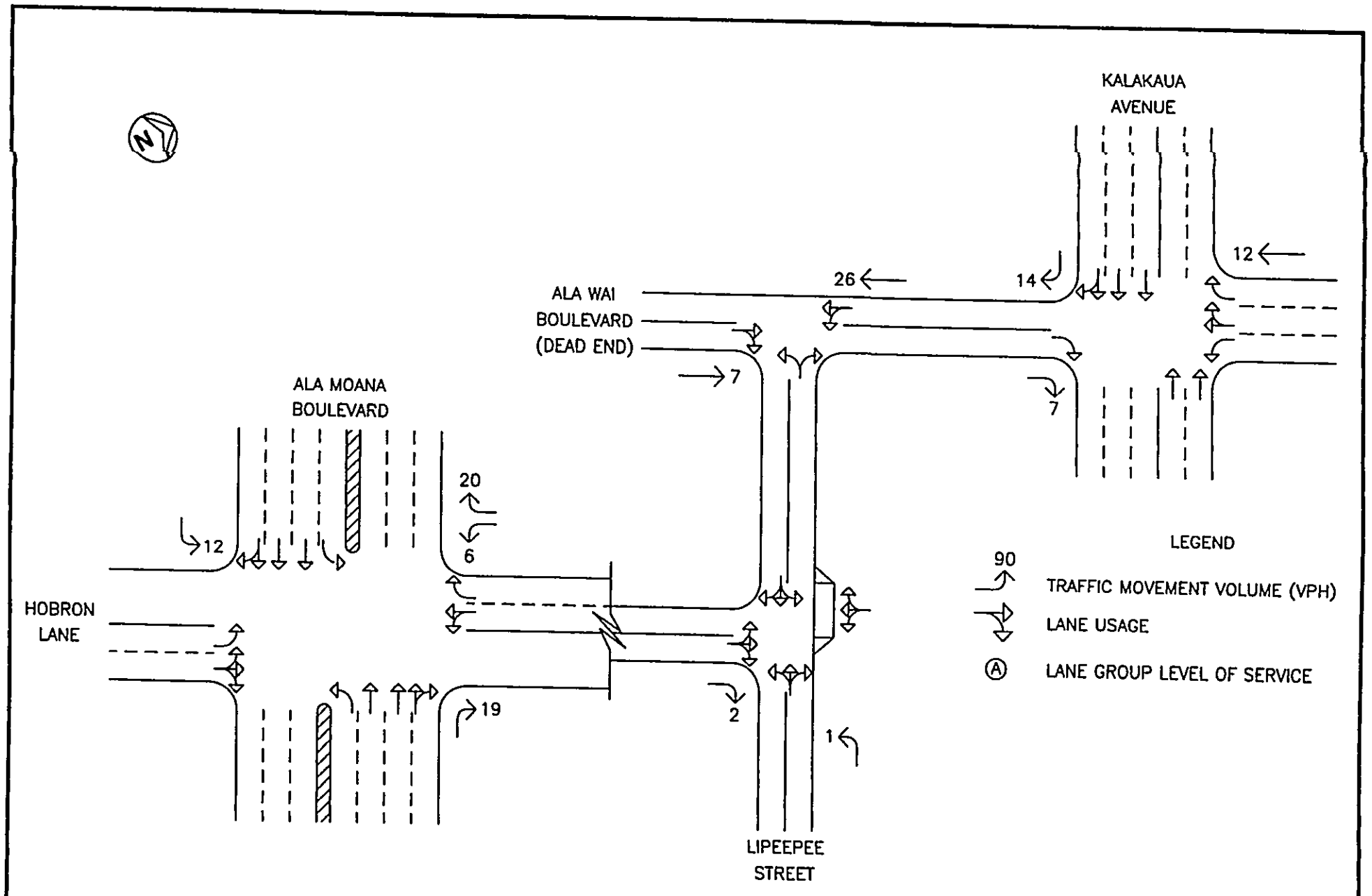
ALA WAI GATEWAY

DISTRIBUTION OF SITE-GENERATED TRAFFIC
YEAR 2007 AM PEAK HOUR OF TRAFFIC

FIGURE
5



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ALA WAI GATEWAY

DISTRIBUTION OF SITE-GENERATED TRAFFIC YEAR 2007 PM PEAK HOUR OF TRAFFIC

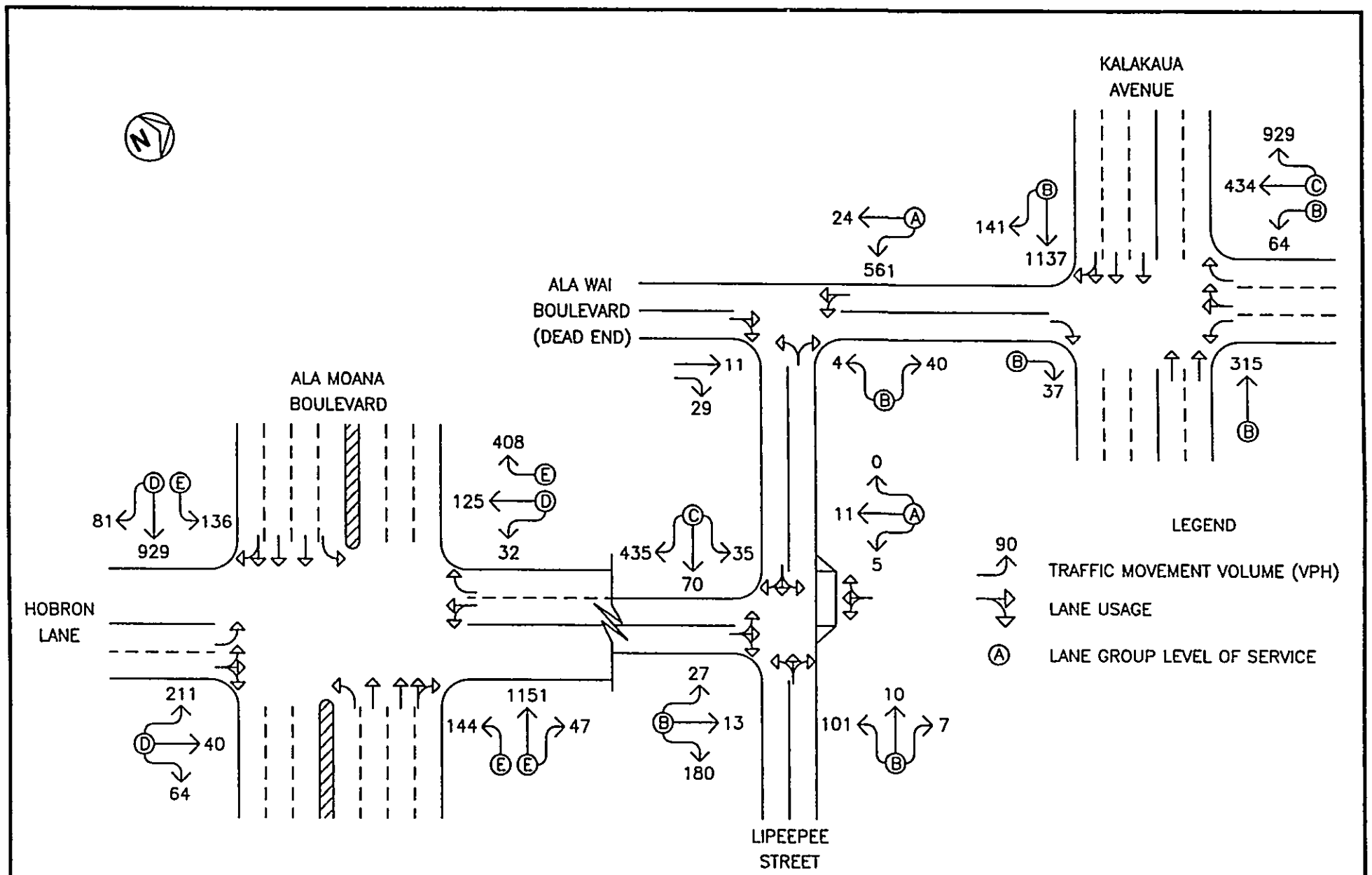
FIGURE 6

B. Through Traffic Forecasting Methodology

The travel forecast is based upon historical traffic count data obtained from the State DOT, Highways Division at survey stations located along Kalakaua Avenue at the Ala Wai Canal Bridge and at the intersection of Ala Moana Boulevard and Kalakaua Avenue. The historical data were analyzed by linear regression techniques to obtain an annual traffic growth rate. However, historical trends indicate a net decrease in traffic demands along Ala Moana Boulevard at Kalakaua Avenue partly due to the effects of tourism and other factors contributing to traffic demand. As such, for the purpose of this study, the annual traffic growth rate of 2.4% from the survey station at the Ala Wai Canal Bridge was conservatively assumed to apply to the through traffic volumes at the study intersections along Kalakaua Avenue and Ala Moana Boulevard. In addition, since Lipeepee Street and Hobron Lane are often utilized as a "cut-through" between these two roadways, the existing traffic volumes along this route were also augmented utilizing the same annual growth rate. As such, using 2004 as the Base Year, a growth rate factor of 1.074 was applied to the existing traffic demands at the study intersections to simulate projected Year 2007 traffic demands at those intersections.

C. Total Traffic Volumes Without Project

Figures 7 and 8 show the projected AM peak hour and PM peak hour traffic volumes and operating conditions in the project vicinity without the development of the proposed Ala Wai Gateway development. A comparison of the existing and projected (without project) levels of service are included in Table 3. LOS calculations are included in Appendix D.



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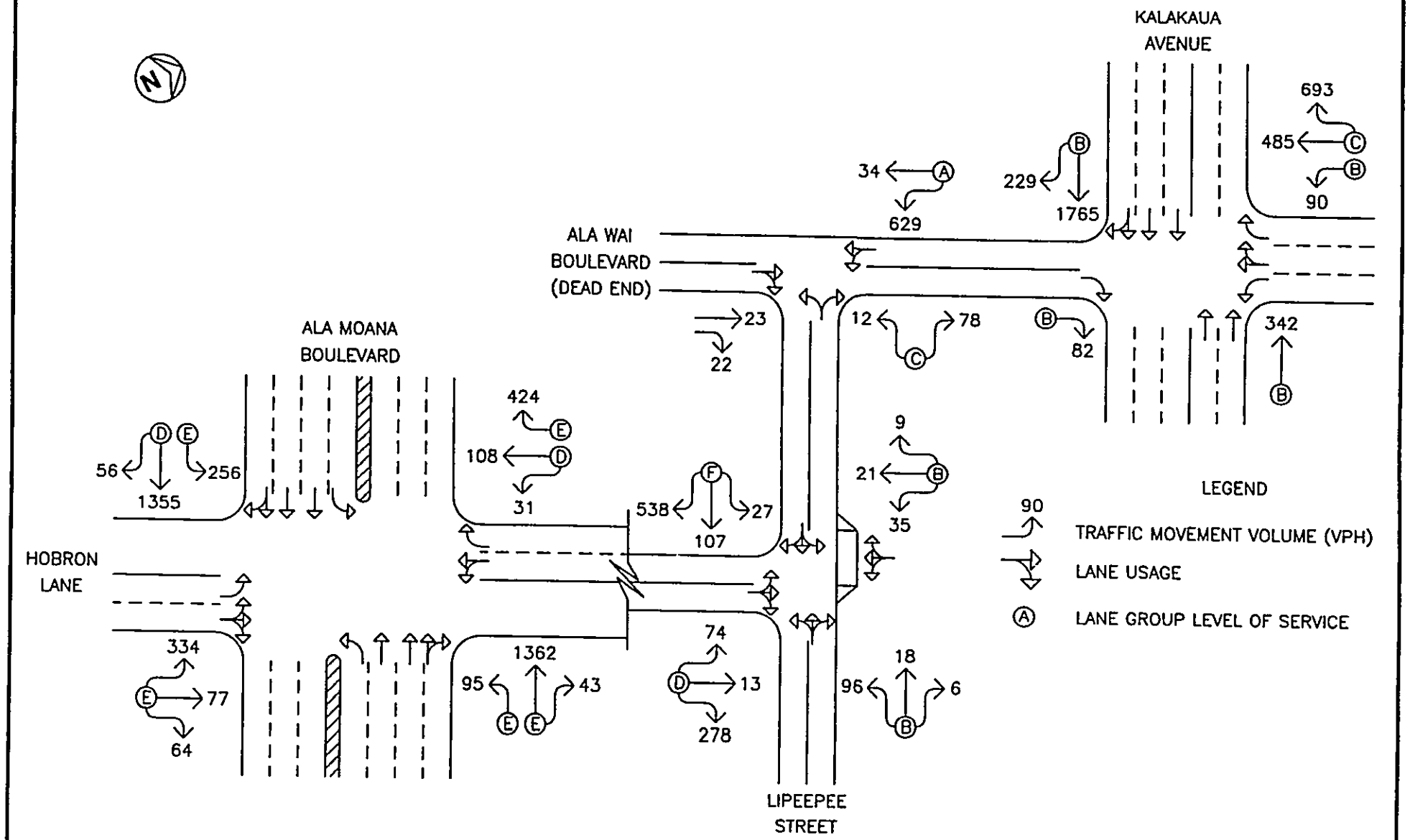
ALA WAI GATEWAY

YEAR 2007 AM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 7



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ALA WAI GATEWAY

YEAR 2007 PM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 8

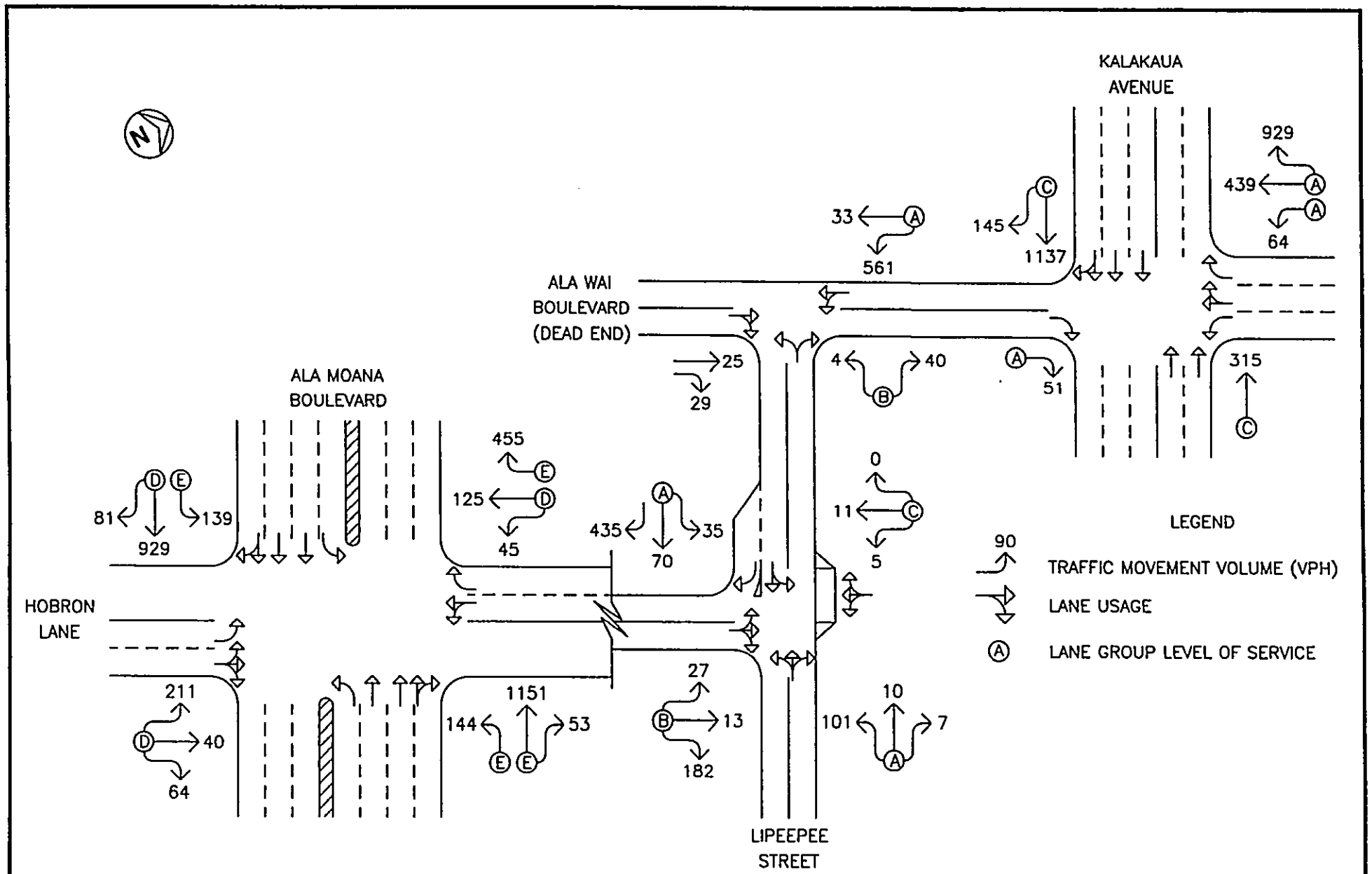
Table 3: Existing and Projected (Without Project) Traffic Operating Conditions

Intersection	Critical Movement	AM		PM	
		Exist	Year 2007 w/out Proj	Exist	Year 2007 w/out Proj
Ala Moana Blvd/ Hobron Ln	Eastbound (LT)	D	E	E	E
	Westbound (TH-RT)	D	E	E	E
	Southbound (RT)	E	E	D	D
Hobron Ln/Lipeepee St	Eastbound (LT-TH-RT)	C	C	F	F
	Northbound (LT-TH-RT)	B	B	C	D
Ala Wai Blvd/ Lipeepee St	Westbound (LT-RT)	B	B	C	C
	Southbound (LT-TH)	A	A	A	A
Ala Wai Blvd/ Kalakaua Ave	Eastbound (TH-RT)	B	B	B	B
	Southbound (TH-RT)	C	C	C	C

Traffic operations under Year 2007 without project conditions are expected to deteriorate from existing conditions due to the anticipated increases in ambient traffic along the roadways within the project vicinity during the AM and PM peak periods. Along Ala Moana Boulevard, the critical movements on the eastbound and westbound approaches at the intersection with Hobron Lane are anticipated to deteriorate from LOS "D" to LOS "E" during the AM peak period. During the PM peak period, the northbound approach of Hobron Lane at the intersection with Lipeepee Street is expected to deteriorate from LOS "C" to LOS "D." The remaining critical movements at the study intersections are expected to operate at levels of service similar to existing traffic conditions during both peak hours of traffic.

D. Total Traffic Volumes With Project

Figures 9 and 10 show the cumulative AM and PM peak hour traffic conditions resulting from the projected external traffic and the development of the proposed Ala Wai Gateway development. The cumulative volumes consist of site-



WILSON OKAMOTO CORPORATION
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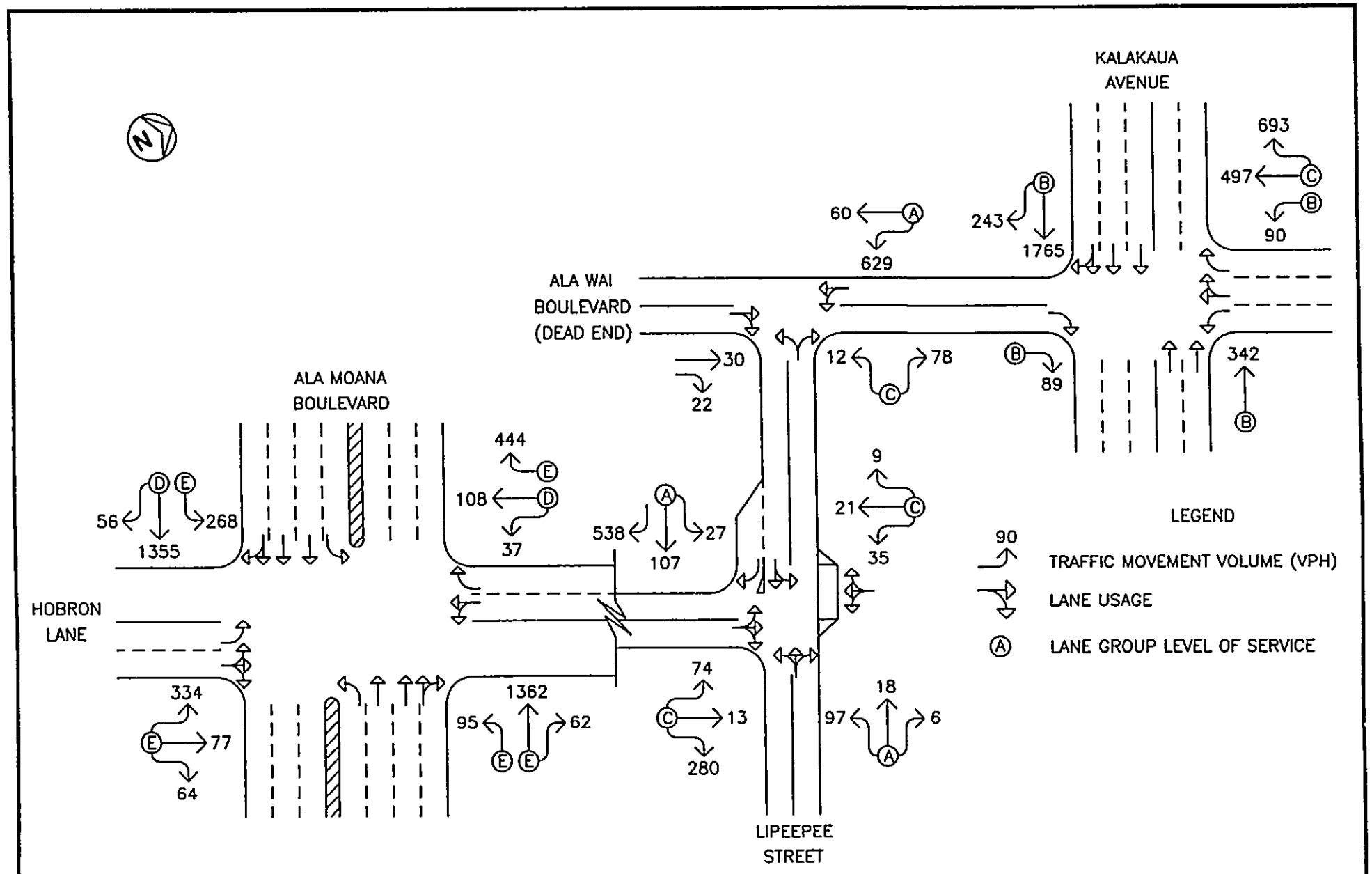
ALA WAI GATEWAY

YEAR 2007 AM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 9



ALA WAI GATEWAY

YEAR 2007 PM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 10

WILSON OKAMOTO CORPORATION
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generated traffic superimposed over Year 2007 projected traffic demands. The traffic impacts resulting from the proposed project are addressed in the following section.

V. TRAFFIC IMPACT ANALYSIS

The Year 2007 cumulative AM and PM peak hour traffic conditions with the development of the proposed Ala Wai Gateway development are summarized in Table 4. Due to the existing and projected high volume of eastbound right-turning vehicles at the intersection of Hobron Lane and Lipeepee Street and the resulting unacceptable levels of service, the intersection should be modified to provide a dedicated right-turn lane on the eastbound approach and should be converted from an all-way stop controlled intersection to a two-way stop controlled intersection with eastbound and westbound traffic traveling through the intersection unimpeded. These improvements are assumed to be completed by the Year 2007 to alleviate existing and projected traffic conditions. The existing and projected Year 2007 operating conditions without the proposed project are provided for comparison purposes. LOS calculations are included in Appendix E.

Table 4: Existing and Projected (With and Without Project) Traffic Operating Conditions

Intersection	Critical Movement	AM			PM		
		Exist	Year 2007		Exist	Year 2007	
			w/out Proj	w/ Proj		w/out Proj	w/ Proj
Ala Moana Blvd/ Hobron Ln	Eastbound (LT)	D	E	E	E	E	E
	Westbound (TH-RT)	D	E	E	E	E	E
	Southbound (RT)	E	E	E	D	D	D
Hobron Ln/Lipeepee St	Eastbound (LT-TH-RT)	C	C	A	F	F	A
	Northbound (LT-TH-RT)	B	B	B	C	D	C
Ala Wai Blvd/ Lipeepee St	Westbound (LT-RT)	B	B	B	C	C	C
	Southbound (LT-TH)	A	A	A	A	A	A
Ala Wai Blvd/ Kalakaua Ave	Eastbound (TH-RT)	B	B	B	B	B	B
	Southbound (TH-RT)	C	C	C	C	C	C

Traffic operations under Year 2007 with project conditions are expected, in general, to operate at levels of service similar to Year 2007 without project conditions in the project vicinity during the AM and PM peak periods. Due to modifications at the intersection of Hobron Lane and Lipeepee Street to provide a dedicated right-turn lane on the eastbound approach and the conversion of the intersection to a two-way stop controlled intersection, the critical movements at that intersection are anticipated to improve significantly from Year 2007 without project conditions. The eastbound approach is expected to operate at LOS "A" during both peak hours while the northbound approach is expected to operate at LOS "B" and LOS "C" during the AM and PM peak hours of traffic, respectively. All of the critical movements at the remaining study intersections are expected to operate at levels of service similar to Year 2007 without project traffic conditions during both peak hours of traffic.

VI. RECOMMENDATIONS

Based on the analysis of the traffic data, the following are the recommendations of this study associated with the project implementation:

1. Provide sufficient driveway width to accommodate safe vehicle ingress and egress.
2. Provide adequate turning radii at all project driveways to avoid or minimize vehicle encroachments to oncoming traffic lanes.
3. Maintain adequate sight distances for motorists to safely enter and exit all project driveways.
4. Provide adequate on-site loading and off-loading service areas and prohibit off-site loading operations.
5. Provide a dedicated right-turn lane on the eastbound approach of the intersection of Hobron Lane and Lipeepee Street.
6. Convert the intersection of Hobron Lane and Lipeepee Street from an all-way stop controlled intersection to a two-way stop controlled intersection with eastbound and westbound traffic traveling through the intersection unimpeded.
7. Ensure that parking area gates are located an adequate distance from the adjacent City streets to ensure that vehicular queues to not encroach onto these streets.

VII. CONCLUSION

With the modifications to the intersection control and configuration at the intersection of Hobron Lane and Lipeepee Street and the implementation of the remainder of the aforementioned recommendations, the proposed Ala Wai Gateway development is not expected to have a significant impact on traffic operations in the project vicinity. The total traffic volumes entering the study intersections along Kalakaua Avenue and Hobron Lane are expected to increase by less than 2% during both peak hours of traffic with the development of the proposed project. These increases in the total traffic volumes are in the range of daily volume fluctuations along those roadways and represent a minimal increase in the overall traffic volumes. The increases in the total traffic volumes entering the study intersection at the intersection of Ala Wai Boulevard and Lipeepee Street during the AM and PM peak hours of traffic are higher, approximately 3-4%. However, the critical movements at this intersection are expected to continue operating at acceptable levels of service despite the anticipated increases in traffic.

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0768/D1-0769
Counted By: IQ/TO
Weather: Clear

File Name : HobalaA
Site Code : 00000004
Start Date : 7/15/2004
Page No : 1

Groups Printed- 1 - Unshifted

	Hobron Lane Southbound					Ala Moana Blvd Westbound					Hobron Lane Northbound					Ala Moana Blvd Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
07:00 AM	7	27	76	44	154	29	250	18	94	391	40	10	12	48	110	20	198	17	2	237	892
07:15 AM	2	29	97	45	173	33	289	9	87	418	48	7	19	32	106	25	201	25	4	255	952
07:30 AM	7	23	84	65	179	39	281	14	131	465	52	12	15	26	105	31	237	21	7	296	1045
07:45 AM	11	30	115	66	222	25	263	11	98	397	47	9	14	31	101	25	200	12	3	240	960
Total	27	109	372	220	728	126	1083	52	410	1671	187	38	60	137	422	101	836	75	16	1028	3849
08:00 AM	10	34	84	47	175	37	239	10	68	354	49	9	12	26	96	46	227	17	5	295	920
08:15 AM	15	30	101	44	190	27	228	13	101	369	39	12	23	25	99	37	210	24	4	275	933
03:30 AM	11	18	101	70	200	20	202	12	93	327	52	4	25	36	117	47	182	17	13	259	903
08:45 AM	4	32	63	57	156	23	224	9	80	336	53	9	19	40	121	27	168	21	8	224	837
Total	40	114	349	218	721	107	893	44	342	1386	193	34	79	127	433	157	787	79	30	1053	3593
Grand Total	67	223	721	438	1449	233	1976	96	752	3057	380	72	139	264	855	258	1623	154	46	2081	7442
Apprch %	4.6	15.4	49.8	30.2		7.6	64.6	3.1	24.6		44.4	8.4	16.3	30.9		12.4	78.0	7.4	2.2		
Total %	0.9	3.0	9.7	5.9	19.5	3.1	26.6	1.3	10.1	41.1	5.1	1.0	1.9	3.5	11.5	3.5	21.8	2.1	0.6	28.0	

	Hobron Lane Southbound					Ala Moana Blvd Westbound					Hobron Lane Northbound					Ala Moana Blvd Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Intersection	07:15 AM																				
Volume	30	116	380	223	749	134	1072	44	384	1634	196	37	60	115	408	127	865	75	19	1086	3877
Percent	4.0	15.5	50.7	29.8		8.2	65.6	2.7	23.5		48.0	9.1	14.7	28.2		11.7	79.7	6.9	1.7		
07:30 Volume	7	23	84	65	179	39	281	14	131	465	52	12	15	26	105	31	237	21	7	296	1045
Peak Factor																					0.928
High Int.	07:45 AM					07:30 AM					07:15 AM					07:30 AM					
Volume	11	30	115	66	222	39	281	14	131	465	48	7	19	32	106	31	237	21	7	296	
Peak Factor					0.843					0.878					0.962					0.917	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0768/D1-0769
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Weather: Clear

File Name : HobalaP
Site Code : 00000004
Start Date : 7/15/2004
Page No : 1

Groups Printed- 1 - Unshifted

	Hobron Lane Southbound					Ala Moana Blvd Westbound					Hobron Lane Northbound					Ala Moana Blvd Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		
03:30 PM	7	29	92	103	231	18	344	15	117	494	64	18	15	35	132	62	348	20	10	440	1297
03:45 PM	10	21	102	123	256	22	286	6	101	415	69	15	19	51	154	44	271	12	1	328	1153
Total	17	50	194	226	487	40	630	21	218	909	133	33	34	86	286	106	619	32	11	768	2450
04:00 PM	6	26	102	104	238	24	334	10	99	467	76	19	11	75	181	72	348	10	6	436	1322
04:15 PM	6	25	99	99	229	24	304	9	91	428	102	20	15	29	166	60	295	10	6	371	1194
04:30 PM	6	38	89	111	244	22	344	10	86	462	71	17	21	34	143	72	302	11	14	399	1248
04:45 PM	9	32	91	96	228	19	271	9	129	428	64	15	18	51	148	61	310	10	5	386	1190
Total	27	121	381	410	939	89	1253	38	405	1785	313	71	65	189	638	265	1255	41	31	1592	4954
05:00 PM	12	40	114	129	295	24	296	12	130	462	65	20	15	70	170	70	289	11	3	373	1300
05:15 PM	6	29	80	104	219	33	264	5	110	412	68	14	19	87	188	54	266	39	3	362	1181
05:30 PM	6	31	115	97	249	31	258	10	143	442	66	14	24	94	198	49	271	19	6	345	1234
05:45 PM	6	27	79	105	217	28	276	13	132	449	51	23	12	104	190	65	307	14	5	391	1247
Total	30	127	388	435	980	116	1094	40	515	1765	250	71	70	355	746	238	1133	83	17	1471	4962
06:00 PM	6	29	103	136	274	21	230	12	162	425	71	23	21	77	192	60	296	15	6	377	1268
06:15 PM	0	0	0	0	0	0	0	0	0	0	60	18	20	115	213	61	303	20	6	390	603
Grand Total	80	327	1066	1207	2680	266	3207	111	1300	4884	827	216	210	822	2075	730	3606	191	71	4598	14237
Apprch %	3.0	12.2	39.8	45.0		5.4	65.7	2.3	26.6		39.9	10.4	10.1	39.6		15.9	78.4	4.2	1.5		
Total %	0.6	2.3	7.5	8.5	18.8	1.9	22.5	0.8	9.1	34.3	5.8	1.5	1.5	5.8	14.6	5.1	25.3	1.3	0.5	32.3	

	Hobron Lane Southbound					Ala Moana Blvd Westbound					Hobron Lane Northbound					Ala Moana Blvd Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour From 03:30 PM to 06:15 PM - Peak 1 of 1																					
Intersection	03:30 PM																				
Volume	29	101	395	429	954	88	1268	40	408	1804	311	72	60	190	633	238	1262	52	23	1575	4966
Percent	3.0	10.6	41.4	45.0		4.9	70.3	2.2	22.6		49.1	11.4	9.5	30.0		15.1	80.1	3.3	1.5		
04:00 Volume	6	26	102	104	238	24	334	10	99	467	76	19	11	75	181	72	348	10	6	436	1322
Peak Factor																					0.939
High Int.	03:45 PM					03:30 PM					04:00 PM					03:30 PM					
Volume	10	21	102	123	256	18	344	15	117	494	76	19	11	75	181	62	348	20	10	440	
Peak Factor					0.932					0.913					0.874					0.895	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0528
Counted By:TO
Weather: Clear

File Name : LiphobA
Site Code : 00000002
Start Date : 7/15/2004
Page No : 1

Groups Printed- Unshifted

	Lipeepee St Southbound				Hobron Lane Westbound				Lipeepee St Northbound				Hobron Lane Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	6	1	0	7	24	0	3	27	5	6	42	53	10	10	95	115	202
07:15 AM	1	2	0	3	19	2	1	22	10	1	33	44	3	12	95	110	179
07:30 AM	0	4	0	4	17	2	0	19	9	2	51	62	6	12	93	111	196
07:45 AM	1	3	0	4	23	3	1	27	4	2	29	35	9	23	102	134	200
Total	8	10	0	18	83	7	5	95	28	11	155	194	28	57	385	470	777
08:00 AM	1	0	0	1	22	3	2	27	7	4	43	54	9	11	102	122	204
08:15 AM	3	4	0	7	32	1	4	37	5	5	45	55	11	19	108	138	237
08:30 AM	2	1	1	4	22	4	3	29	5	13	31	49	12	22	80	114	196
08:45 AM	2	2	0	4	25	5	1	31	8	8	37	53	7	23	77	107	195
Total	8	7	1	16	101	13	10	124	25	30	156	211	39	75	367	481	832
Grand Total	16	17	1	34	184	20	15	219	53	41	311	405	67	132	752	951	1609
Apprch %	47.1	50.0	2.9		84.0	9.1	6.8		13.1	10.1	76.8		7.0	13.9	79.1		
Total %	1.0	1.1	0.1	2.1	11.4	1.2	0.9	13.6	3.3	2.5	19.3	25.2	4.2	8.2	46.7	59.1	

	Lipeepee St Southbound				Hobron Lane Westbound				Lipeepee St Northbound				Hobron Lane Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	5	11	0	16	94	9	7	110	25	13	168	206	35	65	405	505	837
Percent	31.3	68.8	0.0		85.5	8.2	6.4		12.1	6.3	81.6		6.9	12.9	80.2		
08:15 Volume	3	4	0	7	32	1	4	37	5	5	45	55	11	19	108	138	237
Peak Factor																	0.883
High Int.	08:15 AM				08:15 AM				07:30 AM				08:15 AM				
Volume	3	4	0	7	32	1	4	37	9	2	51	62	11	19	108	138	
Peak Factor				0.571				0.743				0.831				0.915	

Wilson Okamoto Corporation
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Honolulu, HI 96826

Counter: D1-0528
Counted By:TO
Weather: Clear

File Name : LiphobP
Site Code : 00000002
Start Date : 7/15/2004
Page No : 1

Groups Printed- Unshifted

	Driveway Southbound				Lipeepee St Westbound				Hobron Ln Northbound				Lipeepee St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
03:30 PM	4	5	0	9	28	5	1	34	11	5	55	71	6	29	112	147	261
03:45 PM	6	4	0	10	26	9	1	36	12	2	54	68	6	25	98	129	243
Total	10	9	0	19	54	14	2	70	23	7	109	139	12	54	210	276	504
04:00 PM	5	6	0	11	24	5	1	30	14	4	72	90	4	23	116	143	274
04:15 PM	8	7	2	17	21	1	1	23	10	1	64	75	8	33	99	140	255
04:30 PM	3	6	0	9	23	4	3	30	11	0	65	76	3	26	126	155	270
04:45 PM	8	3	5	16	23	3	0	26	20	7	76	103	8	26	120	154	299
Total	24	22	7	53	91	13	5	109	55	12	277	344	23	108	461	592	1098
05:00 PM	16	7	2	25	21	2	2	25	13	2	67	82	5	23	132	160	292
05:15 PM	9	3	1	13	23	8	1	32	19	2	54	75	7	22	110	139	259
05:30 PM	2	8	1	11	22	4	3	29	17	2	62	81	7	29	139	175	296
05:45 PM	4	9	0	13	19	5	2	26	13	2	73	88	3	26	105	134	261
Total	31	27	4	62	85	19	8	112	62	8	256	326	22	100	486	608	1108
06:00 PM	14	11	0	25	18	6	2	26	13	2	59	74	2	28	105	135	260
Grand Total	79	69	11	159	248	52	17	317	153	29	701	883	59	290	1262	1611	2970
Apprch %	49.7	43.4	6.9		78.2	16.4	5.4		17.3	3.3	79.4		3.7	18.0	78.3		
Total %	2.7	2.3	0.4	5.4	8.4	1.8	0.6	10.7	5.2	1.0	23.6	29.7	2.0	9.8	42.5	54.2	

	Driveway Southbound				Lipeepee St Westbound				Hobron Ln Northbound				Lipeepee St Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 03:30 PM to 06:00 PM - Peak 1 of 1																	
Intersection	04:45 PM																
Volume	35	21	9	65	89	17	6	112	69	13	259	341	27	100	501	628	1146
Percent	53.8	32.3	13.8		79.5	15.2	5.4		20.2	3.8	76.0		4.3	15.9	79.8		
04:45 Volume	8	3	5	16	23	3	0	26	20	7	76	103	8	26	120	154	299
Peak Factor																	0.958
High Int.	05:00 PM				05:15 PM				04:45 PM				05:30 PM				
Volume	16	7	2	25	23	8	1	32	20	7	76	103	7	29	139	175	
Peak Factor				0.650				0.875				0.828				0.897	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
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Counter: D1-0528
Counted By: TO
Weather:Clear

File Name : LipalaA
Site Code : 00000001
Start Date : 7/14/2004
Page No : 1

Groups Printed- Unshifted

	Ala Wai Blvd Southbound				Lipeepee St Westbound				Ala Wai Blvd Northbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0			
07:00 AM	102	4	0	106	0	0	3	3	0	3	10	13	0	122
07:15 AM	110	4	0	114	3	0	6	9	0	5	8	13	0	136
07:30 AM	119	6	0	125	0	0	4	4	0	3	4	7	0	136
07:45 AM	128	2	0	130	1	0	11	12	0	2	3	5	0	147
Total	459	16	0	475	4	0	24	28	0	13	25	38	0	541
08:00 AM	139	8	0	147	0	0	6	6	0	2	5	7	0	160
08:15 AM	124	6	0	130	2	0	7	9	0	2	12	14	0	153
08:30 AM	131	8	0	139	1	0	13	14	0	5	9	14	0	167
08:45 AM	101	5	0	106	0	0	12	12	0	3	5	8	0	126
Total	495	27	0	522	3	0	38	41	0	12	31	43	0	606
Grand Total	954	43	0	997	7	0	62	69	0	25	56	81	0	1147
Apprch %	95.7	4.3	0.0		10.1	0.0	89.9		0.0	30.9	69.1			
Total %	83.2	3.7	0.0	86.9	0.6	0.0	5.4	6.0	0.0	2.2	4.9	7.1	0.0	

	Ala Wai Blvd Southbound				Lipeepee St Westbound				Ala Wai Blvd Northbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1														
Intersection	07:45 AM													
Volume	522	24	0	546	4	0	37	41	0	11	29	40	0	627
Percent	95.6	4.4	0.0		9.8	0.0	90.2		0.0	27.5	72.5			
08:30 Volume	131	8	0	139	1	0	13	14	0	5	9	14	0	167
Peak Factor														0.939
High Int.	08:00 AM				08:30 AM				08:15 AM				6:45:00 AM	
Volume	139	8	0	147	1	0	13	14	0	2	12	14		
Peak Factor				0.929				0.732				0.714		

Counter: D1-0528
Counted By: TO
Weather: Clear

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

File Name : LipalaP
Site Code : 00000001
Start Date : 7/14/2004
Page No : 1

Groups Printed- Unshifted

	Ala Wai Blvd Southbound				Lipeepee St Westbound				Ala Wai Blvd Northbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0			
03:30 PM	145	6	0	151	4	0	12	16	0	6	8	14	0	181
03:45 PM	142	4	0	146	2	0	15	17	0	6	3	9	0	172
Total	287	10	0	297	6	0	27	33	0	12	11	23	0	353
04:00 PM	146	6	0	152	2	0	14	16	0	4	4	8	0	176
04:15 PM	137	8	0	145	5	0	17	22	0	3	6	9	0	176
04:30 PM	150	7	0	157	4	0	16	20	0	7	2	9	0	186
04:45 PM	163	12	0	175	1	0	16	17	0	7	8	15	0	207
Total	596	33	0	629	12	0	63	75	0	21	20	41	0	745
05:00 PM	136	7	0	143	2	0	24	26	0	6	6	12	0	181
05:15 PM	132	6	0	138	2	0	17	19	0	3	8	11	0	168
05:30 PM	158	3	0	161	5	0	12	17	0	5	7	12	0	190
05:45 PM	148	3	0	151	3	0	10	13	0	7	9	16	0	180
Total	574	19	0	593	12	0	63	75	0	21	30	51	0	719
06:00 PM	137	6	0	143	6	0	17	23	0	1	10	11	0	177
06:15 PM	133	9	0	142	7	0	17	24	0	6	10	16	0	182
Grand Total	1727	77	0	1804	43	0	187	230	0	61	81	142	0	2176
Apprch %	95.7	4.3	0.0		18.7	0.0	81.3		0.0	43.0	57.0			
Total %	79.4	3.5	0.0	82.9	2.0	0.0	8.6	10.6	0.0	2.8	3.7	6.5	0.0	

	Ala Wai Blvd Southbound				Lipeepee St Westbound				Ala Wai Blvd Northbound					
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour From 03:30 PM to 06:15 PM - Peak 1 of 1														
Intersection	04:15 PM													
Volume	586	34	0	620	12	0	73	85	0	23	22	45	0	750
Percent	94.5	5.5	0.0		14.1	0.0	85.9		0.0	51.1	48.9			
04:45 Volume	163	12	0	175	1	0	16	17	0	7	8	15	0	207
Peak Factor														0.906
High Int.	04:45 PM				05:00 PM				04:45 PM				3:15:00 PM	
Volume	163	12	0	175	2	0	24	26	0	7	8	15		
Peak Factor				0.886				0.817				0.750		

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0768/D1-0769
Counted By: IQ/TO
Weather: Clear

File Name : KalalaA
Site Code : 00000001
Start Date : 7/14/2004
Page No : 1

Groups Printed- 1 - Unshifted

	Ala Wai Blvd Southbound				Kalakaua Ave Westbound				Ala Wai Blvd Northbound				Kalakaua Ave Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
07:00 AM	9	76	215	300	0	62	0	62	0	0	5	5	0	216	33	249	616
07:15 AM	7	82	221	310	0	64	0	64	0	0	11	11	0	254	21	275	660
07:30 AM	8	88	222	318	0	83	0	83	0	0	7	7	0	288	35	323	731
07:45 AM	19	106	188	313	0	70	0	70	0	0	8	8	0	266	31	297	688
Total	43	352	846	1241	0	279	0	279	0	0	31	31	0	1024	120	1144	2695
08:00 AM	20	108	235	363	0	71	0	71	0	0	11	11	0	274	25	299	744
08:15 AM	13	102	220	335	0	69	0	69	0	0	8	8	0	231	40	271	683
08:30 AM	22	103	166	291	0	57	0	57	0	0	17	17	0	259	50	309	674
08:45 AM	18	71	180	269	0	75	0	75	0	0	14	14	0	250	35	285	643
Total	73	384	801	1258	0	272	0	272	0	0	50	50	0	1014	150	1164	2744
Grand Total	116	736	1647	2499	0	551	0	551	0	0	81	81	0	2038	270	2308	5439
Apprch %	4.6	29.5	65.9		0.0	100.0	0.0		0.0	0.0	100.0		0.0	88.3	11.7		
Total %	2.1	13.5	30.3	45.9	0.0	10.1	0.0	10.1	0.0	0.0	1.5	1.5	0.0	37.5	5.0	42.4	

	Ala Wai Blvd Southbound				Kalakaua Ave Westbound				Ala Wai Blvd Northbound				Kalakaua Ave Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 07:00 AM to 08:45 AM - Peak 1 of 1																	
Intersection	07:30 AM																
Volume	60	404	865	1329	0	293	0	293	0	0	34	34	0	1059	131	1190	2846
Percent	4.5	30.4	65.1		0.0	100.0	0.0		0.0	0.0	100.0		0.0	89.0	11.0		
08:00 Volume	20	108	235	363	0	71	0	71	0	0	11	11	0	274	25	299	744
Peak Factor																	0.956
High Int.	08:00 AM				07:30 AM				08:00 AM				07:30 AM				
Volume	20	108	235	363	0	83	0	83	0	0	11	11	0	288	35	323	
Peak Factor				0.915				0.883				0.773				0.921	

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96826

Counter: D1-0768/D1-0769
Counted By: IQ/TO
Weather:Clear

File Name : KalalaP
Site Code : 00000001
Start Date : 7/14/2004
Page No : 1

Groups Printed- 1 - Unshifted

	Ala Wai Blvd Southbound				Kalakaua Ave Westbound				Ala Wai Blvd Northbound				Kalakaua Ave Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Factor	1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		1.0	1.0	1.0		
03:30 PM	25	103	179	307	0	76	0	76	0	0	16	16	0	393	47	440	839
03:45 PM	11	100	169	280	0	90	0	90	0	0	18	18	0	408	61	469	857
Total	36	203	348	587	0	166	0	166	0	0	34	34	0	801	108	909	1696
04:00 PM	18	92	174	284	0	85	0	85	0	0	11	11	0	404	63	467	847
04:15 PM	22	94	195	311	0	91	0	91	0	0	17	17	0	364	56	420	839
04:30 PM	21	117	168	306	0	85	0	85	0	0	17	17	0	338	57	395	803
04:45 PM	25	111	157	293	0	82	0	82	0	0	17	17	0	404	65	469	861
Total	86	414	694	1194	0	343	0	343	0	0	62	62	0	1510	241	1751	3350
05:00 PM	14	106	156	276	0	84	0	84	0	0	24	24	0	428	57	485	869
05:15 PM	21	118	170	309	0	89	0	89	0	0	26	26	0	373	51	424	848
05:30 PM	24	117	162	303	0	63	0	63	0	0	9	9	0	438	40	478	853
05:45 PM	18	91	177	286	0	84	0	84	0	0	17	17	0	408	61	469	856
Total	77	432	665	1174	0	320	0	320	0	0	76	76	0	1647	209	1856	3426
06:00 PM	22	86	170	278	0	79	0	79	0	0	15	15	0	386	62	448	820
06:15 PM	22	107	182	311	0	68	0	68	0	0	19	19	0	401	54	455	853
Grand Total	243	1242	2059	3544	0	976	0	976	0	0	206	206	0	4745	674	5419	10145
Apprch %	6.9	35.0	58.1		0.0	100.0	0.0		0.0	0.0	100.0		0.0	87.6	12.4		
Total %	2.4	12.2	20.3	34.9	0.0	9.6	0.0	9.6	0.0	0.0	2.0	2.0	0.0	46.8	6.6	53.4	

	Ala Wai Blvd Southbound				Kalakaua Ave Westbound				Ala Wai Blvd Northbound				Kalakaua Ave Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour From 03:30 PM to 06:15 PM - Peak 1 of 1																	
Intersection	04:45 PM																
Volume	84	452	645	1181	0	318	0	318	0	0	76	76	0	1643	213	1856	3431
Percent	7.1	38.3	54.6		0.0	100.0	0.0		0.0	0.0	100.0		0.0	88.5	11.5		
05:00 Volume	14	106	156	276	0	84	0	84	0	0	24	24	0	428	57	485	869
Peak Factor																	0.987
High Int.	05:15 PM				05:15 PM				05:15 PM				05:00 PM				
Volume	21	118	170	309	0	89	0	89	0	0	26	26	0	428	57	485	
Peak Factor				0.956				0.893				0.731				0.957	

Wilson Okamoto Corporation
1907 S. Beretania Street #400
Honolulu, HI 96826

Title1 : Ala Wai Gateway
Title2 :
Title3 :

Site: 100000000000
Date: 07/13/04
Day: Tuesday

Interval	NB			SB			Combined		
Begin	AM	PM		AM	PM		AM	PM	
12:00									
12:15									
12:30									
12:45									
01:00									
01:15									
01:30									
01:45									
02:00									
02:15									
02:30		36			132			168	
02:45		51			198			249	
03:00		53	235		242	953		295	1,188
03:15		54			239			293	
03:30		66			262			328	
03:45		62			210			272	
04:00		70	273		238	954		308	1,227
04:15		64			248			312	
04:30		63			218			281	
04:45		76			250			326	
05:00		52	250		318	1,051		370	1,301
05:15		64			259			323	
05:30		70			238			308	
05:45		64			236			300	
06:00		58	235		228	870		286	1,105
06:15		68			198			266	
06:30		57			234			291	
06:45		52			210			262	
07:00		28	157		154	700		182	857
07:15		46			211			257	
07:30		48			173			221	
07:45		35			162			197	
08:00		45	147		136	565		181	712
08:15		31			121			152	
08:30		41			152			193	
08:45		30			156			186	
09:00		32	130		126	421		158	551
09:15		36			88			124	
09:30		40			116			156	
09:45		22			91			113	
10:00		42	123		94	401		136	524
10:15		30			127			157	
10:30		25			96			121	
10:45		26			84			110	
11:00		20	78		75	232		95	310
11:15		13			56			69	
11:30		22			44			66	
11:45		23			57			80	
Totals	0	1,715		0	6,477		0	8,192	
Split%		20.9			79.1				
Day Totals		1,715			6,477			8,192	
Day Splits		20.9			79.1				
Peak Hour		04:00			04:45			04:45	
Volume		273			1,065			1,327	
Factor		0.90			0.84			0.90	

Wilson Okamoto Corporation

1907 S. Beretania Street #400
Honolulu, HI 96826

Title1 : Ala Wai Gateway
Title2 :
Title3 :

Site: 100000000000
Date: 07/14/04

Interval	NB				SB				Combined				Day: Wednesday
Begin	AM		PM		AM		PM		AM		PM		
12:00	8	50	42	150	37	136	169	685	45	186	211	835	
12:15	13		36		37		158		50		194		
12:30	17		38		32		180		49		218		
12:45	12		34		30		178		42		212		
01:00	12	45	52	188	41	126	234	782	53	171	286	970	
01:15	7		44		29		190		36		234		
01:30	12		46		26		166		38		212		
01:45	14		46		30		192		44		238		
02:00	10	39	44	216	22	80	164	692	32	119	208	908	
02:15	12		44		16		214		28		258		
02:30	9		66		27		140		36		206		
02:45	8		62		15		174		23		236		
03:00	10	23	70	274	21	82	202	849	31	105	272	1,123	
03:15	6		66		26		170		32		236		
03:30	3		71		9		240		12		311		
03:45	4		67		26		237		30		304		
04:00	10	25	76	288	26	138	224	1,004	36	163	300	1,292	
04:15	5		62		20		236		25		298		
04:30	4		66		40		232		44		298		
04:45	6		84		52		312		58		396		
05:00	8	46	63	253	42	305	272	1,026	50	351	335	1,279	
05:15	12		68		76		258		88		326		
05:30	13		60		84		252		97		312		
05:45	13		62		103		244		116		306		
06:00	18	92	72	256	138	590	242	921	156	682	314	1,177	
06:15	24		58		114		257		138		315		
06:30	22		66		160		189		182		255		
06:45	28		60		178		233		206		293		
07:00	34	172	54	194	196	910	193	741	230	1,082	247	935	
07:15	36		51		242		200		278		251		
07:30	64		43		201		146		265		189		
07:45	38		46		271		202		309		248		
08:00	26	154	42	144	271	879	133	487	297	1,033	175	631	
08:15	50		36		214		166		264		202		
08:30	34		38		222		96		256		134		
08:45	44		28		172		92		216		120		
09:00	41	143	42	200	209	773	122	446	250	916	164	646	
09:15	27		30		200		109		227		139		
09:30	34		62		184		100		218		162		
09:45	41		66		180		115		221		181		
10:00	26	137	50	146	148	748	102	349	174	885	152	495	
10:15	40		36		187		117		227		153		
10:30	36		34		225		65		261		99		
10:45	35		26		188		65		223		91		
11:00	38	174	15	62	200	227	87	262	238	401	102	324	
11:15	38		18		77		80		115		98		
11:30	58		20		*		66		0		86		
11:45	40		9		8		29		48		38		
Totals	1,100		2,371		5,052		8,244		6,094		10,615		
Split%	18.1		22.3		82.9		77.7						
Day Totals		3,471				13,296				16,709			
Day Splits		20.8				79.6							
Peak Hour	07:30		04:00		07:15		04:45		07:15		04:45		
Volume	178		288		985		1,094		1,149		1,369		
Factor	0.70		0.86		0.91		0.88		0.93		0.86		

Wilson Okamoto Corporation
1907 S. Beretania Street #400
Honolulu, HI 96826

Title1 : Ala Wai Gateway
Title2 :
Title3 :

Site: 100000000000
Date: 07/15/04

Interval	NB				SB				Combined				Dry: Thursday
Begin	AM		PM		AM		PM		AM		PM		
12:00	17	44	48	179	32	148	171	734	49	192	219	913	
12:15	6		34		40		196		46		230		
12:30	9		46		28		183		37		229		
12:45	12		51		48		184		60		235		
01:00	16	44	50	208	27	113	170	758	43	157	220	966	
01:15	13		50		29		196		42		246		
01:30	11		58		35		216		46		274		
01:45	4		50		22		176		26		226		
02:00	11	30	59	285	40	122	190	744	51	152	249	1,029	
02:15	7		65		24		172		31		237		
02:30	4		84		20		180		24		264		
02:45	8		77		38		202		46		279		
03:00	4	18	86	291	13	91	200	882	17	109	286	1,173	
03:15	1		82		20		210		21		292		
03:30	3		62		24		234		27		296		
03:45	10		61		34		238		44		299		
04:00	6	30	74	301	24	150	217	892	30	180	291	1,193	
04:15	4		72		32		231		36		303		
04:30	6		72		32		242		38		314		
04:45	14		83		62		202		76		285		
05:00	7	53	86	290	59	291	260	980	66	344	346	1,270	
05:15	9		62		48		224		57		286		
05:30	19		73		86		266		105		339		
05:45	18		69		98		230		116		299		
06:00	18	93	74		123	616	236		141	709	310		
06:15	16		60		159		253		175		313		
06:30	27		0		170		0		197		0		
06:45	32		•		164		•		196		•		
07:00	40	150	•		211	857	•		251	1,007	•		
07:15	36		•		192		•		228		•		
07:30	47		•		208		•		255		•		
07:45	27		•		246		•		273		•		
08:00	46	166	•		228	877	•		274	1,043	•		
08:15	44		•		259		•		303		•		
08:30	38		•		204		•		242		•		
08:45	38		•		186		•		224		•		
09:00	28	135	•		220	818	•		248	953	•		
09:15	46		•		208		•		254		•		
09:30	26		•		210		•		236		•		
09:45	35		•		180		•		215		•		
10:00	34	167	•		185	779	•		219	946	•		
10:15	42		•		190		•		232		•		
10:30	47		•		222		•		269		•		
10:45	44		•		182		•		226		•		
11:00	42	199	•		194	785	•		236	984	•		
11:15	56		•		174		•		230		•		
11:30	52		•		212		•		264		•		
11:45	49		•		205		•		254		•		
Totals	1,129		1,688		5,647		5,479		6,776		7,167		
Split%	16.7		23.6		83.3		76.4						
Day Totals		2,817				11,126				13,943			
Day Splits		20.2				79.8							
Peak Hour	11:00		02:30		07:30		05:30		07:30		05:00		
Volume	199		329		941		985		1,105		1,270		
Factor	0.89		0.96		0.91		0.93		0.91		0.92		

APPENDIX B

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver discomfort, frustration, fuel consumption, and increased travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average control delay per vehicle, typically a 15-min analysis period. The criteria are given in the following table.

Table 1: Level-of-Service Criteria for Signalized Intersections

Level of Service	Control Delay per Vehicle (sec/veh)
A	≤10.0
B	>10.0 and ≤20.0
C	>20.0 and ≤35.0
D	>35.0 and ≤55.0
E	>55.0 and ≤80.0
F	>80.0

Delay is a complex measure and depends on a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group.

Level of Service A describes operations with low control delay, up to 10 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Many vehicles do not stop at all. Short cycle lengths may tend to contribute to low delay values.

Level of Service B describes operations with control delay greater than 10 and up to 20 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than with LOS A, causing higher levels of delay.

Level of Service C describes operations with control delay greater than 20 and up to 35 sec per vehicle. These higher delays may result from only fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level. Cycle failure occurs when a given green phase does not serve queued vehicles and overflows occur. The number of vehicles stopping is significant at this level, though many still pass through the intersection without stopping.

Level of Service D describes operations with control delay greater than 35 and up to 55 sec per vehicle. At level of service D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

"Highway Capacity Manual," Transportation Research Board, 2000.

Level of Service E describes operation with control delay greater than 55 and up to 80 sec per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent.

Level of Service F describes operations with control delay in excess of 80 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity lane groups. It may also occur at high v/c ratios with many individual cycle failures. Poor progression and long cycle lengths may also contribute significantly to high delay levels.

"Highway Capacity Manual," Transportation Research Board, 2000.

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) criteria are given in Table 1. As used here, control delay is defined as the total elapsed time from the time a vehicle stops at the end of the queue to the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position, including deceleration of vehicles from free-flow speed to the speed of vehicles in the queue.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. If the degree of saturation is greater than about 0.9, average control delay is significantly affected by the length of the analysis period.

Table 1: Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Control Delay (Sec/Veh)
A	≤10.0
B	>10.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤35.0
E	>35.0 and ≤50.0
F	>50.0

"Highway Capacity Manual," Transportation Research Board, 2000.

APPENDIX C

CAPACITY ANALYSIS CALCULATIONS
EXISTING PEAK HOUR TRAFFIC ANALYSIS

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: AM Peak
Project ID:
E/W St: Ala Moana Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Hobron Lane

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	0	1	3	0	1	1	0	0	1	1
LGConfig	L	TR		L	TR		L	LTR			LT	R
Volume	127	865	75	134	1072	44	196	37	60	30	116	380
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0			12.0	12.0
RTOR Vol			8			4			6			190

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left	A				NB	Left	A			
	Thru		A				Thru	A			
	Right		A				Right	A			
	Peds						Peds				
WB	Left	A				SB	Left		A		
	Thru		A				Thru		A		
	Right		A				Right		A		
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		23.0	40.0					27.0	30.0		
Yellow		4.0	4.0					4.0	4.0		
All Red		1.0	1.0					1.0	1.0		

Cycle Length: 140.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	291	1770	0.47	0.16	54.2	D		
TR	1437	5030	0.70	0.29	46.3	D	47.3	D
Westbound								
L	291	1770	0.52	0.16	55.2	E		
TR	1445	5058	0.87	0.29	54.3	D	54.4	D
Northbound								
L	341	1770	0.60	0.19	54.5	D		
LTR	327	1698	0.29	0.19	48.8	D	52.7	D
Southbound								
LT	395	1844	0.44	0.21	48.5	D	52.4	D
R	339	1583	0.67	0.21	55.5	E		

Intersection Delay = 51.5 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: PM Peak
Project ID:
E/W St: Ala Moana Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Hobron Lane

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	0	1	3	0	1	1	0	0	1	1
LGConfig	L	TR		L	TR		L	LTR			LT	R
Volume	238	1262	52	88	1268	40	311	72	60	29	101	395
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0			12.0	12.0
RTOR Vol			5			4			6			198

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A	A			NB Left	A		
Thru		A	A		Thru	A		
Right		A	A		Right	A		
Peds					Peds			
WB Left	A				SB Left		A	
Thru			A		Thru		A	
Right			A		Right		A	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	15.0	11.5	41.5			33.0	24.0	
Yellow	0.0	0.0	4.0			4.0	4.0	
All Red	0.0	0.0	1.0			1.0	1.0	

Cycle Length: 140.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	335	1770	0.79	0.19	67.0	E		
TR	1915	5058	0.76	0.38	39.8	D	44.0	D
Westbound								
L	190	1770	0.51	0.11	61.4	E		
TR	1501	5064	0.95	0.30	67.4	E	67.0	E
Northbound								
L	417	1770	0.86	0.24	69.8	E		
LTR	411	1743	0.35	0.24	45.1	D	62.7	E
Southbound								
LT	316	1842	0.44	0.17	53.0	D	63.6	E
R	271	1583	0.78	0.17	70.7	E		

Intersection Delay = 56.5 (sec/veh) Intersection LOS = E

HCS2000: Unsignalized Intersections Release 4.1d

Wilson Okamoto

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: CL
Agency/Co.:
Date Performed: 7/21/2004
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: Lipeepee St
North/South Street: Hobron Ln

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	35	65	405	94	9	7	25	13	168	5	11	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.92		0.74		0.83		0.57	
Flow Rate	548		148		247		27	
% Heavy Veh	2		2		2		2	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	548		148		247		27	
Left-Turn	38		127		30		8	
Right-Turn	440		9		202		0	
Prop. Left-Turns	0.1		0.9		0.1		0.3	
Prop. Right-Turns	0.8		0.1		0.8		0.0	

Prop. Heavy Vehicle	0.0	0.0	0.0	0.0
Geometry Group	1	1	1	1
Adjustments Exhibit 17-33:				
hLT-adj	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7
hadj, computed	-0.4	0.2	-0.4	0.1

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	548		148		247		27	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.49		0.13		0.22		0.02	
hd, final value	4.46		5.53		5.18		6.14	
x, final value	0.68		0.23		0.36		0.05	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.5		3.5		3.2		4.1	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	548		148		247		27	
Service Time	2.5		3.5		3.2		4.1	
Utilization, x	0.68		0.23		0.36		0.05	
Dep. headway, hd	4.46		5.53		5.18		6.14	
Capacity	787		398		497		277	
Delay	16.75		10.16		11.03		9.44	
LOS	C		B		B		A	
Approach:								
Delay	16.75		10.16		11.03		9.44	
LOS	C		B		B		A	

Intersection Delay 14.09 Intersection LOS B

HCS2000: Unsignalized Intersections Release 4.1d

Wilson Okamoto

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: CL
Agency/Co.:
Date Performed: 7/21/2004
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: Lipeepee St
North/South Street: Hobron Ln

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	27	100	501	89	17	6	69	13	259	35	21	9
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.90		0.88		0.83		0.65	
Flow Rate	697		126		410		98	
% Heavy Veh	2		2		2		2	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	697		126		410		98	
Left-Turn	30		101		83		53	
Right-Turn	556		6		312		13	
Prop. Left-Turns	0.0		0.8		0.2		0.5	
Prop. Right-Turns	0.8		0.0		0.8		0.1	

Prop. Heavy Vehicle	0.0	0.0	0.0	0.0
Geometry Group	1	1	1	1
Adjustments Exhibit 17-33:				
hLT-adj	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7
hadj, computed	-0.4	0.2	-0.4	0.1

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	697		126		410		98	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.62		0.11		0.36		0.09	
hd, final value	5.43		7.08		6.09		7.35	
x, final value	1.05		0.25		0.69		0.20	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	3.4		5.1		4.1		5.4	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	697		126		410		98	
Service Time	3.4		5.1		4.1		5.4	
Utilization, x	1.05		0.25		0.69		0.20	
Dep. headway, hd	5.43		7.08		6.09		7.35	
Capacity	697		376		585		348	
Delay	166.95		12.40		22.54		12.19	
LOS	F		B		C		B	
Approach:								
Delay	166.95		12.40		22.54		12.19	
LOS	F		B		C		B	

Intersection Delay 96.44 Intersection LOS F

HCS2000: Unsignalized Intersections Release 4.1d

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 7/21/2004
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: Lipeepee St
North/South Street: Ala Wai Blvd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		11	29	522	24	
Peak-Hour Factor, PHF		0.71	0.71	0.93	0.93	
Hourly Flow Rate, HFR		15	40	561	25	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1 0		0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4		37			
Peak Hour Factor, PHF	0.73		0.73			
Hourly Flow Rate, HFR	5		50			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		561		55				
C(m) (vph)		1550		643				
v/c		0.36		0.09				
95% queue length		1.70		0.28				
Control Delay		8.6		11.1				
LOS		A		B				
Approach Delay				11.1				
Approach LOS				B				

HCS2000: Unsignalized Intersections Release 4.1d

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 7/21/2004
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: Lipeepee St
North/South Street: Ala Wai Blvd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		23	22	586	34	
Peak-Hour Factor, PHF		0.75	0.75	0.89	0.89	
Hourly Flow Rate, HFR		30	29	658	38	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12		73			
Peak Hour Factor, PHF	0.82		0.82			
Hourly Flow Rate, HFR	14		89			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration	LR					

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		658		103				
C(m) (vph)		1545		422				
v/c		0.43		0.24				
95% queue length		2.21		0.96				
Control Delay		9.1		16.3				
LOS		A		C				
Approach Delay				16.3				
Approach LOS				C				

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: AM Peak
Project ID:
E/W St: Kalakaua Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Ala Wai Blvd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	3	0	0	2	0	0	0	1	1	1	1
LGConfig		TR			T				R	L	TR	R
Volume		1059	131		293				34	60	404	865
Lane Width		12.0			12.0				12.0	12.0	12.0	12.0
RTOR Vol			13						0			433

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left								
Thru	A							
Right	A							
Peds								
WB Left								
Thru	A							
Right								
Peds								
NB Right								
SB Right								
Green	40.0				30.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
TR	2505	5009	0.51	0.50	13.6	B	13.6	B
Westbound								
T	1770	3539	0.19	0.50	11.1	B	11.1	B
Northbound								
							16.1	B
R	604	1611	0.07	0.38	16.1	B		
Southbound								
L	664	1770	0.10	0.38	16.3	B		
TR	699	1863	0.63	0.38	22.3	C	25.5	C
R	594	1583	0.79	0.38	29.8	C		

Intersection Delay = 17.7 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: PM Peak
Project ID:
E/W St: Kalakaua Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing

N/S St: Ala Wai Blvd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	3	0	0	2	0	0	0	1	1	1	1
LGConfig		TR			T				R	L	TR	R
Volume		1643	213		318				76	84	452	645
Lane Width		12.0			12.0				12.0	12.0	12.0	12.0
RTOR Vol			21						0			323

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru	A				Thru			
Right	A				Right	A		
Peds					Peds			
WB Left					SB Left	A		
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	40.0				30.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
TR	2503	5005	0.76	0.50	17.6	B	17.6	B
Westbound								
T	1770	3539	0.20	0.50	11.2	B	11.2	B
Northbound								
							16.8	B
R	604	1611	0.17	0.38	16.8	B		
Southbound								
L	664	1770	0.13	0.38	16.5	B		
TR	699	1863	0.67	0.38	23.5	C	21.9	C
R	594	1583	0.56	0.38	21.1	C		

Intersection Delay = 18.1 (sec/veh) Intersection LOS = B

APPENDIX D

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2007 PEAK HOUR TRAFFIC
ANALYSIS WITHOUT PROJECT

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: AM Peak
Project ID:
E/W St: Ala Moana Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out project

N/S St: Hobron Lane

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	0	1	3	0	1	1	0	0	1	1
LGConfig	L	TR		L	TR		L	LTR			LT	R
Volume	136	929	81	144	1151	47	211	40	64	32	125	408
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0			12.0	12.0
RTOR Vol			8			5			6			204

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A				NB Left	A		
	Thru		A			Thru	A		
	Right		A			Right	A		
	Peds					Peds			
WB	Left	A				SB Left		A	
	Thru		A			Thru		A	
	Right		A			Right		A	
	Peds					Peds			
NB	Right					EB Right			
SB	Right					WB Right			
Green		22.5	41.0				27.0	29.5	
Yellow		4.0	4.0				4.0	4.0	
All Red		1.0	1.0				1.0	1.0	

Cycle Length: 140.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	284	1770	0.52	0.16	55.6	E		
TR	1473	5030	0.74	0.29	46.7	D	47.8	D
Westbound								
L	284	1770	0.56	0.16	56.8	E		
TR	1481	5058	0.90	0.29	55.8	E	55.9	E
Northbound								
L	341	1770	0.65	0.19	56.3	E		
LTR	327	1698	0.31	0.19	49.1	D	54.0	D
Southbound								
LT	389	1844	0.45	0.21	49.0	D	53.3	D
R	334	1583	0.68	0.21	56.6	E		

Intersection Delay = 52.5 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: PM Peak
Project ID:
E/W St: Ala Moana Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out project

N/S St: Hobron Lane

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	0	1	3	0	1	1	0	0	1	1
LGConfig	L	TR		L	TR		L	LTR			LT	R
Volume	256	1355	56	95	1362	43	334	77	64	31	108	424
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0			12.0	12.0
RTOR Vol			6			4			6			212

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4			5	6	7	8
EB Left		A	A		NB	Left	A			
Thru			A	A		Thru	A			
Right			A	A		Right	A			
Peds						Peds				
WB Left		A			SB	Left		A		
Thru				A		Thru		A		
Right				A		Right		A		
Peds						Peds				
NB Right					EB	Right				
SB Right					WB	Right				
Green		12.0	14.0	42.0				32.0	25.0	
Yellow		0.0	0.0	4.0				4.0	4.0	
All Red		0.0	0.0	1.0				1.0	1.0	

Cycle Length: 140.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	329	1770	0.82	0.19	71.4	E		
TR	2023	5058	0.73	0.40	37.0	D	42.3	D
Westbound								
L	152	1770	0.66	0.09	72.5	E		
TR	1519	5064	0.97	0.30	73.9	E	73.8	E
Northbound								
L	405	1770	0.87	0.23	73.5	E		
LTR	398	1743	0.36	0.23	45.9	D	65.6	E
Southbound								
LT	329	1842	0.45	0.18	52.3	D	63.1	E
R	283	1583	0.79	0.18	70.2	E		

Intersection Delay = 58.7 (sec/veh) Intersection LOS = E

HCS2000: Unsignalized Intersections Release 4.1d

Wilson Okamoto

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: CL
Agency/Co.:
Date Performed: 7/21/2004
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2007 w/out project
Project ID:
East/West Street: Lipeepee St
North/South Street: Hobron Ln

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	35	70	435	101	10	7	27	13	180	5	11	0
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.92		0.74		0.83		0.57	
Flow Rate	586		158		263		27	
% Heavy Veh	2		2		2		2	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	586		158		263		27	
Left-Turn	38		136		32		8	
Right-Turn	472		9		216		0	
Prop. Left-Turns	0.1		0.9		0.1		0.3	
Prop. Right-Turns	0.8		0.1		0.8		0.0	

Prop. Heavy Vehicle	0.0	0.0	0.0	0.0
Geometry Group	1	1	1	1
Adjustments Exhibit 17-33:				
hLT-adj	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7
hadj, computed	-0.4	0.2	-0.4	0.1

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	586		158		263		27	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.52		0.14		0.23		0.02	
hd, final value	4.55		5.68		5.32		6.36	
x, final value	0.74		0.25		0.39		0.05	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	2.6		3.7		3.3		4.4	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	586		158		263		27	
Service Time	2.6		3.7		3.3		4.4	
Utilization, x	0.74		0.25		0.39		0.05	
Dep. headway, hd	4.55		5.68		5.32		6.36	
Capacity	774		408		513		277	
Delay	20.23		10.56		11.70		9.67	
LOS	C		B		B		A	
Approach:								
Delay	20.23		10.56		11.70		9.67	
LOS	C		B		B		A	

Intersection Delay 16.31 Intersection LOS C

HCS2000: Unsignalized Intersections Release 4.1d

Wilson Okamoto

Phone: Fax:
E-Mail:

ALL-WAY STOP CONTROL(AWSC) ANALYSIS

Analyst: CL
Agency/Co.:
Date Performed: 7/21/2004
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2007 w/out project
Project ID:
East/West Street: Lipeepee St
North/South Street: Hobron Ln

Worksheet 2 - Volume Adjustments and Site Characteristics

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
Volume	27	107	538	96	18	6	74	13	278	35	21	9
% Thrus Left Lane												

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Configuration	LTR		LTR		LTR		LTR	
PHF	0.90		0.88		0.83		0.65	
Flow Rate	745		135		438		98	
% Heavy Veh	2		2		2		2	
No. Lanes	1		1		1		1	
Opposing-Lanes	1		1		1		1	
Conflicting-lanes	1		1		1		1	
Geometry group	1		1		1		1	

Duration, T 1.00 hrs.

Worksheet 3 - Saturation Headway Adjustment Worksheet

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rates:								
Total in Lane	745		135		438		98	
Left-Turn	30		109		89		53	
Right-Turn	597		6		334		13	
Prop. Left-Turns	0.0		0.8		0.2		0.5	
Prop. Right-Turns	0.8		0.0		0.8		0.1	

Prop. Heavy Vehicle	0.0	0.0	0.0	0.0
Geometry Group	1	1	1	1
Adjustments Exhibit 17-33:				
hLT-adj	0.2	0.2	0.2	0.2
hRT-adj	-0.6	-0.6	-0.6	-0.6
hHV-adj	1.7	1.7	1.7	1.7
hadj, computed	-0.4	0.2	-0.4	0.1

Worksheet 4 - Departure Headway and Service Time

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow rate	745		135		438		98	
hd, initial value	3.20	3.20	3.20	3.20	3.20	3.20	3.20	3.20
x, initial	0.66		0.12		0.39		0.09	
hd, final value	5.57		7.22		6.13		7.49	
x, final value	1.15		0.27		0.75		0.20	
Move-up time, m	2.0		2.0		2.0		2.0	
Service Time	3.6		5.2		4.1		5.5	

Worksheet 5 - Capacity and Level of Service

	Eastbound		Westbound		Northbound		Southbound	
	L1	L2	L1	L2	L1	L2	L1	L2
Flow Rate	745		135		438		98	
Service Time	3.6		5.2		4.1		5.5	
Utilization, x	1.15		0.27		0.75		0.20	
Dep. headway, hd	5.57		7.22		6.13		7.49	
Capacity	745		385		582		348	
Delay	321.40		12.89		26.48		12.41	
LOS	F		B		D		B	
Approach:								
Delay	321.40		12.89		26.48		12.41	
LOS	F		B		D		B	

Intersection Delay 179.38 Intersection LOS F

HCS2000: Unsignalized Intersections Release 4.1d

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 7/21/2004
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2007 w/out project
Project ID:
East/West Street: Lipeepee St
North/South Street: Ala Wai Blvd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		11	29	561	24	
Peak-Hour Factor, PHF		0.71	0.71	0.93	0.93	
Hourly Flow Rate, HFR		15	40	603	25	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1	0	0	1	
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4		40			
Peak Hour Factor, PHF	0.73		0.73			
Hourly Flow Rate, HFR	5		54			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No	/		/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		603		59				
C(m) (vph)		1550		615				
v/c		0.39		0.10				
95% queue length		1.90		0.32				
Control Delay		8.8		11.5				
LOS		A		B				
Approach Delay				11.5				
Approach LOS				B				

HCS2000: Unsignalized Intersections Release 4.1d

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 7/21/2004
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2007 w/out project
Project ID:
East/West Street: Lipeepee St
North/South Street: Ala Wai Blvd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		23	22	629	34	
Peak-Hour Factor, PHF		0.75	0.75	0.89	0.89	
Hourly Flow Rate, HFR		30	29	706	38	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1 0			0 1	
Configuration		TR			LT	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12		78			
Peak Hour Factor, PHF	0.82		0.82			
Hourly Flow Rate, HFR	14		95			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration		LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		706		109				
C(m) (vph)		1545		387				
v/c		0.46		0.28				
95% queue length		2.51		1.17				
Control Delay		9.3		17.9				
LOS		A		C				
Approach Delay				17.9				
Approach LOS				C				

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: AM Peak
Project ID:
E/W St: Kalakaua Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out project

N/S St: Ala Wai Blvd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	3	0	0	2	0	0	0	1	1	1	1
LGConfig		TR			T				R	L	TR	R
Volume		1137	141		315				37	64	434	929
Lane Width		12.0			12.0				12.0	12.0	12.0	12.0
RTOR Vol			14						0			465

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru	A				Thru			
Right	A				Right	A		
Peds					Peds			
WB Left					SB Left	A		
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	40.0				30.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
TR	2505	5009	0.55	0.50	14.0	B	14.0	B
Westbound								
T	1770	3539	0.20	0.50	11.2	B	11.2	B
Northbound								
							16.2	B
R	604	1611	0.08	0.38	16.2	B		
Southbound								
L	664	1770	0.11	0.38	16.3	B		
TR	699	1863	0.68	0.38	23.6	C	28.7	C
R	594	1583	0.85	0.38	35.3	D		

Intersection Delay = 19.2 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: PM Peak
Project ID:
E/W St: Kalakaua Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/out project

N/S St: Ala Wai Blvd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	3	0	0	2	0	0	0	1	1	1	1
LGConfig		TR			T				R	L	TR	R
Volume		1765	229		342				82	90	485	693
Lane Width		12.0			12.0				12.0	12.0	12.0	12.0
RTOR Vol			23						0			347

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru	A				Thru			
Right	A				Right	A		
Peds					Peds			
WB Left					SB Left	A		
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	40.0				30.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
TR	2503	5005	0.82	0.50	19.3	B	19.3	B
Westbound								
T	1770	3539	0.22	0.50	11.3	B	11.3	B
Northbound								
							16.9	B
R	604	1611	0.19	0.38	16.9	B		
Southbound								
L	664	1770	0.14	0.38	16.6	B		
TR	699	1863	0.72	0.38	25.2	C	23.2	C
R	594	1583	0.61	0.38	22.0	C		

Intersection Delay = 19.4 (sec/veh) Intersection LOS = B

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2007 PEAK HOUR TRAFFIC
ANALYSIS WITH PROJECT

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: AM Peak
Project ID:
E/W St: Ala Moana Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ project

N/S St: Hobron Lane

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	0	1	3	0	1	1	0	0	1	1
LGConfig	L	TR		L	TR		L	LTR			LT	R
Volume	139	929	81	144	1151	53	211	40	64	45	125	455
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0			12.0	12.0
RTOR Vol			8			5			6			228

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A				NB Left	A		
	Thru		A			Thru	A		
	Right		A			Right	A		
	Peds					Peds			
WB	Left	A				SB Left		A	
	Thru		A			Thru		A	
	Right		A			Right		A	
	Peds					Peds			
NB	Right					EB Right			
SB	Right					WB Right			
Green		22.0	40.5				26.5	31.0	
Yellow		4.0	4.0				4.0	4.0	
All Red		1.0	1.0				1.0	1.0	

Cycle Length: 140.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	278	1770	0.54	0.16	56.6	E		
TR	1455	5030	0.75	0.29	47.4	D	48.5	D
Westbound								
L	278	1770	0.58	0.16	57.6	E		
TR	1462	5055	0.91	0.29	58.2	E	58.2	E
Northbound								
L	335	1770	0.66	0.19	57.3	E		
LTR	321	1698	0.32	0.19	49.5	D	54.8	D
Southbound								
LT	407	1838	0.46	0.22	48.1	D	53.6	D
R	351	1583	0.72	0.22	57.7	E		

Intersection Delay = 53.8 (sec/veh) Intersection LOS = D

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: PM Peak
Project ID:
E/W St: Ala Moana Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ project

N/S St: Hobron Lane

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	0	1	3	0	1	1	0	0	1	1
LGConfig	L	TR		L	TR		L	LTR			LT	R
Volume	268	1355	56	95	1362	62	334	77	64	37	108	444
Lane Width	12.0	12.0		12.0	12.0		12.0	12.0			12.0	12.0
RTOR Vol			6			6			6			222

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4	5	6	7	8
EB	Left	A	A			NB Left	A		
	Thru		A	A		Thru	A		
	Right		A	A		Right	A		
	Peds					Peds			
WB	Left	A				SB Left		A	
	Thru			A		Thru		A	
	Right			A		Right		A	
	Peds					Peds			
NB	Right					EB Right			
SB	Right					WB Right			
Green		11.5	14.5	42.5			31.5	25.0	
Yellow		0.0	0.0	4.0			4.0	4.0	
All Red		0.0	0.0	1.0			1.0	1.0	

Cycle Length: 140.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	329	1770	0.86	0.19	78.6	E		
TR	2059	5058	0.72	0.41	36.0	D	42.8	D
Westbound								
L	145	1770	0.69	0.08	76.4	E		
TR	1535	5055	0.97	0.30	74.3	E	74.4	E
Northbound								
L	398	1770	0.88	0.22	77.8	E		
LTR	392	1743	0.36	0.22	46.3	D	68.7	E
Southbound								
LT	328	1839	0.47	0.18	52.6	D	66.9	E
R	283	1583	0.83	0.18	76.2	E		

Intersection Delay = 59.9 (sec/veh) Intersection LOS = E

HCS2000: Unsignalized Intersections Release 4.1d

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 7/26/2004
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2007 w/ project
Project ID:
East/West Street: Lipeepee St
North/South Street: Hobron Lane
Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	35	70	435	101	10	7
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.74	0.74	0.74
Hourly Flow Rate, HFR	38	76	472	136	13	9
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?			Yes			
Lanes	0	1	1		0 1	0
Configuration		LT	R		LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	27	13	182	5	11	0
Peak Hour Factor, PHF	0.83	0.83	0.83	0.57	0.57	0.57
Hourly Flow Rate, HFR	32	15	219	8	19	0
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1 0		0	1 0	
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LTR		LTR			LTR	
v (vph)	38	136		266			27	
C(m) (vph)	1593	1523		817			373	
v/c	0.02	0.09		0.33			0.07	
95% queue length	0.07	0.29		1.44			0.23	
Control Delay	7.3	7.6		11.5			15.4	
LOS	A	A		B			C	
Approach Delay				11.5			15.4	
Approach LOS				B			C	

HCS2000: Unsignalized Intersections Release 4.1d

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 7/26/2004
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2007 w/out project
Project ID:
East/West Street: Lipeepee St
North/South Street: Hobron Ln
Intersection Orientation: EW Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	27	107	538	97	18	6
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.88	0.88	0.88
Hourly Flow Rate, HFR	30	118	597	110	20	6
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?			Yes			
Lanes	0	1	1	0	1	0
Configuration		LT	R		LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	74	13	280	35	21	9
Peak Hour Factor, PHF	0.83	0.83	0.83	0.65	0.65	0.65
Hourly Flow Rate, HFR	89	15	337	53	32	13
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LTR		LTR			LTR	
v (vph)	30	110		441			98	
C(m) (vph)	1588	1470		750			278	
v/c	0.02	0.07		0.59			0.35	
95% queue length	0.06	0.24		4.17			1.60	
Control Delay	7.3	7.6		16.6			25.0-	
LOS	A	A		C			C	
Approach Delay				16.6			25.0-	
Approach LOS				C			C	

HCS2000: Unsignalized Intersections Release 4.1d

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 7/21/2004
Analysis Time Period: AM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2007 w/ project
Project ID:
East/West Street: Lipeepee St
North/South Street: Ala Wai Blvd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street:	Approach	Northbound			Southbound		
	Movement	1	2	3	4	5	6
		L	T	R	L	T	R
Volume			25	29	561	33	
Peak-Hour Factor, PHF			0.71	0.71	0.93	0.93	
Hourly Flow Rate, HFR			35	40	603	35	
Percent Heavy Vehicles			--	--	2	--	--
Median Type/Storage		Undivided			/		
RT Channelized?							
Lanes			1	0		0	1
Configuration				TR			LT
Upstream Signal?			No				No

Minor Street:	Approach	Westbound			Eastbound		
	Movement	7	8	9	10	11	12
		L	T	R	L	T	R
Volume		4		40			
Peak Hour Factor, PHF		0.73		0.73			
Hourly Flow Rate, HFR		5		54			
Percent Heavy Vehicles		2		2			
Percent Grade (%)			0			0	
Flared Approach:	Exists?/Storage			No /			/
Lanes		0		0			
Configuration			LR				

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		603		59				
C(m) (vph)		1524		592				
v/c		0.40		0.10				
95% queue length		1.96		0.33				
Control Delay		8.9		11.8				
LOS		A		B				
Approach Delay				11.8				
Approach LOS				B				

HCS2000: Unsignalized Intersections Release 4.1d

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 7/21/2004
Analysis Time Period: PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2007 w/ project
Project ID:
East/West Street: Lipeepee St
North/South Street: Ala Wai Blvd
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume		30	22	629	60	
Peak-Hour Factor, PHF		0.75	0.75	0.89	0.89	
Hourly Flow Rate, HFR		40	29	706	67	
Percent Heavy Vehicles		--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes		1 0		0 1		
Configuration		TR		LT		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	12		78			
Peak Hour Factor, PHF	0.82		0.82			
Hourly Flow Rate, HFR	14		95			
Percent Heavy Vehicles	2		2			
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	0		0			
Configuration	LR					

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config		LT		LR				
v (vph)		706		109				
C(m) (vph)		1532		367				
v/c		0.46		0.30				
95% queue length		2.55		1.26				
Control Delay		9.4		18.9				
LOS		A		C				
Approach Delay				18.9				
Approach LOS				C				

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: AM Peak
Project ID:
E/W St: Kalakaua Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ project

N/S St: Ala Wai Blvd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	3	0	0	2	0	0	0	1	1	1	1
LGConfig		TR			T				R	L	TR	R
Volume		1137	145		315				51	64	439	929
Lane Width		12.0			12.0				12.0	12.0	12.0	12.0
RTOR Vol			15						0			465

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru	A				Thru			
Right	A				Right	A		
Peds					Peds			
WB Left					SB Left	A		
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	40.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 80.0

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
TR	2504	5007	0.55	0.50	14.1	B	14.1	B
Westbound								
T	1770	3539	0.20	0.50	11.2	B	11.2	B
Northbound								
							16.4	B
R	604	1611	0.11	0.38	16.4	B		
Southbound								
L	664	1770	0.11	0.38	16.3	B		
TR	699	1863	0.68	0.38	23.8	C	28.8	C
R	594	1583	0.85	0.38	35.3	D		

Intersection Delay = 19.2 (sec/veh) Intersection LOS = B

HCS2000: Signalized Intersections Release 4.1d

Analyst: CL
Agency:
Date: 7/21/2004
Period: PM Peak
Project ID:
E/W St: Kalakaua Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2007 w/ project
N/S St: Ala Wai Blvd

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	3	0	0	2	0	0	0	1	1	1	1
LGConfig		TR			T				R	L	TR	R
Volume		1765	243		342				89	90	497	693
Lane Width		12.0			12.0				12.0	12.0	12.0	12.0
RTOR Vol			24						0			347

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left			
Thru	A				Thru			
Right	A				Right	A		
Peds					Peds			
WB Left					SB Left	A		
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	40.0				30.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 80.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
TR	2501	5001	0.83	0.50	19.5	B	19.5	B
Westbound								
T	1770	3539	0.22	0.50	11.3	B	11.3	B
Northbound								
							17.1	B
R	604	1611	0.20	0.38	17.1	B		
Southbound								
L	664	1770	0.14	0.38	16.6	B		
TR	699	1863	0.74	0.38	26.0	C	23.6	C
R	594	1583	0.61	0.38	22.0	C		

Intersection Delay = 19.7 (sec/veh) Intersection LOS = B

APPENDIX III

AGENCY COMMENTS PRIOR TO DRAFT EA

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

JEREMY HARRIS, Mayor

EDDIE FLORES, JR., Chairman
CHARLES A. STED, Vice-Chairman
HERBERT S. K. KAOPUA, SR.
DAROLYN H. LENDIO

RODNEY K. HARAGA, Ex-Officio
LARRY J. LEOPARDI, Ex-Officio

CLIFFORD S. JAMILE
Manager and Chief Engineer

DONNA FAY K. KIYOSAKI
Deputy Manager and Chief Engineer

August 9, 2004

RECEIVED
AUG 12 2004
WILSON OKAMOTO CORPORATION

mmf

Mr. Michael M. Fujita, P.E.
Project Manager
Wilson Okamoto Corporation
1907 South Beretania Street
Honolulu, Hawaii 96826

Dear Mr. Fujita:

Subject: Your Letter of July 30, 2004 Regarding Water Availability for Ala Wai Gateway Condominium, TMK: 2-6-011: 1, 2, 4, 32 and 40, Hobron Lane

Thank you for your letter regarding water service for the proposed Ala Wai Gateway condominium development in Honolulu.

The existing water system is presently adequate to provide water service to the proposed condominium development.

The development plan may require approval by the Department of Planning and Permitting before the Board of Water Supply processes the building permit on the proposed development. The availability of water will be confirmed when the building permit is approved.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

We have suspended fire flow tests on fire hydrants as a water conservation measure. However, you may use the following calculated flow data for Fire Hydrant Nos. 2922 on Ala Wai Boulevard and 3211 on Hobron Lane:

Fire Hydrant Number	Location	Static Pressure (psi)	Residual Pressure (psi)	Flow (gpm)
2922	Ala Wai Boulevard	74	20	4,000
3211	Hobron Lane	74	20	4,000

The data are based on the existing water system, and the static pressure represents the theoretical pressure at the point of calculation with the reservoir full and no demands on the water system. The static pressure is not indicative of the actual pressures in the field. Therefore, in order to determine the flows that are available to the site, you will have to ascertain the actual field pressure by taking on-site pressure readings at various times of the day and correlating that field data with the above hydraulic design data.

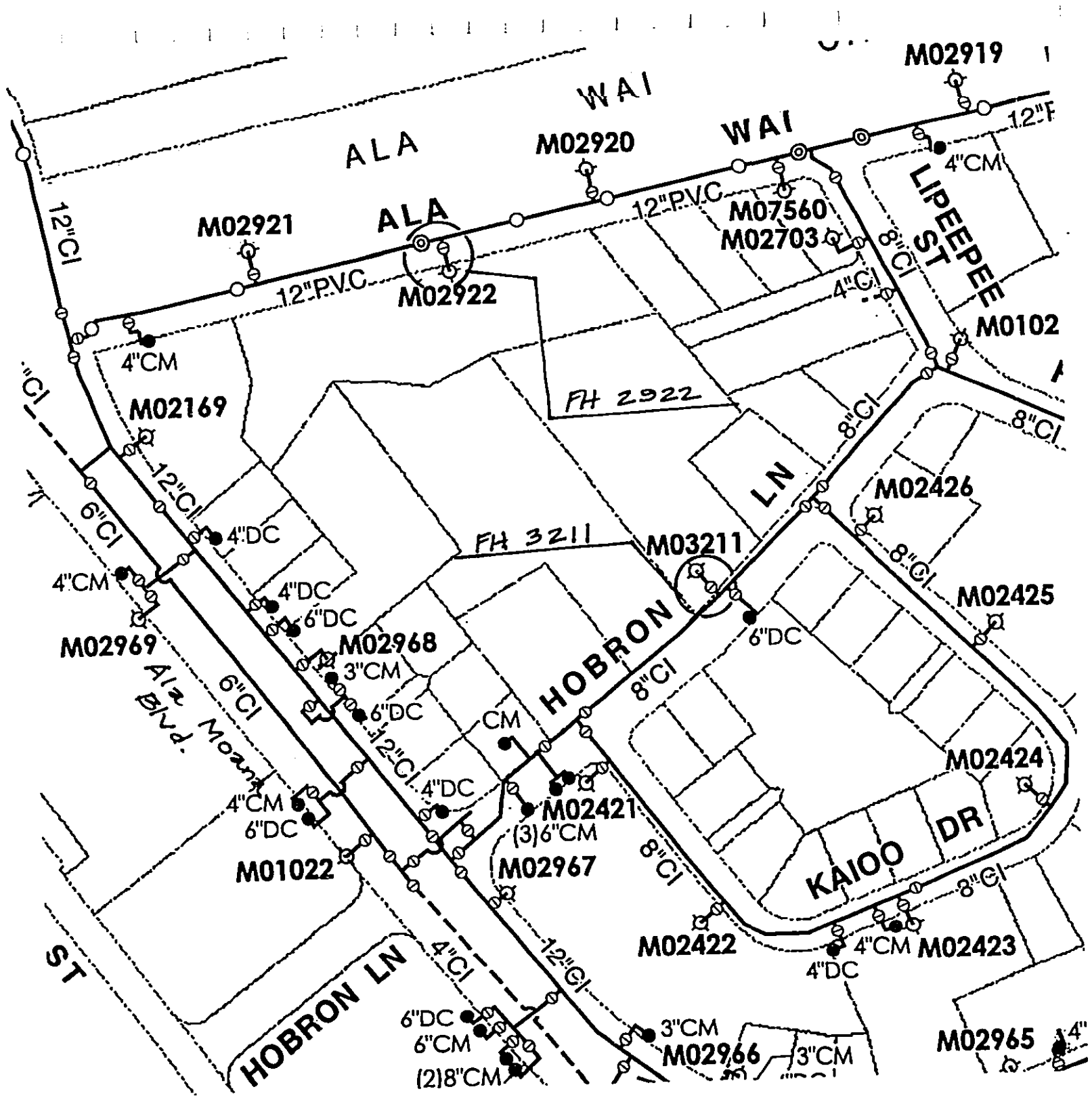
Attached is a map showing the location of the hydrants.

If you have any questions, please contact Joseph Kaakua at 748-5442.

Very truly yours,

CLIFFORD S. JAMILE
Manager and Chief Engineer

Attachment


WAI
ALA
M02919
M02920
WAI
12"P
4"CM
12"P.V.C
M07560
M02703
M02921
ALA
LIPEEPEE ST
8"CI
12"CI
12"P.V.C
M02922
4"CI
M0102
4"CM
M02169
FH 2922
8"CI
8"CI
12"CI
LN
M02426
6"CI
4"DC
FH 3211
M03211
4"CM
4"DC
8"CI
M02425
6"DC
M02969
M02968
3"CM
HOBRON
6"CI
Alz Blvd.
6"DC
12"CI
CM
8"CI
M02424
4"DC
4"CM
M02421
(3)6"CM
6"DC
M02967
KAIOO DR
M01022
8"CI
8"CI
M02422
4"CM
M02423
4"DC
ST
HOBRON LN
4"CI
12"CI
6"DC
6"CM
(2)8"CM
3"CM
M02966
3"CM
M02965

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET • HONOLULU, HAWAII 96813
Phone: (808) 527-5827 • Fax: (808) 547-7316

SEWER CONNECTION APPLICATION

APPLICATION NO.: **2004/SCA-0482** STATUS: **Approved with conditions**

DATE RECEIVED: **07/30/2004** IWDP APP. NO.:

PROJECT NAME: **Ala Wai Gateway / Dwelling Unit**

$0.00
Wastewater System Facility Charge

LOCATION:

Zone	Section	Plat	Parcel		
2	6	011	001	372 - HOBRON LN	10,441 Sq. Ft.
2	6	011	004	352 - HOBRON LN	116,395 Sq. Ft.
2	6	011	002	362 - HOBRON LN	13,786 Sq. Ft.
2	6	011	032	1609 - ALA WAI BLVD	9,899 Sq. Ft.
2	6	011	040	386 - HOBRON LN	8,000 Sq. Ft.

SPECIFIC LOCATION: **352 Hobron Ln**

APPLICANT: **Wilson Okamoto Corporation, Michael M. Fujita**
1907 S. Beretania St Suite 400
Honolulu, HI 96826

DEVELOPMENT TYPE: **Dwelling, Multi-family**

SEWER CONNECTION WORK DESIRED: **Existing**

OTHER USES:

NON-RESIDENTIAL AREA: s.f.

APPROXIMATE DATE OF CONNECTION: **03/30/2007**

PROPOSED UNITS		EXISTING UNITS		UNITS TO BE DEMOLISHED	
No. of New Units:	**228**	No. of Existing Units:	**0**	No. of Units to be Demolished:	**0**
Studios:		Studios:		Studios:	
1-Bedroom:		1-Bedroom:		1-Bedroom:	
2-Bedroom:	**227**	2-Bedroom:		2-Bedroom:	
3-Bedroom:	**1**	3-Bedroom:		3-Bedroom:	
4-Bedroom:		4-Bedroom:		4-Bedroom:	
5-Bedroom:		5-Bedroom:		5-Bedroom:	
6-Bedroom:		6-Bedroom:		6-Bedroom:	

REMARKS **Approval is conditioned that collectively, parcels 1, 2, 4, 32 and 40 are inclusive for this project. Should any of the above parcels not included in this project, the project size (number of units) shall be reduced accordingly. In addition, wastewater flows from this project shall be split between Ala Wai Boulevard system and Hobron Lane system. Existing Ala Wai system is inadequate to support this project.**

APPROVAL DATE: **08/02/2004**

Valid 2-years after approval date. Construction plans shall be completed and approved within this 2-year period. Construction shall commence within 1-year after approval of plans.

EXPIRATION DATE:**08/02/2006**

REVIEWED BY: ***Arturo Saavedra Jr.***

A. Saavedra, Jr.
Site Development Division, Wastewater Branch

ExternalID: **020487034-001** JobId: **20487034**

Initial Print Date: Tuesday August 3, 2004 2:18 pm

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

ERIC G. CRISPIN, AIA
DIRECTOR

BARBARA KIM STANTON
DEPUTY DIRECTOR

2004/CUP-44 (JM)

File Number	:	2004/CUP-44
Applicant/ Landowner	:	Irongate Ala Wai Investors, LLC, etal
Agent	:	Kusao & Kurahashi, Inc.
Location	:	352, 362, 372 and 386 Hobron Lane, 1819 Lipeepee Street, and 1609 Ala Wai Boulevard - Waikiki
Tax Map Keys	:	2-6-11: 1, 2, 4, 32, 37 and 40
Zoning	:	Apartment Precinct (Waikiki Special District)
Date Received:		July 14, 2004
Date Accepted:		July 19, 2004

The Conditional Use Permit (Minor) application for joint development is ***APPROVED***, subject to the following conditions:

1. **Prior to issuance of a building permit,** the applicant shall:

   a. Submit **an executed joint development agreement for review and approval by the Director of Planning and Permitting.** The submitted agreement shall include exhibits describing the lots to be jointly developed as they are recorded with the Bureau of Conveyances and/or Land Court of the State of Hawaii; and

   b. **File the *approved* agreement with the Bureau of Conveyances and/or Land Court of the State of Hawaii.** Proof of such filing shall be in the form of a copy **certified** by the appropriate agency and shall be submitted to the Department of Planning and Permitting (Zoning Regulations and Permits Branch).

(NOTE: DO NOT RECORD THE JOINT DEVELOPMENT AGREEMENT PRIOR TO REVIEW AND APPROVAL BY THE DIRECTOR OF PLANNING AND PERMITTING.)

2. All lots or parcels identified in the exhibits of the approved joint development agreement shall be considered to be one zoning lot.

3. This application has only been reviewed and approved pursuant to the provisions of Section 21-5.380, and development shall comply with all other provisions of the Land Use Ordinance.

4. Approval of this Conditional Use Permit shall not be construed as approval of any building/sign permit application; such applications are reviewed separately and shall comply with applicable codes and regulations.

5. This approval may be revoked by the Director of Planning and Permitting when there is a breach of any of the conditions stated above; provided that, for good cause, the Director may amend the above conditions.

THIS COPY, WHEN SIGNED BELOW, IS NOTIFICATION OF THE ACTION TAKEN.

SIGNATURE	TITLE	DATE
Eric J. Crispin	Director	August 9, 2004

This approval does not constitute approval of any other required permits, such as building or sign permits.

APPENDIX IV

ARCHAEOLOGICAL ASSESSMENT

Archaeological Inventory Survey and Cultural Impact Evaluation for the

Waikīkī Gateway Project Site, Kālia, Waikīkī, O'ahu

TMK: ([1] 2-6-011: 001, 002, 004, 032, 037, and 040)

by

Sallee D.M. Freeman, M.A.,
Matt McDermott, M.A.,
Constance R. O'Hare, B.A.,
and
Hallett H. Hammatt, Ph.D.

Prepared for
Irongate Ala Wai Investors, LLC

by
Cultural Surveys Hawai'i, Inc.
November 2004

MANAGEMENT SUMMARY

Title	Archaeological Inventory Survey and Cultural Impact Evaluation for the Waikīkī Gateway Project Site, Kālia, Waikīkī, O'ahu
Date	November 2004 (Draft)
Project Number	Cultural Surveys Hawai'i Inc. (CSH) Project No. WAIK 59
Agency	State of Hawai'i Department of Land and Natural Resources / State Historic Preservation Division (DLNR / SHPD)
Permit Number	Fieldwork was performed under CSH's annual archaeological research permit, No. 0404, issued by DLNR / SHPD
Location	The project area comprises 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, in the *ili* of Kālia, a*hupua'a* of Waikīkī, District of Kona, Island of O'ahu. This area is depicted on the 1998 Honolulu 7.5-minute USGS topographic quadrangle.
Land Jurisdiction	Private, owned by Irongate Ala Wai Investors, LLC (Irongate)
Project Acreage	Approximately four acres
Project Description	The proposed project involves developing the currently largely vacant property into a single high-rise residential tower condominium of approximately 290,000 square feet with approximately 212 new high-rise units, the retention of 36 existing low-rise units and 470 parking spaces. There will be associated utility installation and landscaping. Most, if not all, of the project area will have subsurface ground disturbance.
Area of Potential Effect (APE) and Inventory Survey Acreage	For this inventory survey investigation, the project's APE is defined as the entire approximately 4-acre footprint of the proposed condominium development. The project area's surrounding built environment is urban (paved streets and low rise and high rise buildings) and the proposed condominium construction poses no *additional* auditory or visual impact 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.
Document Purpose	At the request of Irongate, CSH undertook this archaeological inventory survey and cultural impact evaluation. In consultation with SHPD, the inventory survey investigation was designed to fulfill the state requirements for archaeological inventory survey [Hawai'i Administrative Rules (HAR) Chapter 13-276]. The cultural impact evaluation provides information pertinent to the assessment of the proposed project's cultural impacts [per Hawai'i Revised Statutes (HRS) Chapter 343 and the Office of Environmental Quality's *Guidelines for Assessing Cultural Impacts*[1]). This document was prepared to support the proposed project's historic preservation review under HRS Chapter 6E-42 and HAR Chapter 13-284, as well as the project's environmental review under HRS Chapter 343.
Dates, Personnel, and Number of Person-days Required for Field Effort	Carl Van Ryzin, BA, Jennifer Olson, BA, Steve Rohrer, BA, and Jessie York, BA, assisted project director William Folk, BA, with the field effort, which required 12 person-days to complete. Fieldwork took place 13-15 September and 4 October 2004 (with intermittent inspection of geotechnical borings until 22 October) under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator).
Number of historic properties identified	Four

Historic Properties Recommended Eligible to the Hawai'i Register of Historic Places (Hawai'i Register)	Site 50-80-14-6700, disturbed, presumably Native Hawaiian (but ethnicity unknown), human skeletal remains, criteria "D" and "E"[2] Site 50-80-14-6701, historic coffin burial (ethnicity unknown), criteria "D" and "E"[2] Site 50-80-14-6702, culturally enriched buried A horizon in geographic association with Land Court Award (LCA) 99 FL to Uma, criteria "D" Site 50-80-14-6703, fishpond remnant, criteria "D"
Historic Properties Recommended Ineligible for the Hawai'i Register	None
Results of Cultural Impact Evaluation	No potential impacts to current cultural practices within the project area were identified as a result of this investigation.
Results of Archaeological Inventory Survey	Prior to the project's fieldwork, an extensive archaeological and historical literature review was conducted to inform on the project area's cultural setting. Fieldwork consisted of the excavation and documentation of 22 backhoe trenches, the extraction of a single sediment core from identified fishpond sediments, and archaeological monitoring of narrow diameter geotechnical boring excavations. The historic properties documented within the project area (described above) are part of an extensive archaeological landscape, including *'auwai* (irrigation ditches), *lo'i* (pond fields), fishponds, human burials, and other remnants of prehistoric and historic land use. This archaeological landscape has been documented throughout much of Waikīkī. Information regarding the four historic properties currently documented includes historical and archival data, stratigraphic information, geographic locations and areal extents, and the results of radiocarbon dating analysis of selected samples (see attached table). The findings of this inventory survey were in keeping with the predictive model based on background research. These findings indicate that the project area was the site of extensive traditional Hawaiian land use, both prehistorically and historically. Within the current project area traditional land use effectively ended with the installation of the Ala Wai Canal in the 1920s.
Effect Recommendation	CSH's project specific effect recommendation is "effect with mitigation commitments." The proposed condominium development will adversely affect significant[3] historic properties (Sites -6700, 6701, 6702, and 6703) located with the project's APE. Because these significant historic properties are subsurface and will be affected by the ground disturbance that is proposed throughout all, or most, of the project area, the recommended mitigation measures will reduce the project's effect to these historic properties.
Mitigation Recommendation	To alleviate the proposed project's adverse effect on significant historic properties, CSH recommends that an SHPD-approved burial treatment plan be implemented. It should detail the treatment of the known skeletal remains within the project area and any additional skeletal remains that could potentially be uncovered during the proposed project. As an appropriate archaeological data recovery method, an archaeological monitoring package should be implemented during the ground disturbing phases of the project. The monitoring methods should be developed in coordination with SHPD and should include appropriate sampling and analytic methods to document additional information from exposed archaeological and/or paleoenvironmental deposits and to facilitate the identification and treatment of any additional burials discovered within the project area.

[1]CSH's scope of work and methods for cultural impact evaluation studies includes consultation with knowledgeable individuals and groups regarding current cultural practices, but does not include formal ethnographic interviews and oral histories. Cultural impact evaluation studies are intended as a more time and cost effective means of addressing potential impacts to cultural practices within project areas that have been fully developed for a long time and where, accordingly, there is less likelihood of ongoing cultural practices.

[2]Criterion "D" applies to historic properties that have yielded or are likely to yield information important for research on prehistory or history. Criterion "E" applies to historic properties that have an important value to Native Hawaiian people or to other ethnic groups and have associations that are important to the group's history and culture. As burials identified during an archaeological inventory survey, they are considered "previously recorded" and their treatment falls under the jurisdiction of the O'ahu Island Burial Council. The appropriate burial notification procedures were undertaken per the requirements of HRS Chapter 6E-43 and HAR Section 13-300.

[3]Significant historic properties are historic properties that meet the criteria for inclusion on the Hawai'i Register of Historic Places.

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I. INTRODUCTION

A. Project Background

At the request of the landowner, Irongate Ala Wai Investors, LLC (Irongate), Cultural Surveys Hawai'i Inc. (CSH) undertook this archaeological inventory survey and cultural impact evaluation. In consultation with the State of Hawai'i Department of Land and Natural Resources (SHPD), the inventory survey investigation was designed to fulfill the state requirements for archaeological inventory survey [Hawai'i Administrative Rules (HAR) Chapter 13-276]. The cultural impact evaluation provides information pertinent to the assessment of the proposed project's cultural impacts [per Hawai'i Revised Statutes (HRS) Chapter 343 and the Office of Environmental Quality's *Guidelines for Assessing Cultural Impacts*]. This document was prepared to support the proposed project's historic preservation review under HRS Chapter 6E-42 and HAR Chapter 13-284, as well as the project's environmental review under HRS Chapter 343.

The approximately 4-acre project area comprises 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, in the *ili* of Kālia, *ahupua'a* of Waikīkī, District of Kona, Island of O'ahu. This area is depicted on the 1998 Honolulu 7.5-minute USGS topographic quadrangle and TMK 2-6-011 (Figures 1, 2).

The proposed project involves developing the currently largely vacant property into a single high-rise residential tower condominium of approximately 290,000 square feet with approximately 212 new high-rise units, the retention of 36 existing low-rise units and 470 parking spaces. There will be associated utility installation and landscaping. Most, if not all, of the project area will have subsurface ground disturbance.

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Carl Van Ryzin, BA, Jennifer Olson, BA, Steve Rohrer, BA, and Jessie York, BA, assisted project director William Folk, BA, with the field effort, which required 12 person-days to complete. Fieldwork took place 13-15 September and 4 October 2004 (with intermittent inspection of geotechnical borings until 22 October) under the general supervision of Hallett H. Hammatt, Ph.D. (principal investigator). The inventory survey was limited to surface inspection in parcels 32 and 37 (Figure 2) due to the presence of existing buildings and associated landscaping on these parcels.

Fieldwork was performed under CSH's annual archaeological research permit, No. 0404, issued by the State of Hawai'i Department of Land and Natural Resources / State Historic Preservation Division (DLNR / SHPD).

B. Scope-of-Work

The scope of work for this archaeological inventory survey includes:

1. A complete ground survey of the entire project area for the purpose of site inventory. No surface sites were located. Documentation of the surface survey included photographs and field notes.
2. Limited subsurface testing with a backhoe to determine if subsurface deposits were located in the project area, and, if so, their significance. When appropriate samples from these excavations were found, they were analyzed for chronological and paleoenvironmental information. Documentation included photographs and scale drawings. All sites were assigned State Inventory of Historic Properties (SIHP) site numbers.
3. Research on historic and archaeological background, including 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 emphasized settlement patterns.
4. Preparation of a survey report which includes the following:
    a. A topographic map of the survey area showing all archaeological sites and site areas;
    b. Description of all archaeological sites with selected photographs, scale drawings, and discussions of function;
    c. Historical and archaeological background sections summarizing pre-contact and historic land use as they relate to the archaeological features;
    d. A summary of site categories and their significance in an archaeological and historic context;
    e. Recommendations based on all information generated specifying what steps should be taken to mitigate impact of development on archaeological resources - such as a burial treatment plan and a monitoring package. These recommendations were developed in consultation with the client and the State agencies.

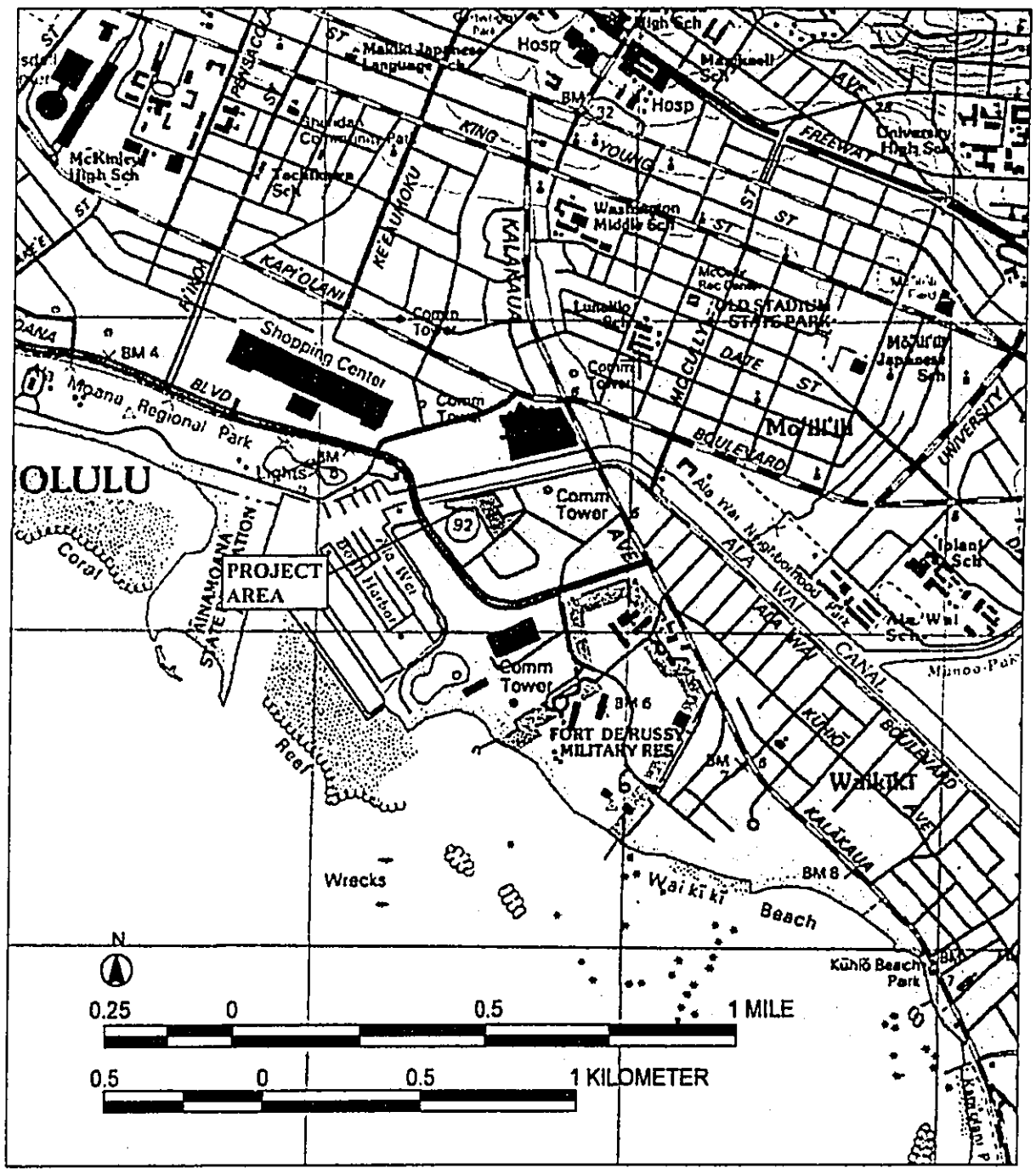

Figure 1. USGS 7.5 Minute Series topographic map, Honolulu Quadrangle, showing project area location

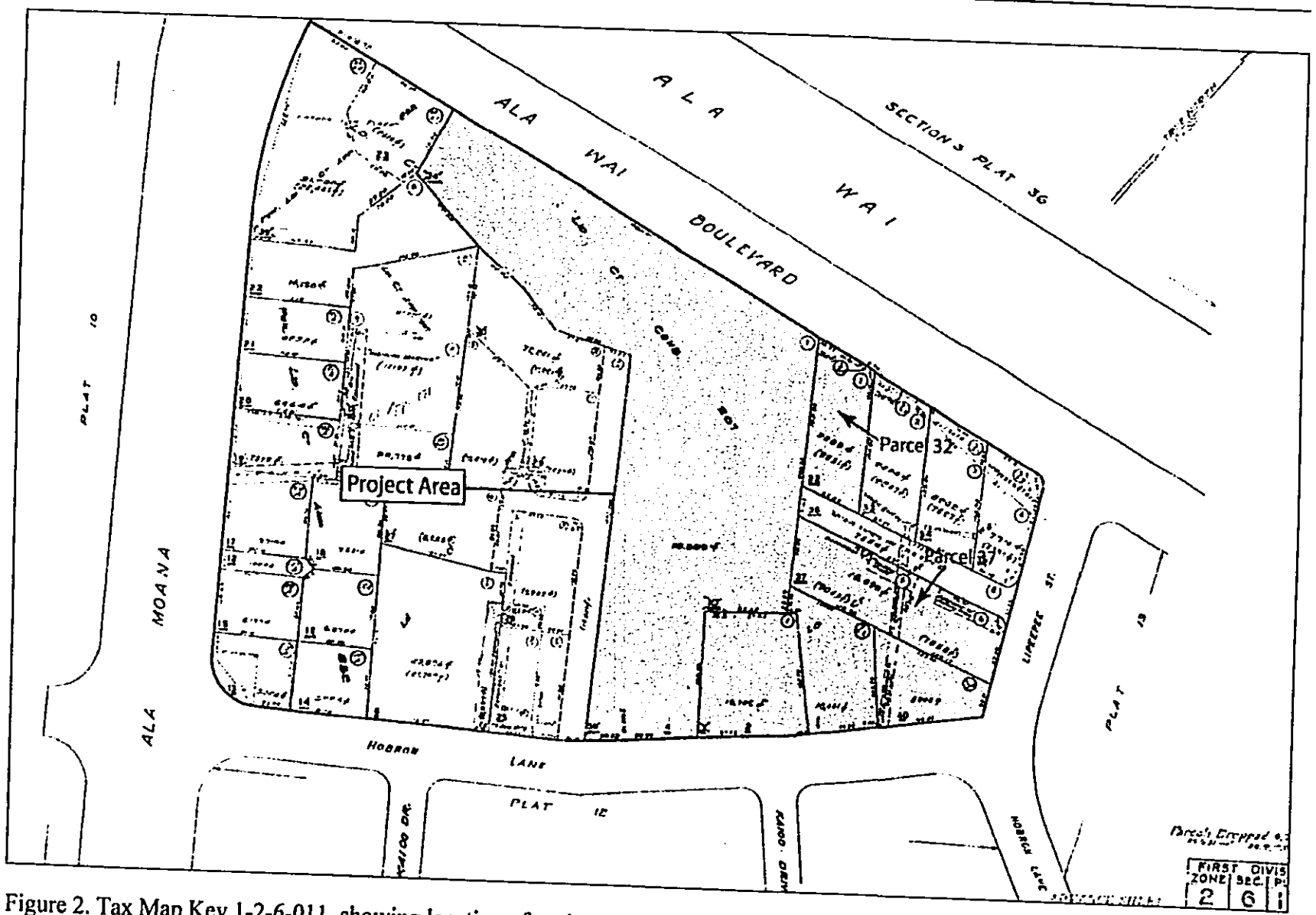

Figure 2. Tax Map Key 1-2-6-011, showing location of project area

This scope of work also includes full coordination with the State Historic Preservation Division (SHPD), and County relating to archaeological matters. This coordination takes place after consent of the owner or representatives.

C. Natural Setting

The project area is flat and averages 2 to 3 meters above mean sea level. The average rainfall in this coastal area of Waikīkī is between 20 to 30 inches per year, with temperatures ranging from 60 to 85 degrees Fahrenheit (Armstrong 1973:56). Although the area has been graded and filled (Fill Land), the natural soil deposit is Jaucus sand (JaC) (Foote et al. 1973). Portions of the lot are paved with asphalt or have a gravel surface, which is currently being used as a parking lot (Figure 3). A metal shed covered a portion of the eastern section (Figure 4), but has since been demolished. Two buildings exist on lots 32 and 37. The majority of the lot is covered with low grass over a reddish clay loam that is probably a fill layer (Figures 5 and 6). There are a few palm trees along the fenced edges of the lot.

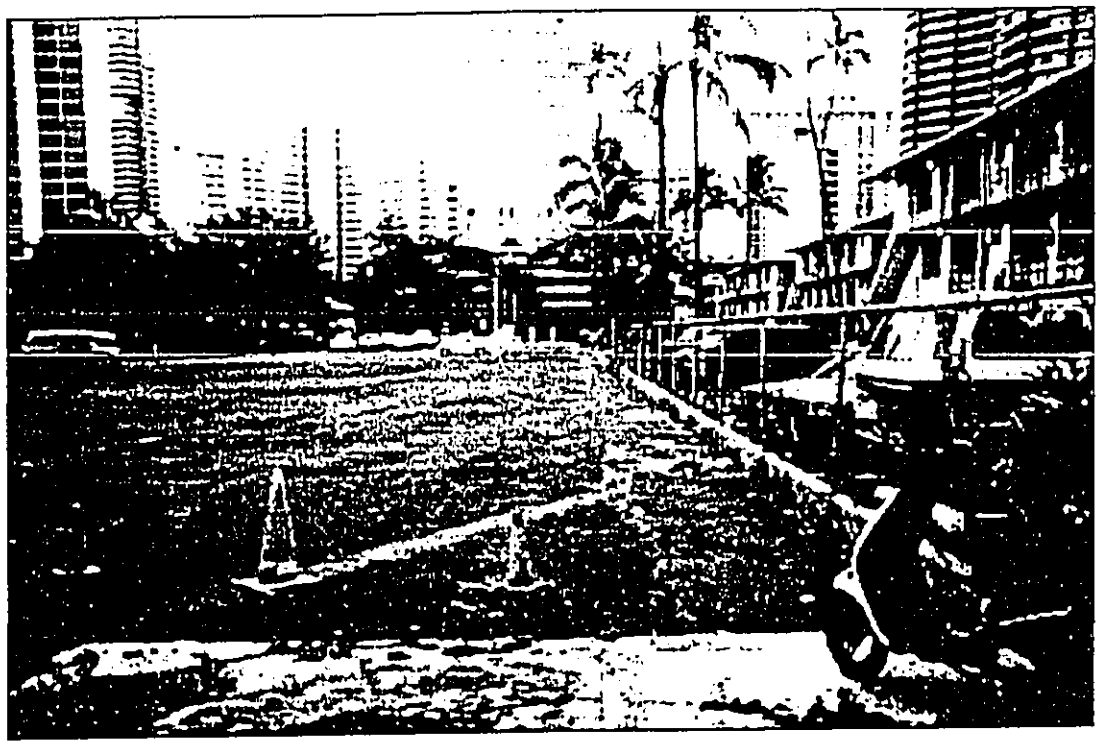

Figure 3. Photograph showing paved portion of project area, view to south towards Hobron Lane

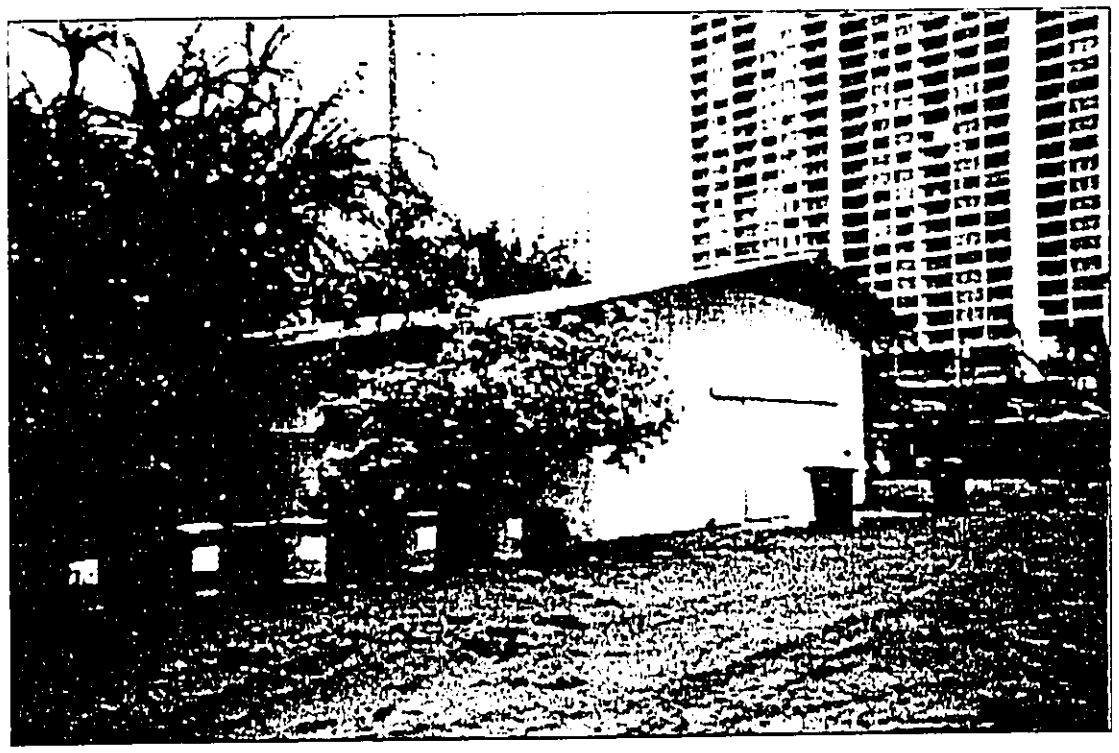

Figure 4. Photograph showing metal shed on paved portion of project area, view to the southeast. This shed is now demolished

Figure 5. Photograph showing grassy portion at the north end of the project area, view to the west towards Ala Moana Boulevard

Figure 6. Photograph showing grassy portion at the north end of the project area, view to the east towards Līpe'epe'e Street

II. WAIKĪKĪ CULTURAL AND HISTORICAL DOCUMENTATION

This section presents a review of the available documentary evidence for the general character of the area presently identified as Waikīkī as it had evolved in the years before western contact in the later eighteenth century. The development of Waikīkī lands adjacent to and including the present project area during the nineteenth century and into the early twentieth century was recorded in increasingly detailed documentation, including government records and maps. Finally, during subsequent decades of the twenticth century, abundant documentation of Waikīkī allows a more precise focus on development of the project area itself.

A. Pre-contact to 1800

Waikīkī is actually the name of a large *ahupua'a* (traditional land division) encompassing lands stretching from Honolulu to Maunalua Bay. Within that *ahupua'a*, by the time of the arrival of Europeans during the late eighteenth century, the area today known as Waikīkī had long been a center of population and political power on O'ahu. According to Martha Beckwith (1940:383), by the end of the fourteenth century Waikīkī had become "the ruling seat of the chiefs of O'ahu." The pre-eminence of Waikīkī continued into the eighteenth century and is confirmed by the decision of Kamehameha, in the midst of unifying control of the islands, to reside there after wrestling control of O'ahu by defeating the island's chief, Kalanikupule. The nineteenth 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. Vancouver [1798:161-164]

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 [Menzies 1920: 23-24].

These and other early written accounts clearly depict a continuous zone of population and cultivation from the shoreline of present day Waikīkī Beach extending north well into Mānoa Valley.

An early, somewhat generalized depiction of the pre-contact native Hawaiian shaping of Honolulu and Waikīkī is given on an 1817 map (Figure 7) by Otto von Kotzebue, commander of the Russian ship *Rurick*, who had visited O'ahu the previous year. The map shows taro *lo'i* (rectangular areas depicting irrigated fields) massed around the streams descending from Nu'uanu and Mānoa valleys. The depicted areas of population and habitation concentration (indicated by the trapezoids), however, probably reflect distortions caused by the post-contact shift of Hawaiians to the area around Honolulu Harbor - the only sheltered landing on O'ahu and the center of increasing trade with visiting foreign vessels.

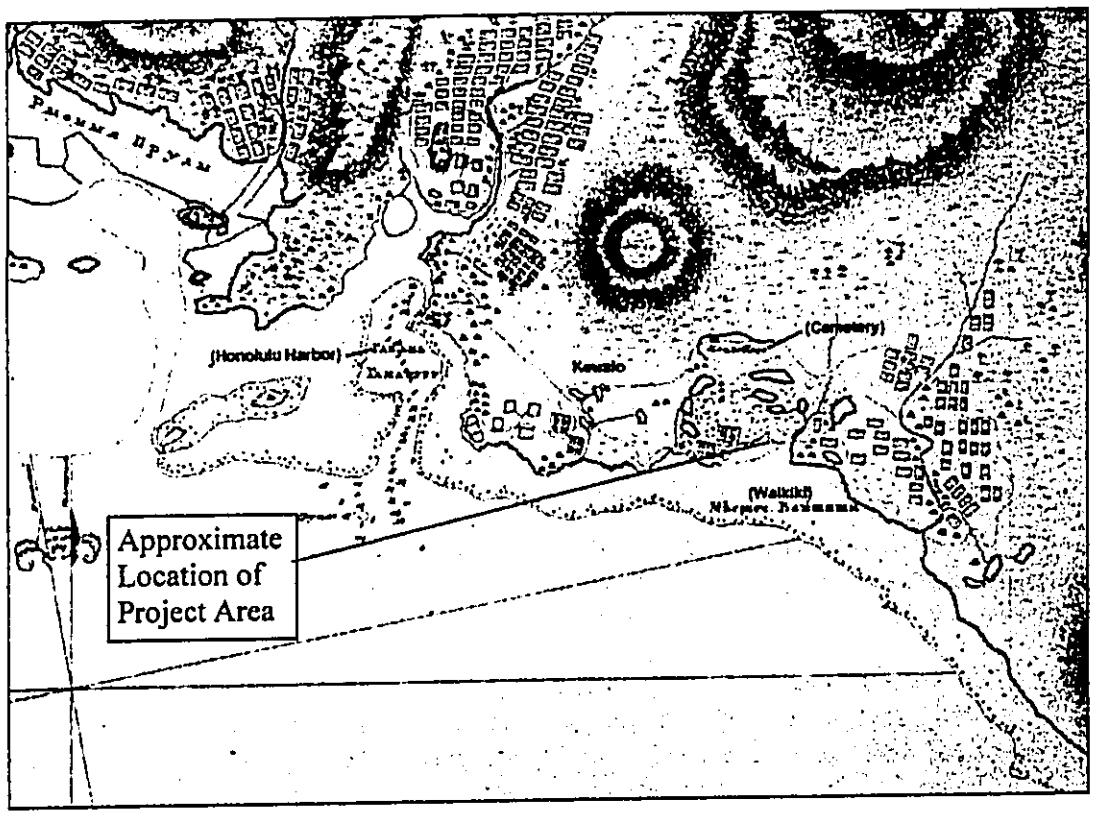

Figure 7. 1817 Map by Otto Von Kotzebue with translations (in parentheses), showing densely populated areas of Honolulu and Waikīkī

An early map of O'ahu's south shore depicts the Waikīkī landscape in the first decades following western contact (Figure 8). Lt. Charles Malden surveyed south O'ahu in 1825; his map was published in 1841. It shows a concentration of house sites and coconut trees at "Waiatité" (Waikīkī), stretched along the coast and terminating, to the southeast, at a pair of "fresh water ponds."

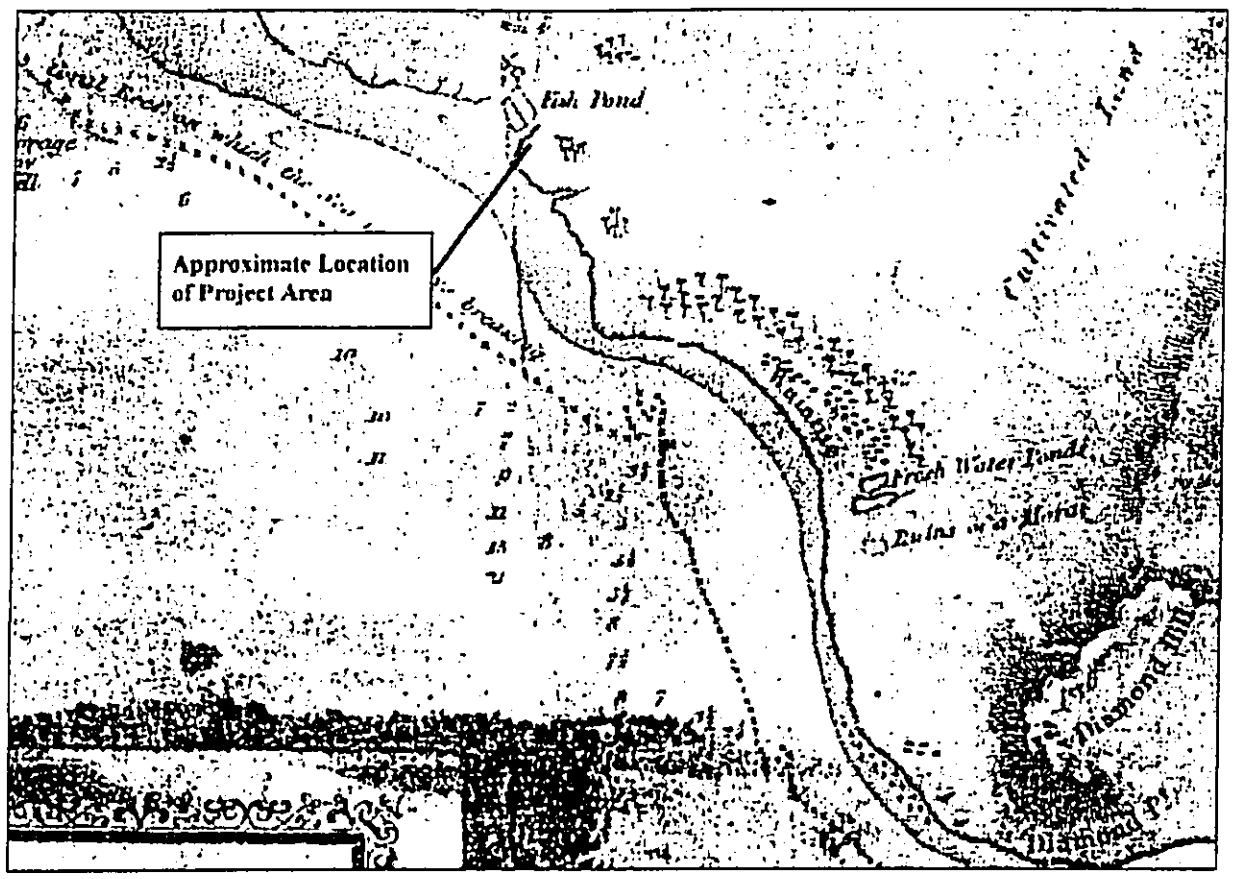

Figure 8. Portion of 1841 Map, survey by Lt. Charles Malden in 1825, showing Waikīkī coastline

Already in the 1820s when Malden was drawing his map, the traditional Hawaiian focus on Waikīkī as a center of chiefly and agricultural activities on southeastern O'ahu was changing, 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. The shift in pre-eminence is illustrated by the fact that Kamehameha moved his residence from Waikīkī to Honolulu. Indeed, by 1828, Levi Chamberlain 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 1820s, the population was estimated at 6,000 to 7,000), but also of the

European diseases that had devastating effects upon the Hawaiian populace. The depopulation of Waikīkī, however, was not total and the *ahupua'a* continued to sustain Hawaiians living traditionally into the nineteenth century. Land Commission Award (LCA) records from the 1840s indicate awardees continuing to maintain fishponds and irrigated and dry-land agricultural plots though on a greatly reduced scale than had been possible previously with adequate manpower.

B. Mid-Nineteenth Century and the Māhele

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, the Hawaiian government, and the *ali'i* (royalty) received their land titles. Subsequently in the Māhele, Land Commission Awards (LCAs) for *kuleana* (tenant) parcels were given to commoners and others who could prove residency on and use of the parcels they claimed. LCA records document awardees continuing to maintain fishponds and irrigated and dry-land agricultural plots, though on a greatly reduced scale than had been previously possible with adequate manpower.

An 1881 Hawaiian Government survey map by S.E. Bishop (Figure 9) shows the locations of LCA parcels indicated and provides a detailed record of the physical landscape of Waikīkī before the transformations of the twentieth century. The map reveals an extensive complex of irrigated fields, streams and irrigation watercourses, and ponds stretching inland from the Waikīkī shoreline to the plains of Mō'ili'ili. LCA records for the awards shown on the map document houselots near the shore with associated taro *lo'i* (irrigated plots) located inland and house lots adjacent to inland taro *lo'i*.

An outline of the project area has been overlain on a portion of the Bishop map (Figure 9). LCA 99 is within the project area (in an area now covered with asphalt), LCA 2549, Lot 3 is just outside the western border, a fishpond was once located in the eastern portion, and a "sea ditch" (now covered by the Ala Wai Canal) once flowed through the northern section.

No. 99 F.L., Uma, Honolulu, 18 March 1852
N.R. 763v3

The Land Commissioners of the Hawaiian Islands, Greetings: I have a house site in the 'ili of Kalia in Waikiki, Oahu, with one house in it. It has not been fenced because it has not been necessary and it is bounded by a pond.

Kindly award this little claim.
With thanks.
UMA X, his mark
Witness: S.P. Kalama

N.T. 304v10
No. 99 FL. Uma, 21 March 1853

Luaiku, sworn, I have seen his land section in Kalia, Waikiki, Kona, Oahu of a house site and a fish pond.

Mauka, Waialae, Makai, Government land
Honolulu, A sea ditch

Land from parents during the time of Kamehameha I. No objections to the present time.

Nainui, sworn, every word above is true. I have known in the same way.

[Award 99 F.L.; Land Patent 8348; Kalia Waikiki Kona; 1 ap.; .73 Ac.]

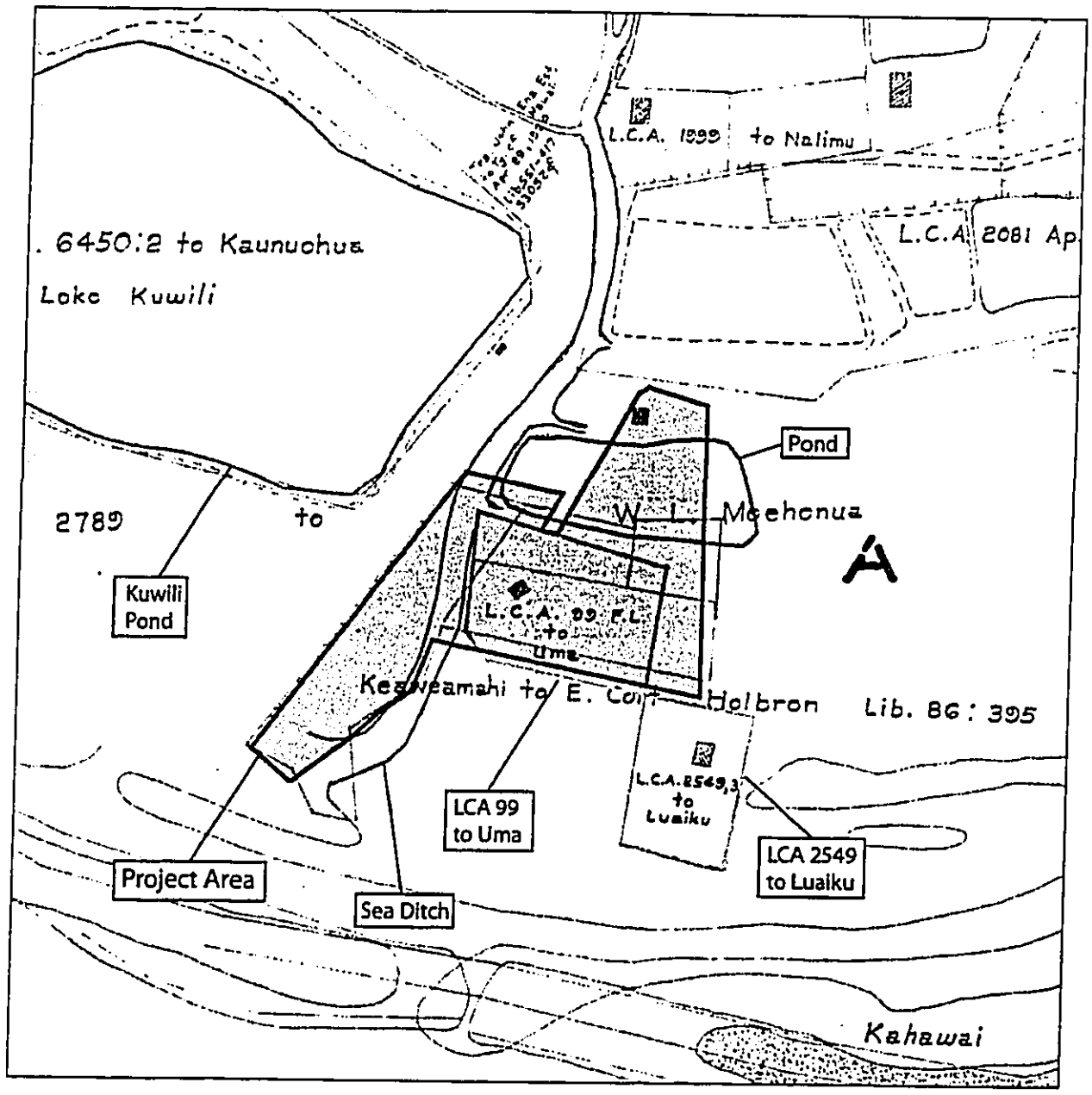

Figure 9. Portion of 1881 Hawaiian Government survey map by S.E. Bishop showing locations of LCA awards, pond, and current project area

Land Court Award No. 99 was awarded to Uma, who describes it as a house lot bound by a pond on the *mauka* (east) side by a pond, on the north by a sea ditch, and on the north side by a sea ditch. Uma described his land thus:

The LCA adjacent to the southwest corner of Uma's land is LCA 2549, which consisted of several scattered lots awarded to Luaiku. Lot (*'āpana*) 3 was described as his house site, which had a watercourse and 4 *lo'i* (irrigated plots).

> Say! I, the one whose name is below, hereby state my little claim in Waikiki, in the 'ili of Maulukikepa. I have 4 lo'i and a section of watercourse and my house site at Kalia. 2 lo'i were from my makuahine, and a kula and her house in that kula. That is my claim which I state to you, to be worked on at the proper time. When I am directed, I will come with the proper witnesses.
>
> LUAIKU
>
> Waikiki, 30 December 1847 Apana 3, kahuahale situated in Kamooloa, ili of Kalia, Waikiki, is bounded:
>
> Mauka by the loko belonging to Mahuka
> Kekaha by the land of Nakai
> Makai by the land Kalia, of Kekuanaoa
> Honolulu by the land of Uma.

During the Māhele, the *'ili* of Kālia in Waikīkī was one of 52 *'ili* in the Kona district of O'ahu set aside as "fort lands", which were reserved "for the use of the Fort in Honolulu to be cultivated by soldiers and other tenants under the direction of the Governor of Oahu" (Chinen 1958:27). After the Māhele, portions of the Government Lands were often sold as a means of obtaining revenue to meet the increasing costs of the Government. Purchasers of these lands were issued documents called "Grants" or "Royal Patent Grants." On the Bishop map (Figure 9), the area surrounding LCAs 99 and 2549:3 was owned by W. L. Moehonua through Royal Patent Grant No. 2785. W. L. Moehonua was an uncle of David Kalākaua, and husband of Kaunohua, a *kahu* (guardian) of Alexander Liholiho, Kamehameha III (Kame'eleihiwa 1992:264).

C. Mid to Late 1800s

As the nineteenth 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 nineteenth century include a number of changes that would dramatically alter the landscape of Waikīkī during the 20th century: 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 nineteenth 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 nineteenth 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 1880s, 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 1800s 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-nineteenth 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* (inland) of the present Ala Wai Boulevard.

D. 1900 to Present

During the first decade of the twentieth 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 Brigadier General R. E. DeRussy of the Army Corps of Engineers.

> On November 12 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 fish ponds that covered most of the 70 acres of the Fort. The task fell to the Quartermaster Corps, and they accomplished it through the use of a hydraulic dredger that 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].

It was also during the 1920s that the lands, including the present project area, would be transformed when the construction of the Ala Wai Drainage Canal - begun in 1921 and completed eight years later - resulted in the draining and filling in of the remaining ponds and irrigated fields of Waikīkī. 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].

Dredging for the Ala Wai Canal began in 1921 and was completed seven years later. The final result was a "canal three miles long, with an average depth of twenty-five feet and a breadth of two hundred fifty feet" (*Honolulu Advertiser*, 17 October 1928:2:16). Several claims were made against the dredging company, including compensation for destroyed crops and livestock, by farmers living in Waikīkī. For instance, a Chinese tenant farmer named Chang Fow, leasing lands in Waikīkī from the Bishop Trust Company wrote a letter of complaint indicating that the salt water that leached into his lands as a result of the dredging of the canal had devastated his fishponds and stocks of ducks and chickens (letter from Chang Fow to the Bishop Trust Company, 23 May 1922, quoted in Nakamura 1979:100-101). His claims, along with those of other residents of the area, give an impression of the continuing agricultural subsistence base in Waikīkī that lasted into the 1920s, and rapidly became a thing of the past.

Nakamura (1979:85) writes that the government of the Territory of Hawai'i solicited bids, in 1920, for the dredge and fill project planned for the environs of Waikīkī. The plan was to create hundreds of acres of urban land—at the expense of wetland agriculture and aquaculture in the area. The advertisement soliciting bids for the project, put forward by Lyman H. Bigelow, masked the significance of the project by stating that "for Dredging a Drainage Canal and Filling and Reclaiming Certain Unsanitary Lands at Waikiki" (Nakamura 1979:85). He further writes that State laws were passed requiring property owners to pay for the filling in of their lands, which apparently was going to be done whether they wanted it or not. A lien would be fixed against their property and if all payment was not made on time, land would be foreclosed on. Nakamura points out that the cost was so high for some of the property owners that the bank lien could extend into a fifteen year mortgage (Nakamura 1979:89).

Once land that the Territory of Hawai'i government wanted filled in (for state buildings) was complete, any further dredged materials became the property of the dredging company—the

Hawaiian Dredging Company—and they in turn could sell the materials to the property owners, who in turn were forced to buy the product. Walter F Dillingham, of the Hawaiian Dredging Company died in 1963. *Time* magazine, in their article about him and his involvement in the project stated that ". . . Walter Dillingham used the muck dragged up from the sea to fill in low, marshy areas around Honolulu, over the years created 5,000 acres of solid ground that now holds a full third of the city's population" (cited in Nakamura 1979:112).

The land surface of modern Waikīkī is situated on the result of this decade long dredging and fill project of which the creation of the Ala Wai Canal was included. In Nakamura's (1979:113) *The Story of Waikīkī and the "Reclamation" Project*, he writes that this land "reclamation" program changed the ecology of Waikīkī from a once viable and important agriculture and aquaculture center. . . destroyed by profit-seeking capitalist entrepreneurs. . . under the subterfuge of "drainage" and "sanitation." Many of the original property owners lost their land or had serious damage to their property as a result of the reclamation activities and/or the costly expense for the mandatory filling in of their properties.

Waikīkī had been changed forever by the Ala Wai Canal. The ancient irrigation systems were gone, the farms were gone, the streams were gone, the mosquitoes were gone, and Waikīkī was separated from the rest of Honolulu by a broad canal. On the new high-and-dry lands behind the hotels, developers laid out tracts of inexpensive homes and garden apartments. Almost overnight Waikīkī became urban (Grant 1996:54).

E. Development of the Project Area

Historic maps and photographs give us some information on the specific development of the present study area. The 1881 Bishop Map (Figure 9) shows that the project area was bordered on the east by a fishpond, had a house lot in the central area, and a sea ditch running through the northern half. The map also indicates several water channels to the west, surrounding LCA 99 to Uma and the adjacent LCA 2549:3 to Luaiku. A 1914 Sanborn Fire Insurance Map (Figure 10) indicates that the area remained relatively undeveloped into the early twentieth century. There are no houses shown on this large-scale map, but it is possible that a few scattered small houses were still present in the area. The sea ditch is still shown in the northern half of the project area, but no fishponds are illustrated.

An aerial photograph (Figure 11) of the area taken in 1927 shows the general project area after the construction of the Ala Wai Canal. This photograph shows the dredge "Kewalo" carving out tidal flats along the coast. The project area is covered with white coral fill, probably material dredged from Kewalo Basin, the Ala Wai, or from the coast. The 1927 Sanborn Fire Insurance map (Figure 12, left side) illustrates the new straight Ala Wai Canal on the northern boundary of the project area, Piinaio Stream to the west, a few scattered one-story dwellings in the southern section of the project area, and a pond adjacent to the western boundary. This pond does not seem to fit the location of the fishpond described by Uma on the eastern boundary of LCA 99, rather it is within a curve of the sea ditch to the south. When the straight Ala Wai Canal was built, this inward curved section of the ditch may have been made into a pond. It is interesting to note that the dwellings to the east of the project area are built in a curve, possibly suggesting that they were built around a high curved ridge around lower ground. This lower ground may be the remains of the fishpond on the eastern border of Uma's LCA 99 plot.

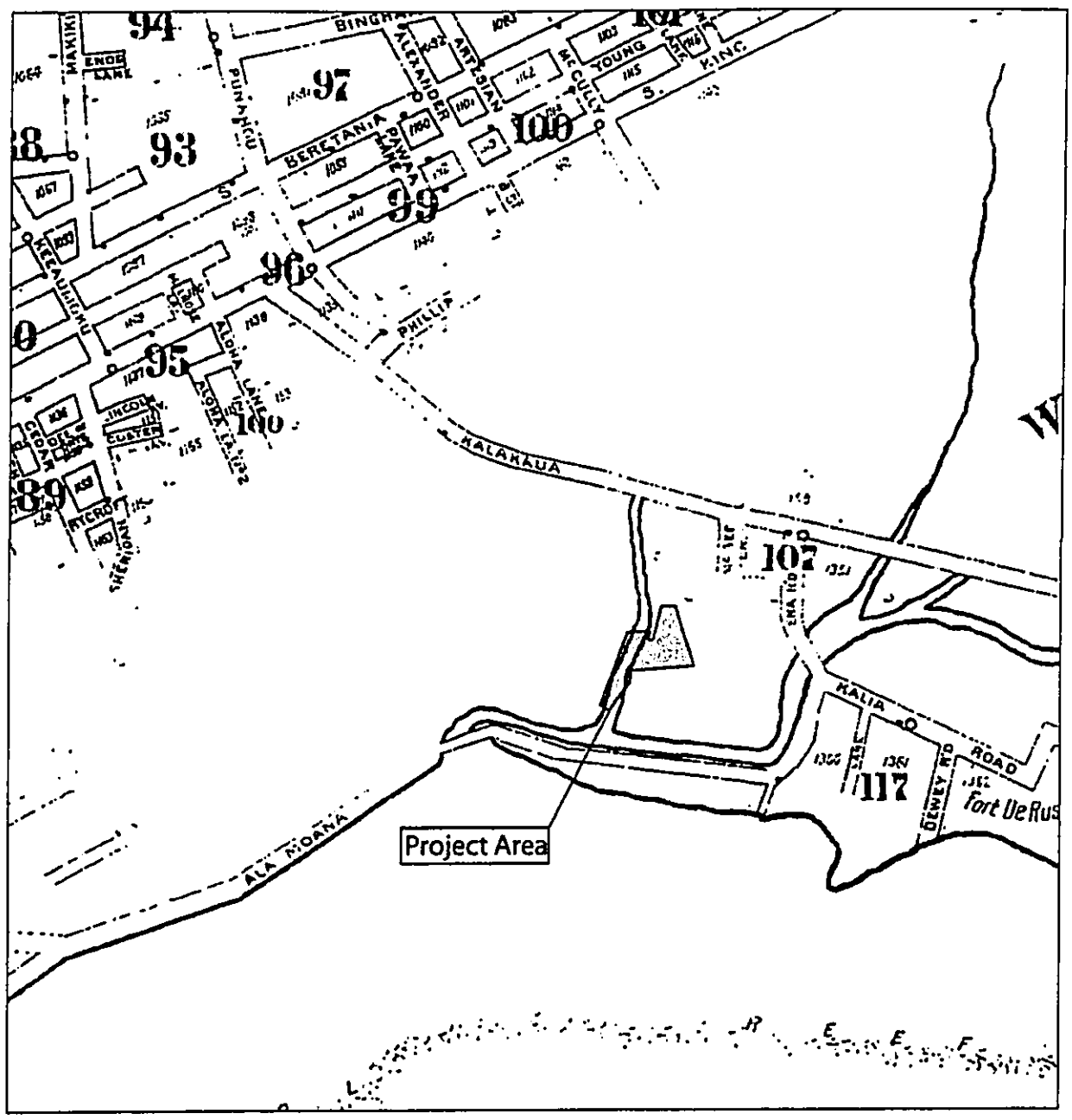

Figure 10. 1914 Sanborn Fire Insurance map showing approximate location of project area

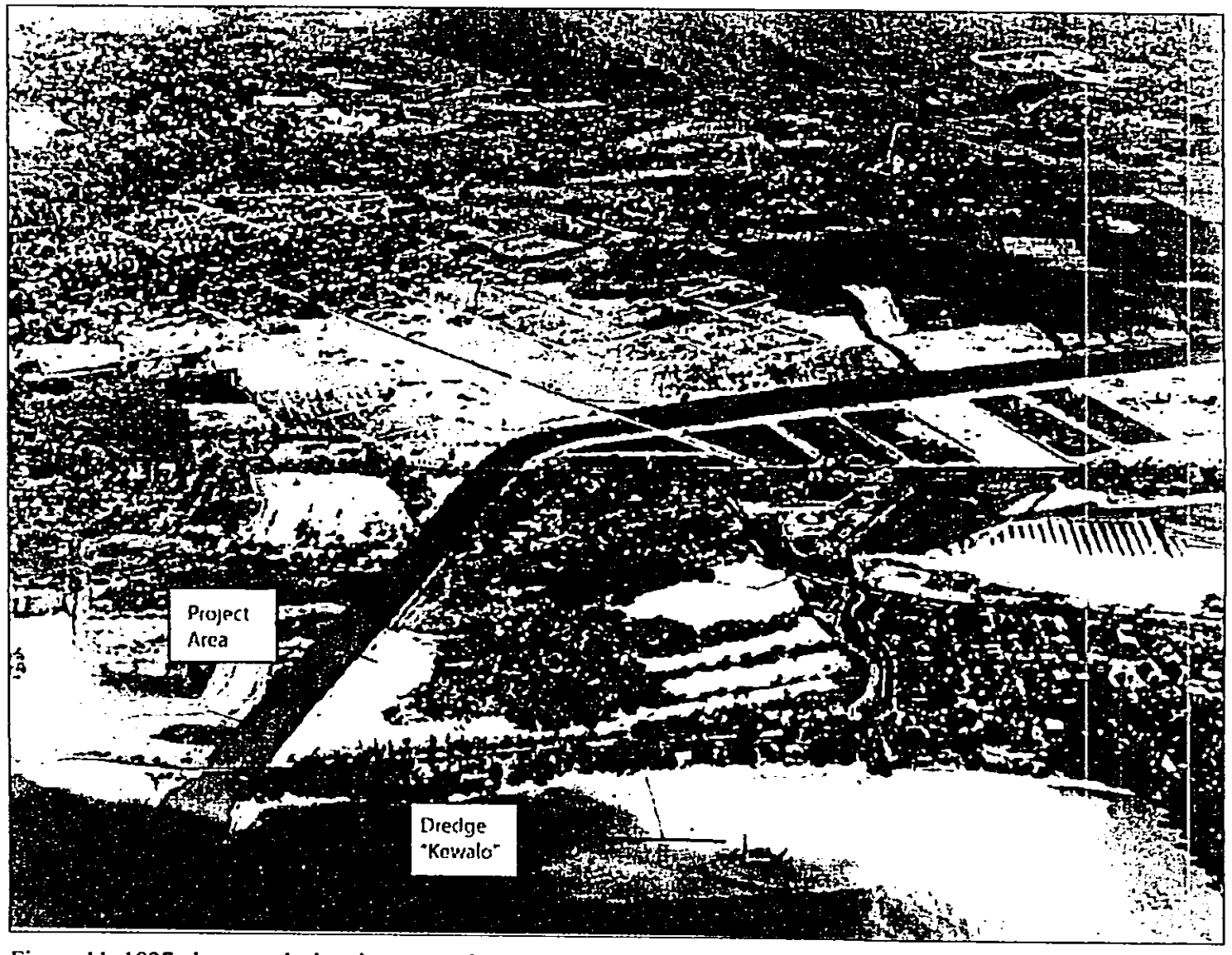

Figure 11. 1927 photograph showing approximate location of project area and suction dredge "Kewalo" carving out and filling tidal flats

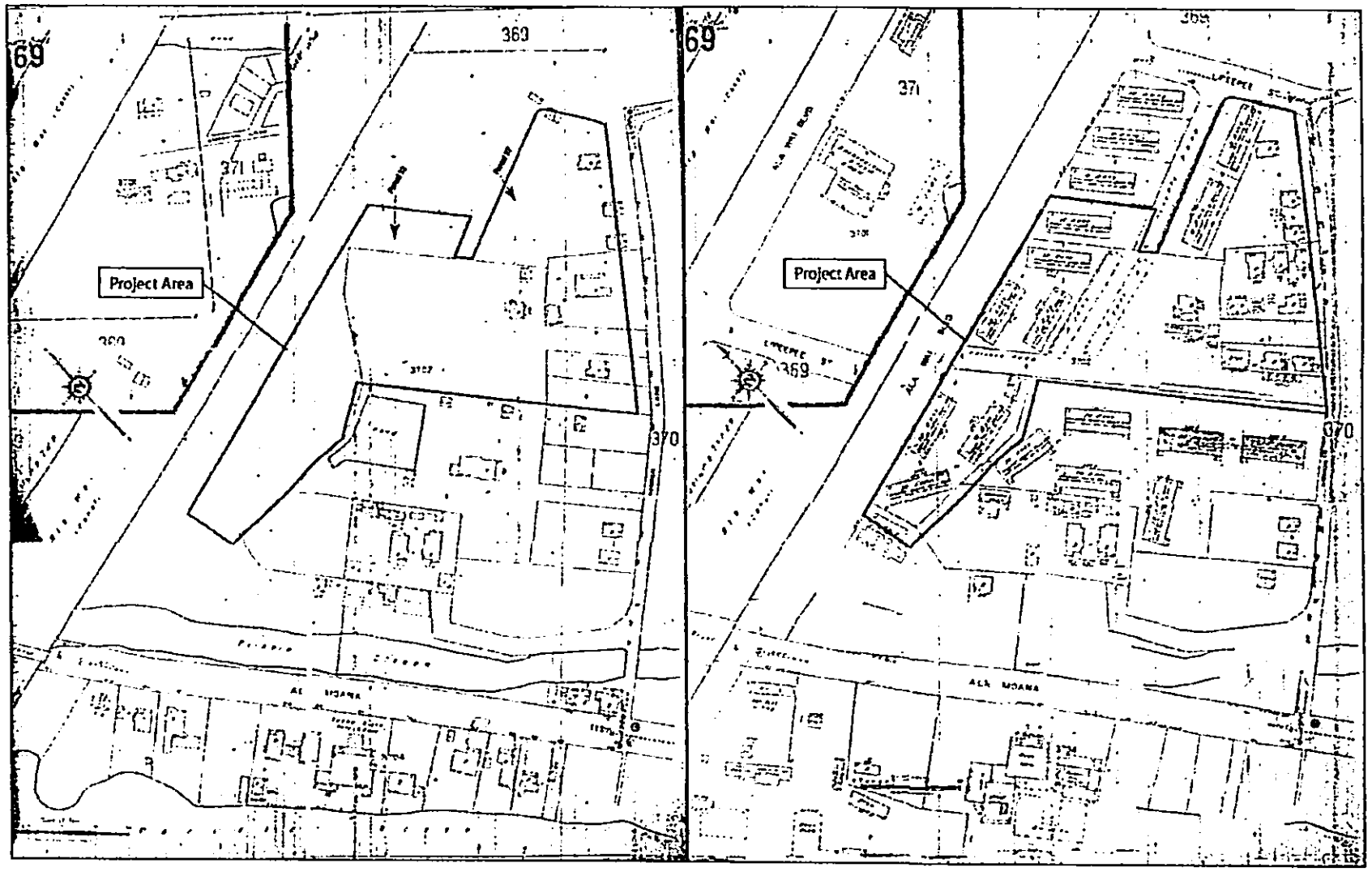

Figure 12. Sanborn Fire Insurance Maps, 1927 on left; buildings added between 1927 and 1951 on right

A second Sanborn fire insurance map (Figure 12, right side) illustrates buildings that were built on the property between 1927 and 1951. There are now six large apartment buildings on the north half of the lot, built between 1947 and 1949. The number of small dwellings (two-story) has increased in the southern half of the project area, along with several storage sheds. The pond on the west side has been filled in and the area on the east side is now developed with large apartment buildings. Two photographs taken from the Ala Moana Bridge also illustrate the sudden development of the area in the 1940s. A 1945 photograph (Figure 13) shows only small cottages along the northern boundary of the project area. In a 1948 photograph (Figure 14), four of the six apartment buildings on the project area can be seen. A larger aerial photograph (Figure 15), taken in 1949, shows the extensive development of the project area, with six large apartment buildings along the Ala Wai Canal, two long carport sheds, and a scatter of single-family dwellings in the southern half of the study area.

In summary, the project area in the twentieth century was drastically altered. Fishponds and other low areas were filled with material dredged from streams, ditches, and from the coast. Several single family dwellings were built before 1927, and a rapid construction of large apartment buildings took place in the mid 1940s. These constructions have obliterated any surface remnants of pre-contact to nineteenth century constructions. The upper subsurface probably has several layers of fill, from the Ala Wai Canal construction, and from the later building construction phases. Historic artifacts dating to the early twentieth century may be found in these fill layers, and pre-contact and early post-contact cultural materials may be found in intact sand deposits below these fill layers.

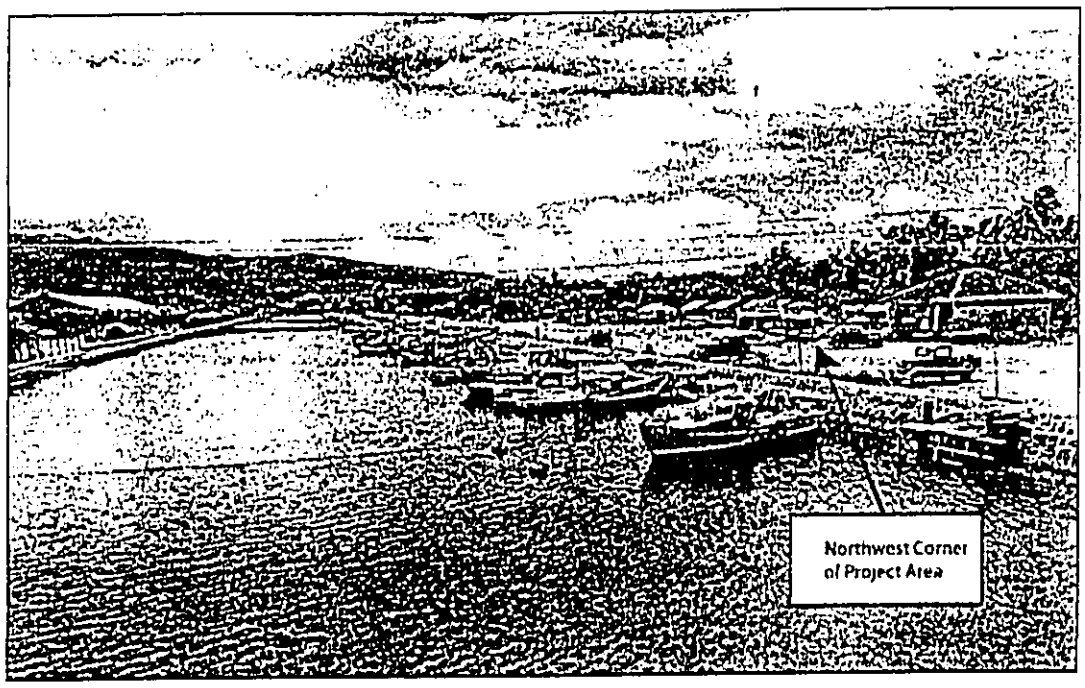

Figure 13. 1945 Photograph from Ala Moana bridge (view to SE) showing small cottages along the Ala Wai Canal within project area

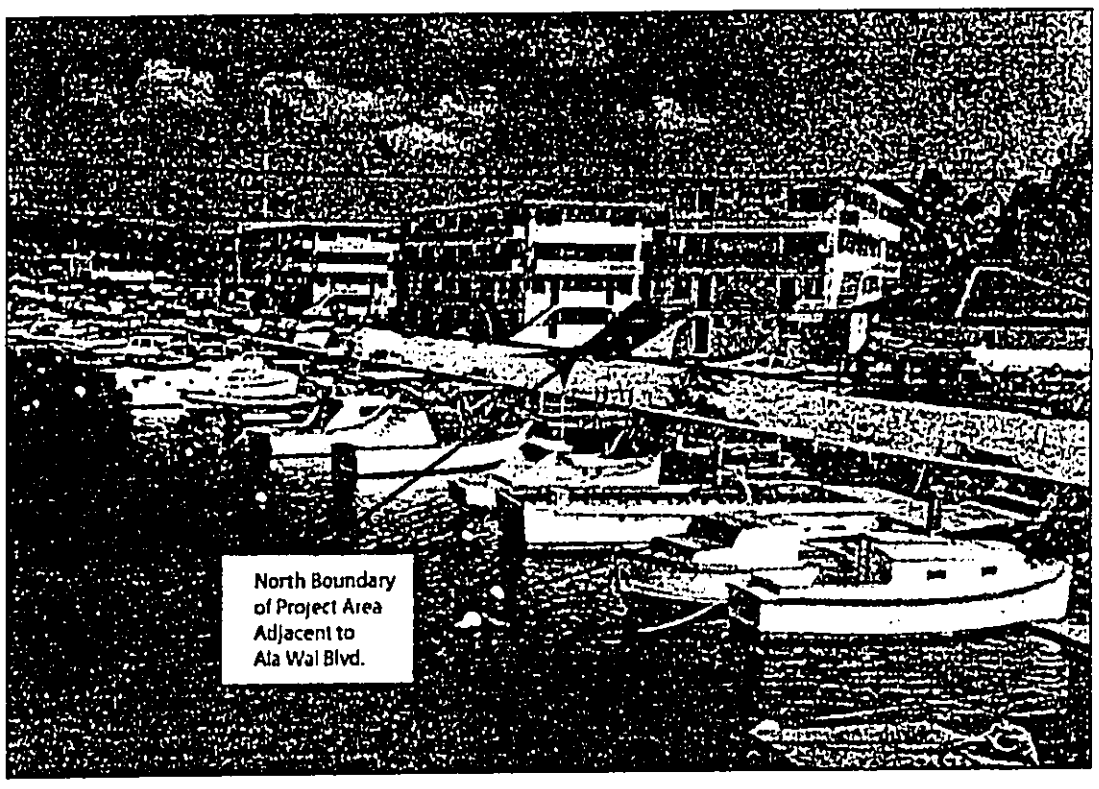

Figure 14. 1948 photograph from Ala Moana bridge (view to SE) showing four apartment buildings fronting the Ala Wai Canal within the project area

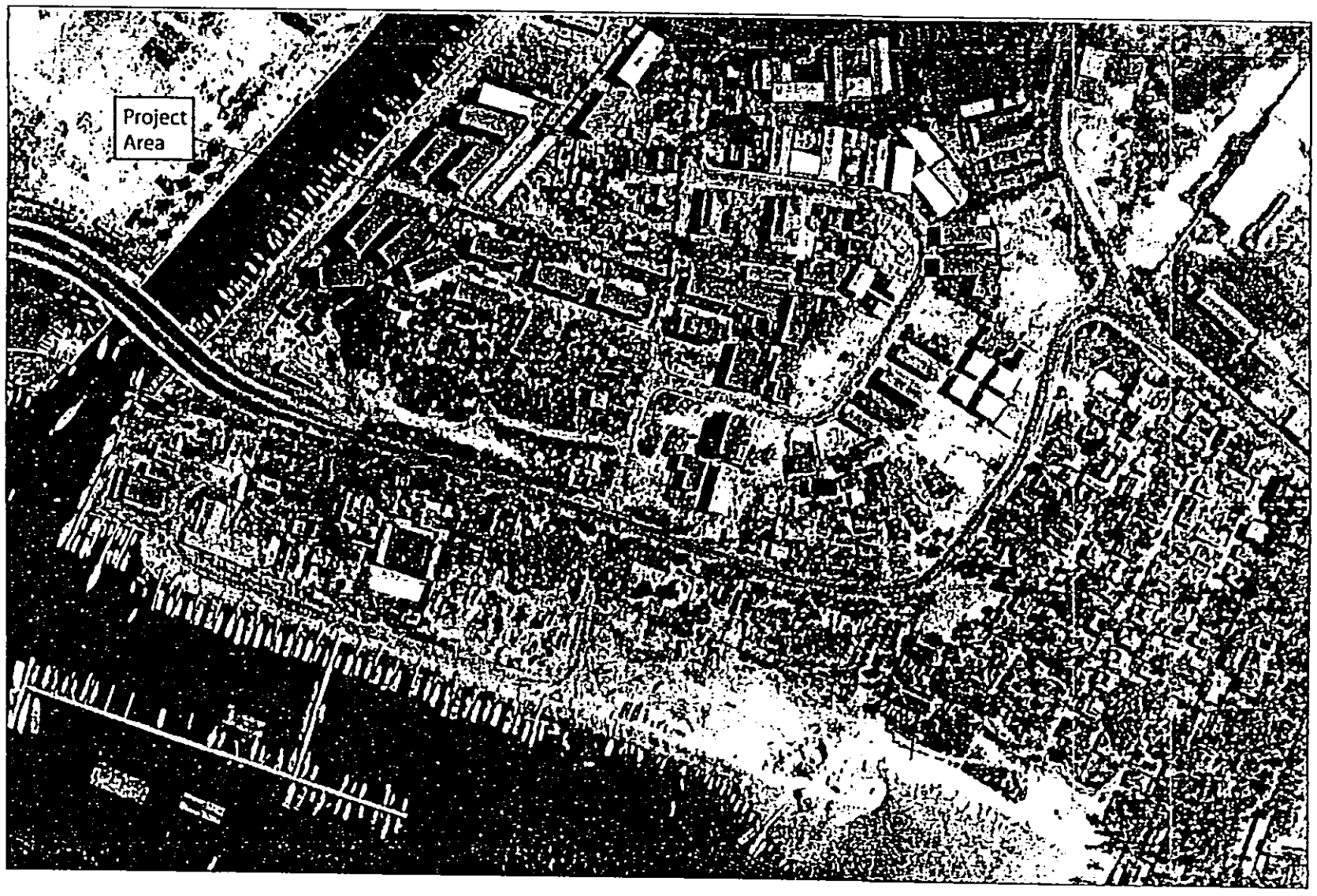

Figure 15. 1949 aerial photograph showing buildings in project area, including four buildings fronting the Ala Wai Canal

III. 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. Figure16 shows locations of previous archaeological studies and burials in the vicinity of the present project area. A discussion of projects focusing on burials 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 pre-contact Hawaiian sites.
Bishop Museum 1981	Interim Progress Report on Testing, Excavations, and Monitoring	Halekulani Hotel	Intact cultural deposits found.
Neller 1981	Reconnaissance Survey	Halekulani Hotel	Limited background research on area
Acson 1983	Historical Research, Past and Present Landmarks	'Ewa to Diamond Head end of Waikīkī	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 pre-contact 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 the 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 (SIHP site -9901).

Reference	Type of Investigation	General Location	Findings
Davis 1989	Reconnaissance Survey and 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	Pre-Field Background Literature Search	TMK: 2-6-014:039	List of literature pertaining to Waikīkī area.
Rosendahl 1989	Inventory Survey, Preliminary Report	Fort DeRussy	Historic artifacts, no human remains
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 and Documents 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	TMK 2-6-24:36-40, formerly a corner of the ʻĀinahau estate; remainder of parcels, former *ʻauwai*, *kalo* and rice fields; subsurface test excavations and specific sampling strategy recommended.
Davis 1991	Monitoring Report	Fort DeRussy	See also Davis 1989. No groundwater contamination found; 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 the pollen sequence were interpreted as inverted.

Reference	Type of Investigation	General Location	Findings
SHPD 1991	Public Inquiry	TMK: 2-6-024:036	Bones were determined to be non-human and part of the extensive fill material present in the area.
Simons et al. 1991	Interim Field Study, Monitoring and Data Recovery	Moana Hotel Area	Human skeletal remains, 8 burials, preliminary osteological analysis indicates pre-contact type; artifactual material recovered, both pre- and post-contact types.
Hurlbett 1992	Monitoring Report	TMK: 2-6-008:001	SIHP site -2870 (3 burials) found by Neller in 1980. This report is on testing and monitoring in same area.
Pietrusewsky 1992a	PA Report	Moana Hotel	Right half of human mandible found by hotel guest.
Pietrusewsky 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; not recommended for further work, significant solely for information content.
Streck 1992	Memorandum for Record	Fort DeRussy	Human burial discovery (believed to be late pre-contact Hawaiian) during data recovery excavations, May, 20, 1992.
Cleghorn 1993	Report on Inadvertent Discovery of Remains	Waikīkī Aquarium	Remains of one human individual, mandible identified.
Dagher 1993	Report on Inadvertent Discovery of Remains	Waikīkī Aquarium	Human remains of at least one person identified, excavation recommended.
Dega and Kennedy 1993	Report on Inadvertent Discovery of Remains	Waikīkī Aquarium	Discovery of unidentified bone fragments, all remains turned over to SHPD.

Reference	Type of Investigation	General Location	Findings
Hammatt and Chiogioji 1993	Archaeological Assessment	16-Acre Portion of the Ala Wai Golf Course	Not associated with any know surface archaeological site, however pre-contact 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 and Shideler 1995	Sub-surface Inventory Surface	Hawai'i Convention Center SIHP site, 1777 Kalākaua Ave.	No further work recommended.
Jourdane 1995	Report of 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 pre-contact artifacts, artifact debris, and midden materials collected from 7 occupational layers. 6 pre-contact 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 and Shideler 1996	Data Recovery	Hawai'i Convention Center Site	No clear evidence that Kuwili Pond sediments present in project area; no further work recommended.

Reference	Type of Investigation	General Location	Findings
McDermott et al. 1996	Inventory Survey	ʻĀinahau Estate	Buried remnants of *ʻauwai* and *loʻi* and human burial found on grounds of ʻĀinahau Estate, ^{14}C dates
Denham et al. 1997	Data Recovery Report	Fort DeRussy	Excavations conducted at fishponds, ^{14}C dates mid-17th C.
Denham and 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 and 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 and 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 and McDermott 1999	Burial Disinterment Plan and Report	Kalākaua Avenue	Two human burials found
Perzinski et al. 1999	Monitoring Report	Along Portions of Ala Wai Boulevard, Kalākaua Avenue, Ala Moana Boulevard, and ʻEna Road	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 and 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 southwestern portion, and archaeological monitoring is recommended in this area.

Reference	Type of Investigation	General Location	Findings
LeSuer et al. 2000	Inventory Survey	King Kalākaua Plaza Phase II	SIHP site -5796 has been adversely affected by land alteration of the project area. SIHP site -4970, has been adequately documented.
Perzinski et al. 2000	Burial Findings	Kalākaua Ave. between Kai'ulani and Monsarrat Avenues	44 sets of human remains; 37 disinterred, 7 left in place; believed to be Native Hawaiian, 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
Elmore and Kennedy 2001	Burial Report	Royal Hawaiian Hotel	Human remains found during trench excavations for conduit. In situ remains left in place, remains disturbed reentered with others.
McGuire and Hammatt 2001	Cultural Assessment	Along Lewers St., Beach Walk, Kālia Rd. and Saratoga Rd. Proposed Waikīkī Beach Walk project (Outrigger properties renovations)	Primary cultural concern identified as inadvertent burial discovery. Cultural monitoring recommended for all subsurface work within project area.
Perzinski and Hammatt 2001a	Monitoring Report	Kapi'olani Bandstand	A charcoal layer was observed, more concentrated on the southwest side of the bandstand; recovered indigenous artifact, basalt lamp with a handle, from the southeast end of the bandstand.
Perzinski and Hammatt 2001b	Monitoring Report	Kapi'olani Park	No cultural layer, artifacts, midden or human burials were encountered during the excavations.
Perzinski and 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.

Reference	Type of Investigation	General Location	Findings
Rosendahl 2001	Assessment Study	Outrigger Beach Walk	Assessment of previous archaeological and historical literature.
Winieski and 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 encountered during testing; absence of dry Jaucus 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, analysis suggests 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 and Kennedy 2002	Monitoring Report	Fort DeRussy	No findings.
Mann and Hammatt 2002	Monitoring Report	Lili'uokalani Avenue and Uluniu Avenue	5 burial finds of 6 individuals; two historic trash pits.
Putzi and Cleghorn 2002	Monitoring Report	Hilton Hawaiian Village	No findings during monitoring of trench excavations for sewer connections.

Reference	Type of Investigation	General Location	Findings
Winieski, Perzinski, Shideler and Hammatt 2002	Monitoring Report	Kalākaua Ave. between Ka'iulani and Monsarrat Avenues.	44 human burials encountered, 37 disinterred; buried habitation layer identified which contained traditional Hawaiian artifacts, midden, hearths, firepits, and charcoal concentrations; 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 and Hammatt 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 and Dega 2003	Monitoring Report	Waikīkī Marriot	No in situ remains, recommends monitoring if more work to be done, one isolated not in situ possible human bone fragment. Not identifiable.
Tulchin and Hammatt 2003	Archaeological and Cultural Impact Assessment	2284 Kalākaua Ave.	Notes possibility of burials within the project area; recommends an inventory survey with subsurface testing.

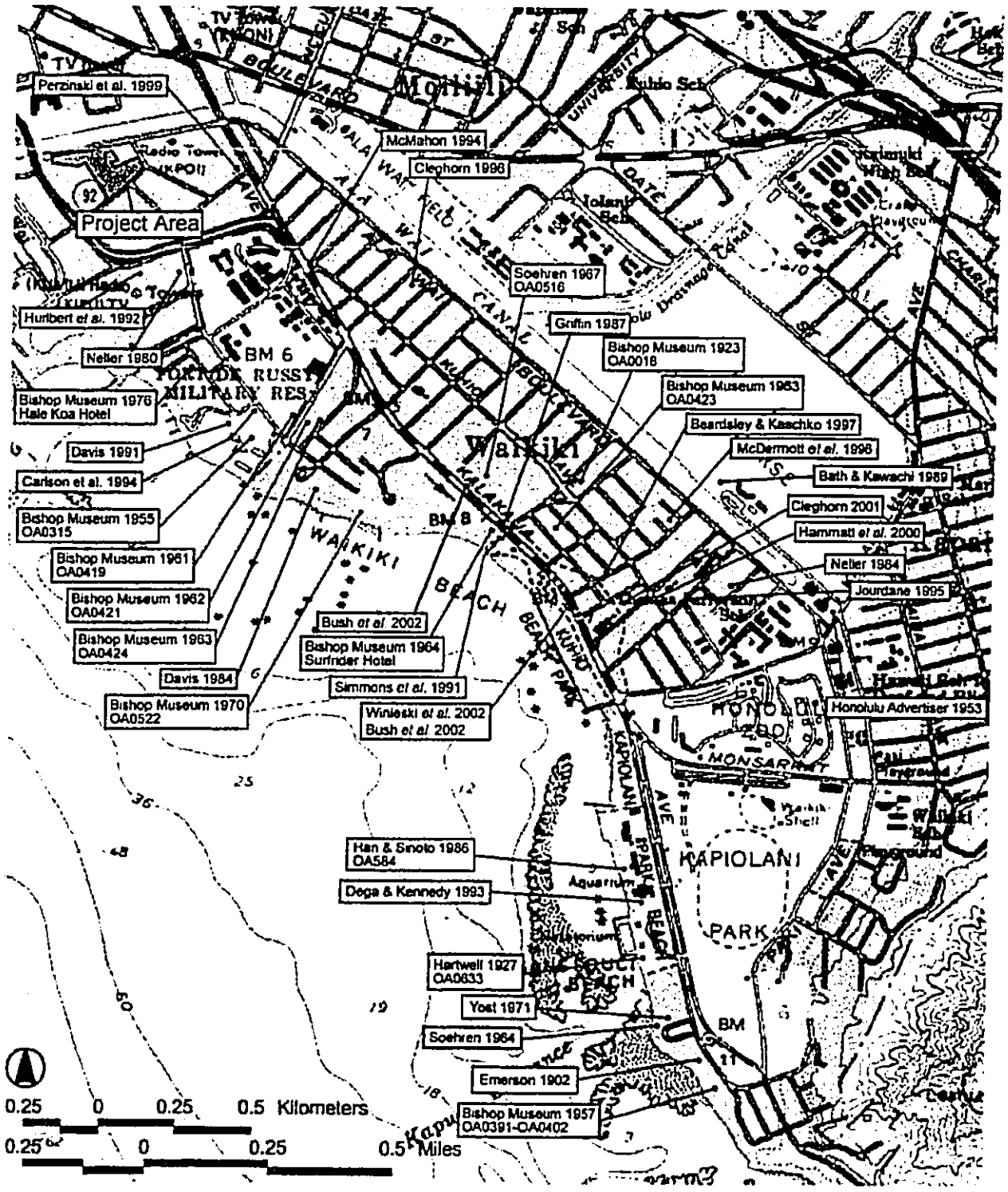

Figure 16. Previous archaeological work in Waikīkī including location of burials

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).

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 pre-contact 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, south-southeast of the present project area. 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).

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).

In 1988, 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, pre-contact, 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 (SIHP site -4970) in the 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 pre-contact/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). SIHP 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 which contained post holes.

In 1993, during construction activities at the Waikīkī Aquarium, approximately 3 km (1.86 miles) southwest of 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 which 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

approximately 350 m (0.2 mile) east of the present 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 and 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), approximately 1.30 km north of the current project area. 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 designated SIHP site -5937. The burial was encountered on the north side of the hotel in the spa garden. 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-inch 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 SIHP 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 SIHP site 50-80-14-5859, the two new individuals were recorded as Feature H of this previously recorded site.

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.

IV. PREDICTIVE MODEL

Historical background research included study of archival sources, LCAs and historic maps, as well as a review of past archaeological research in the vicinity to construct a history of land use. From these sources, a predictive model was developed to give a general idea of pre-contact and historic coastal land use patterns in the coastal area of Waikīkī.

The *ahupua'a* of Waikīkī in the centuries before the arrival of Europeans was an intensely used locale with abundant natural and cultivated resources - including an expansive system of irrigated taro fields - supporting a large population that included the highest-ranking *ali'i*. In the nineteenth century, after a period of depopulation, Waikīkī was reanimated by the Hawaiian *ali'i* and the foreigners residing there and by the farmers continuing to work the irrigated field system which had been converted from taro to rice. This farming continued up to the first decades of this century until the Waikīkī reclamation project drained the remaining ponds and irrigated fields.

Early nineteenth century historic maps (Figures 7, 8) show that the northern portion of Waikīkī, in which the current project area is located, was less intensely populated than Honolulu or the southern portion of Waikīkī. Mid-nineteenth century Land Court Award maps and documents do indicate that this area was used for habitation, fishpond agriculture, and irrigated agriculture, probably for taro. A portion of LCA 99 (Figure 9) awarded to Uma is within the eastern half of the project area. This LCA was bound by a fishpond to the east, and a "sea ditch" to the north, and contained the house of Uma, whose family had lived on this property from the time of Kamehameha I (pre-1819, or before the year of his death). LCA 2549:3 lay just outside the boundaries of the study area. The awardee Luaiku testified that his lot contained a house, an *'auwai* (watercourse), and four *lo'i* for irrigated agriculture.

These two LCAs are between the sea to the west, a pond to the east, and a stream to the north. It is likely that areas around the ponds and streams were low-lying wetlands or marshes. The two houselots must have been on higher ground, on a sandbar that allowed for the formation of the fishpond east of the coast. According to the LCA testimony, the houselots were used for habitation, agriculture, and fishpond aquaculture. Infrequently, houselots were also used by Hawaiians for the burial of family members.

A. Human Burials

Previous and on-going archaeological reports have documented human burials - both pre-contact Hawaiian and historic - throughout the Waikīkī area (Figure 16). Perzinski et al. (1999) found three burials on the corner of Ena Road and Kalākaua Avenue, approximately 350 m (0.2 mile) or one block east of the current project area (Figure 17). These burials were interpreted as probably pre-contact or early post-contact Hawaiian burials. Isolated pre-contact burials and burial clusters in Waikīkī have been found primarily in sandy deposits, just above the water table and below historic era fill materials. If there are intact Jaucus sand deposits below the nineteenth and twentieth century fills in the project area, it is possible that pre-contact burials may be found. Pre-contact burials will likely be located within pits and be associated with pre-contact habitation deposits.

Three human burials, possibly dated to the mid-1800s, were recorded by Neller in 1980 and later by Hurlbett in 1992. These burials were found approximately 250 m (800 feet) or one block south of the current project area, near the corner of Ala Moana Boulevard where it fronts the Hilton Hawaiian Village Complex (Figure 17). Post-contact burials will typically be located within extended pits with possible evidence of coffin material and/or grave goods associated with the post-contact period (metal jewelry or other Asian or European objects), which may be present.

B. Pre-Contact and Early Post-Contact Agricultural and Habitation Deposits

It is predicted that features related to habitation, such as a house platform, food residue, and other trash, features related to ponds, such as pond banks and berms, and features related to agriculture, such as *lo'i* (pond fields) and *'auwai* levee remnants, may be found in the project area. Habitation deposits will frequently be evident in the stratigraphy as dark-colored sand with features such as post-holes and firepits, artifacts, and food remains (marine shell, bone, and *kukui* endocarps etc.). Agricultural features such as irrigation ditches, fishponds and irrigated fields, and the sand berms that were often built along the edges of ponds and fields may be found in the trench profiles. *'Auwai* will frequently be evident within the stratigraphy as a dip within a stratigraphic layer which could possibly be stone-lined as could be sand or earthen berms. *Lo'i* will frequently be evident by a silty clay layer within the stratigraphy.

Following the initial years of European contact, Westerners engaged in new massive agricultural ventures. Immigrant workers from Asia were brought to Hawai'i to labor in these new agricultural ventures, and as a result rice also became a major crop in many areas. The wetlands of Waikīkī were an ideal environment for the cultivation of rice, and the area yielded much of its traditional taro cultivation land to rice production. Features related to rice agriculture may also be present, such as fences to mark field boundaries, or other evidence.

The same area, in the early 20th century, was altered more intensely for land-reclamation plans; the resulting dredge and fill projects obliterated what remained of traditional Hawaiian cultivation processes, in Waikīkī. In the three archaeological projects conducted near the current project area (Neller 1980; Hurlbett 1992; Perzinski et al. 1999) post-contact subsurface features with nineteenth and twentieth century artifacts were also recorded, indicating the use of the area in the later post-contact period. The post-contact deposits will likely contain ceramic, metal and glass.

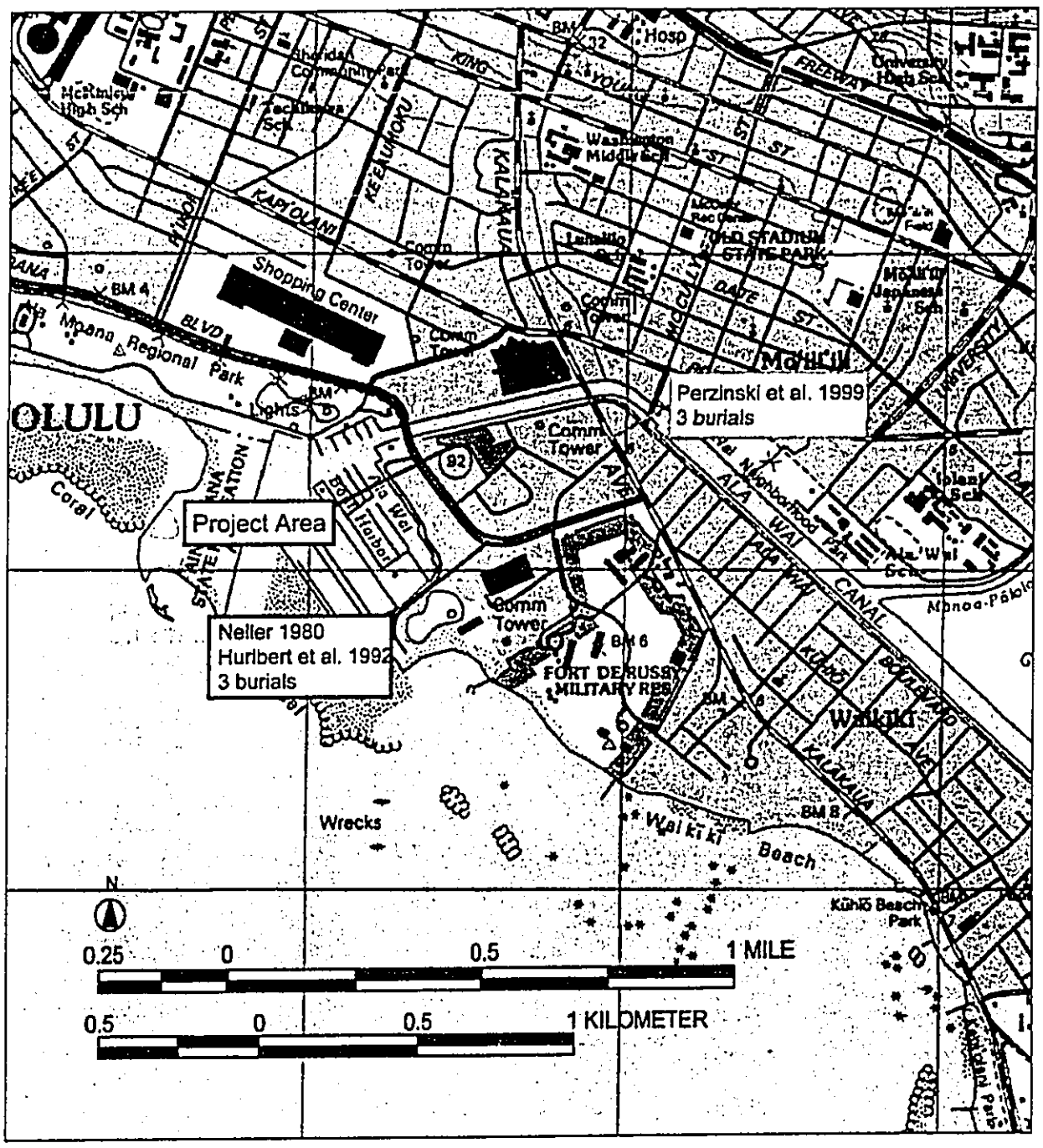

Figure 17. Previous archaeological projects near current project area

V. INVENTORY SURVEY AND TESTING METHODS

A. Surface Survey Methods

Dr. Hallett H. Hammatt, Ph. D. of Cultural Surveys Hawai'i, Inc. (CSH), operating under permit No. 0404 issued by SHPD / DLNR for archaeological research, was the principal investigator for this project - an archaeological inventory survey of the proposed Waikīkī Gateway Project. The survey fieldwork involved a surface survey of the project area by CSH archaeologists on March 3, 2004 [as part of an earlier archaeological literature review and field inspection of the project area (O'Hare et al. 2004)] and September 13, 2004 (as part of the current inventory survey). Surface survey coverage was 100%. The project area is largely open and vacant of buildings and structures, with some areas covered by an asphalt parking area. Notably, Lots 32 and 37 (TMKs: [1] 2-6-011: 32 and 37—refer to Figure 2) of the project area still have in use buildings on them, with associated structures and landscaped areas.

The archaeological subsurface testing was conducted from September 13 through October 4, 2004. The subsurface testing of the project property consisted of excavating 15 backhoe trenches (Figure 18). Four CSH archaeologists were on site at all times to monitor the excavations, to document the exposed sections, and to collect sediment samples. One archaeologist was positioned to watch the bucket as material was excavated, as well as the exposed section on one side of the trench. Another was positioned to watch the bucket as the excavated material was dumped from the bucket as well as the other exposed section of the trench. The other two archaeologists recorded trench location, dimensions, orientation, stratigraphic profiles, and soil descriptions.

Historical research and previous archaeology provided a clear picture of the types of deposits that could be found within the project parcels. Backhoe trenches provided a means to rapidly investigate these potential subsurface deposits. Trenches were dug to investigate specific questions regarding expected subsurface deposits. They were also dug to give a representative coverage throughout the entire project area so that unexpected deposits would not be missed.

Trenches 1 and 2 were excavated north to south along the east boundary of the property to pick up the edge of the pond shown on historic maps (Figure 9).

Trenches 3, 4 and 5 were excavated in the north section of the property with trenches oriented parallel to the coastline perpendicular to the north property boundary and the sea channel shown on the historic maps. The intent of these trenches was to identify the bounds of the sea channel. An unexpected find in Trench 3 was a coffin burial.

Trenches 6 through 10, and 15 were excavated in the east extreme of the project parcels along Hobron Lane to Lipe'epe'e Street to locate pond sediments.

Trench 11 was excavated in the north-central area of the project parcels with the purpose of obtaining profiles and samples from the historic house site within LCA 99 (Figure 9).

Trenches 12, 13 and 14 were excavated on the east, west and north sides of Trench 3 to investigate the likelihood of additional burials in that area. No other burials were found in these trenches.

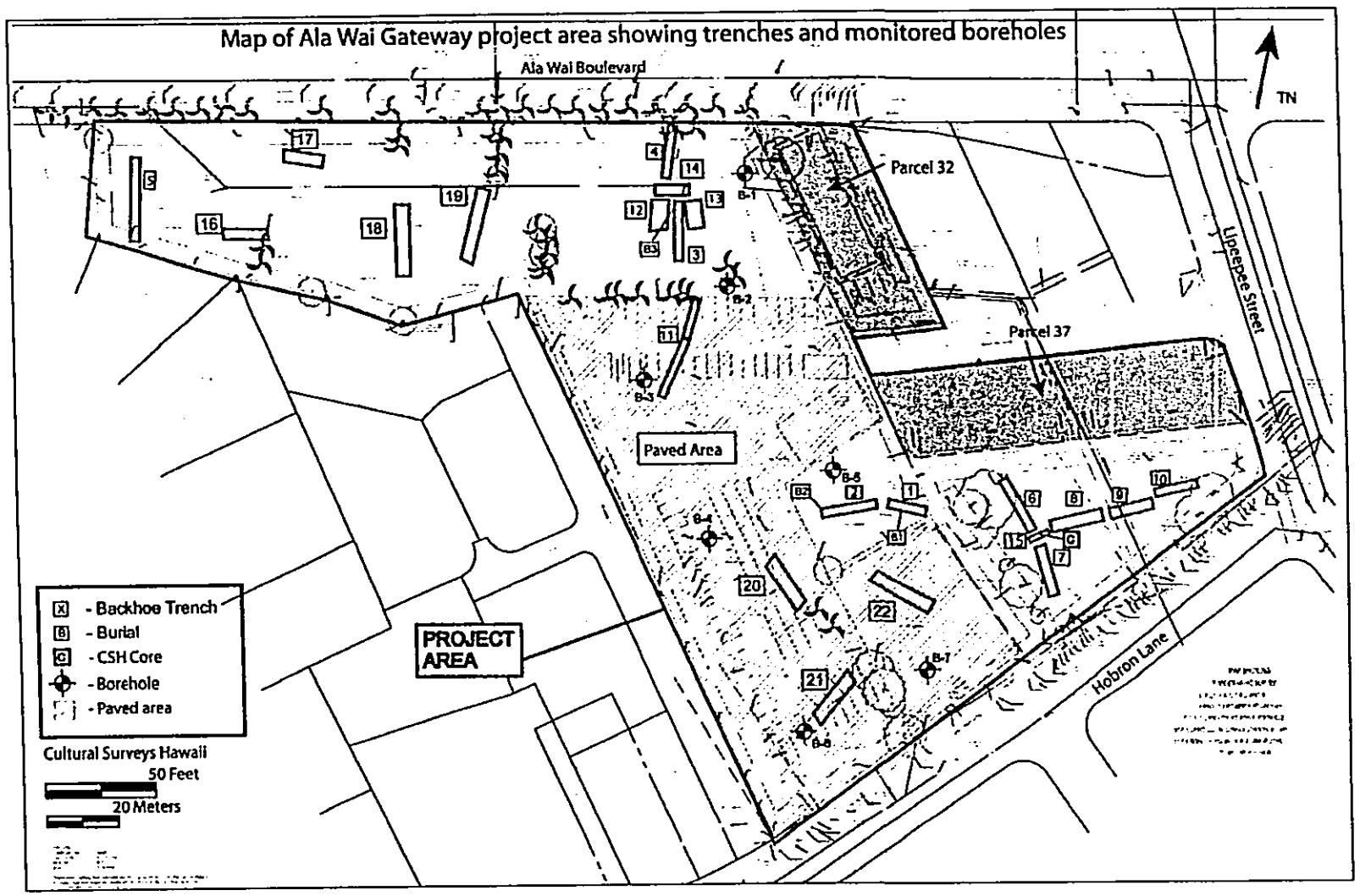

Figure 18. Project parcels showing property boundaries and archaeological survey test trenches

Trenches 16 through 22 were excavated at various locations with the project area (refer to Figure 18. SHPD specifically requested these additional trenches to lessen the interval between the previous excavated trenches, and to provide a greater sampling of the project area's subsurface deposits. Subsurface testing was not undertaken in Lots 32 and 37 (refer to Figure 2) because these developed parcels currently have in-use buildings and structures.

Trenches were excavated to ground water or to solid coral base-rock. Trenches were of variable widths and depths (see individual trench descriptions below) Trenches 12, 13, and 14 were dug with a backhoe to the surface of the sand deposits. Then shovels were used to scrape the sand layer surface looking for burial pit outlines.

Exposed trench sections were documented with scale section profiles, photographs, detailed sediment descriptions, and, where useful, sediment samples. Sediment descriptions included Munsell color designations, sediment size, inclusions, and cultural material present. Representative samples of cultural material were collected from sediment sifted through 1/8th inch mesh screens.

Samples were collected in the field from the trench profiles from features where available or from specific layers and sample collection locations were marked on the trench profile. Samples and cultural materials were inventoried and catalogued. Charcoal samples, and one organic sediment sample, were sent for radiocarbon dating.

Samples for charcoal dating were screened and collected from 1/8-inch screen and window screen. Samples to assess midden or other cultural content were sifted through 1/8-inch screen.

Another method of subsurface testing, comprised of seven 4-inch diameter test borings by Geolabs, Inc., was included as part of the inventory testing investigation (refer to Figure 18). Sediments from the first ten feet of each of the borings were inspected during the drilling by one CSH employee from October 4 through October 22, 2004. No cultural deposits were observed during the borings.

VI. SUBSURFACE TESTING RESULTS

Twenty-two backhoe trenches (with a combined length of 223.5 meters (733.3 feet)) were excavated within the project area (Figure 18). The sediments and features exposed were as expected from the historical research and previous archaeology. The following is a description of each backhoe trench excavated during the inventory survey. A sidewall profile and an in depth stratigraphic description has been included for each trench.

A. Trench 1

Trench 1 was excavated in the southern half of the project area, along the eastern border. This excavation was situated between the houselot L.C.A. 99 and a former fresh water pond. Trench 1 was excavated to locate the edge of the pond.

Trench 1 measured 5.5 m (18 feet). It had a maximum depth of 154 cm (5.1 feet) and a maximum width of 1 m. The trench was oriented east-west (268° metric north) with the western end of the trench located 6.1 m (20 feet) from the eastern end of Trench 2 (Figure 18). The trench was excavated to the coral shelf. Three strata were noted and described in the excavation (Figure 19). A peat sample (S1) was also collected from a lens in stratum II, 140-144 cmbs, weighing 425.24 grams.

Human remains were observed and all subsurface excavations were stopped; Kana'i Kapeliela of SHPD was notified. An SHPD site visit determined that any displaced remains were to be replaced, and the trench filled in. Present SHPD staff and archaeologists were in agreement that their should be further testing in the vicinity.

The skeletal remains were observed within the lower, mottled portion of Stratum I. Stratum I is a mixed sandy sediment that contains what appear to be modern construction gravels and refuse. It appears to have been reworked by grading or similar ground disturbance and may be a fill sediment. The skeletal remains were clearly prevously disturbed and may have been brought to their current location from somewhere else within the project area, or possible outside the project area.

Stratum (cmbs):

Backhoe Trench #1 West Sidewall Stratum I: 0-100	10yr 6/2, light brownish gray; gravelly, gravel and sand; weak, columnar structure; loose dry consistency; non-plastic; no cementation; abrupt wavy lower boundary; coral & gravel inclusions, a sandy fill
Backhoe Trench #1 West Sidewall Stratum II: 100-140	Sand; weak, single grain structure; loose dry consistency; non-plastic; weak cementation; clear & irregular lower boundary.
Backhoe Trench #1 West Sidewall Stratum III: 140-154	10yr 3/2, very dark grayish brown; medium to coarse, sand; weak structure grade, single grain structure; loose dry consistency; non-plastic; weak cementation; clear & smooth lower boundary.

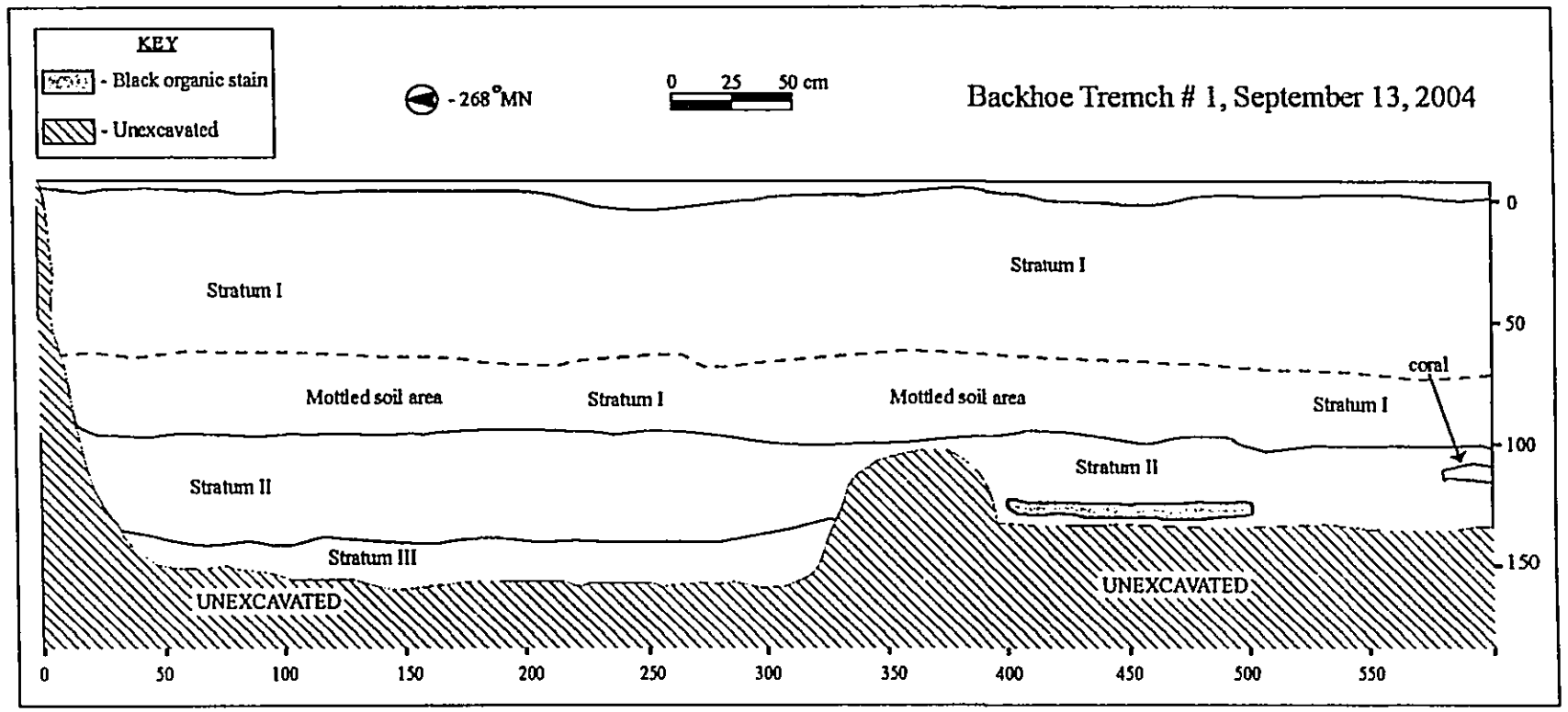

Figure 19. Profile of Trench 1, West Face

B. Trench 2

Trench 2 was excavated in the southern half of the project area, near the eastern boundary. Historical maps and L. C. A. testimony stated that the area that this trench was excavated in was formerly a houselot (though the actual structure was farther to the northwest, see Trench 11). Trench 2 was excavated within the bounds of LCA 99, near the former pond (Figure 9).

Trench 2 measured 11.5 m (37.4 feet). It had a maximum depth of 175 cm (5.74 feet) and a maximum width of 1 m. The trench was oriented east-west, with its east end 20 feet from the west end of Trench 1. The trench was excavated to 175 cmbs. Three strata were noted and described during the excavation (Figure 20). A peat sample (S1) weighing 425.24 grams was collected from stratum III, 160-165cmbs.

Human skeletal remains appeared in mottled soil area of stratum I (Figure 20). When human remains were observed all subsurface excavations were stopped and Kana'i Kapeliela of SHPD was notified. An SHPD staff site visit determined that any displaced remains were to be replaced, and the trench filled in. Present SHPD staff and archaeologists were in agreement that their should be further testing in the vicinity.

The skeletal remains were observed within the lower, mottled portion of Stratum I. Stratum I is a mixed sandy sediment that contains what appear to be modern construction gravels and refuse. It appears to have been reworked by grading or similar ground disturbance and may be a fill sediment. The skeletal remains were clearly prevously disturbed and may have been brought to their current location from somewhere else within the project area, or possible outside the project area.

Stratum (cmbs):

Backhoe Trench #2 South Sidewall Stratum I: 0-100	10yr 6/2, light brownish gray; gravelly, gravel; weak, loose dry consistency; wavy lower boundary. Lower half of stratum I is a mottled: a graded layer of dark and light horizontal mottling.
Backhoe Trench #2 South Sidewall Stratum II: 100-150	Medium to coarse sand; weak structure grade, single grain structure; loose dry consistency; non-plastic; no cementation; clear & irregular lower boundary.
Backhoe Trench #2 South Sidewall Stratum III: 150-175	10 yr 3/2, very dark grayish brown; medium texture, sand; weak structure grade, single grain structure; loose dry consistency; non-plastic; no cementation; clear & smooth lower boundary.

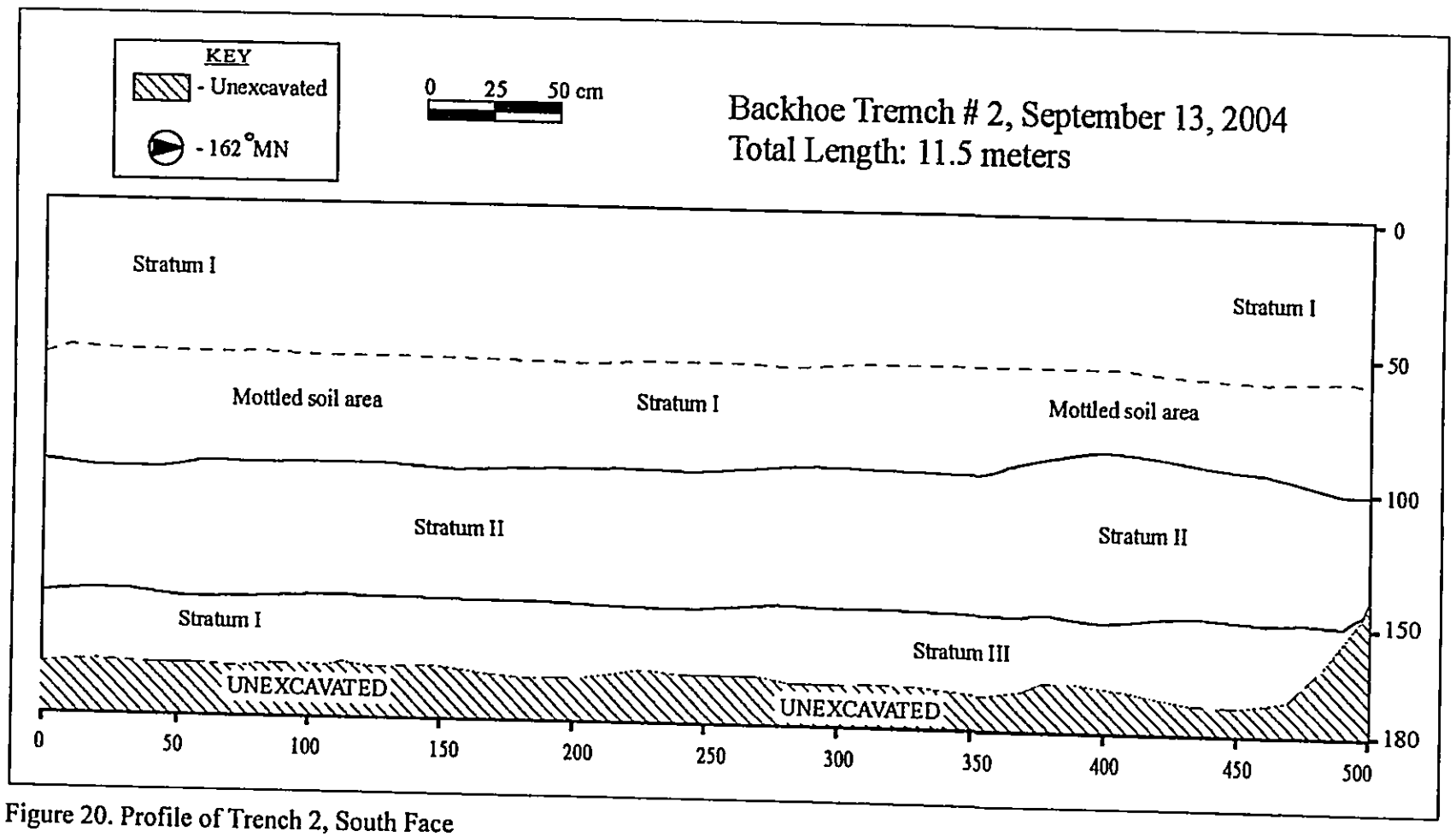

Figure 20. Profile of Trench 2, South Face

C. Trench 3

Trench 3 was excavated in the northeastern quadrant of the project area. Historical maps place this trench within the area of L.C.A. 99 (Figure 9).

Trench 3 measured 5.5 m (18 feet). It had a maximum depth of 105 cm (3.44 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented north-south (3° true north) and was excavated to the water table. Three strata were noted and described in the excavation. A soil sample (S3) was collected from a lense about 5cm above the water table (98-100cmbs), weighing 963.88 grams.

Human remains were uncovered, digging was stopped, SHPD contacted, and the back pile of dirt was screened for any human remains or grave goods. A coffin with human remains (a complete but fragmented skull) and grave goods were found above the water line (105cmbs), between 90-105 cmbs (Figure 21). Accompanying grave goods consisted of a gold earing, one shell bead, a button, an opium bottle and opium pipe bowl (Figures 22, 23). All remains and grave goods were replaced and the trench was back-filled. Based on the prelimiarly identification of the associated grave goods in the field, this burial would appear to date to the mid 19th century. Discussions with SHPD prompted further investigation in the area and Trenches 13 and 14 were later excavated on either side of the northern (*mauka*) end of Trench 3.

Stratum (cmbs):

Backhoe Trench #3 East Sidewall Stratum I: 0-20	7.5yr 3/4, dark brown; sandy loam; weak grade, fine texture, crumb structure; weakly coherent dry consistency; non-plastic; no cementation; clear & smooth lower boundary. No cultural inclusions.
Backhoe Trench #3 East Sidewall Stratum II: 20-70	10yr 5/1, gray; coarse tecture, sand; structureless grade, single grain structure, loose dry consistency; non-plastic; no cementation; abrupt & broken lower boundary; about 30% basalt cobbles.
Backhoe Trench #3 East Sidewall Stratum III: 70-105 (H_2O table)	10yr 8/1, white; coraline gravelly, sand; structureless grade, non-sticky wet consistency; non-plastic; weak cementation; abrupt & wavy lower boundary. Naturally deposited marine shell inclusions.

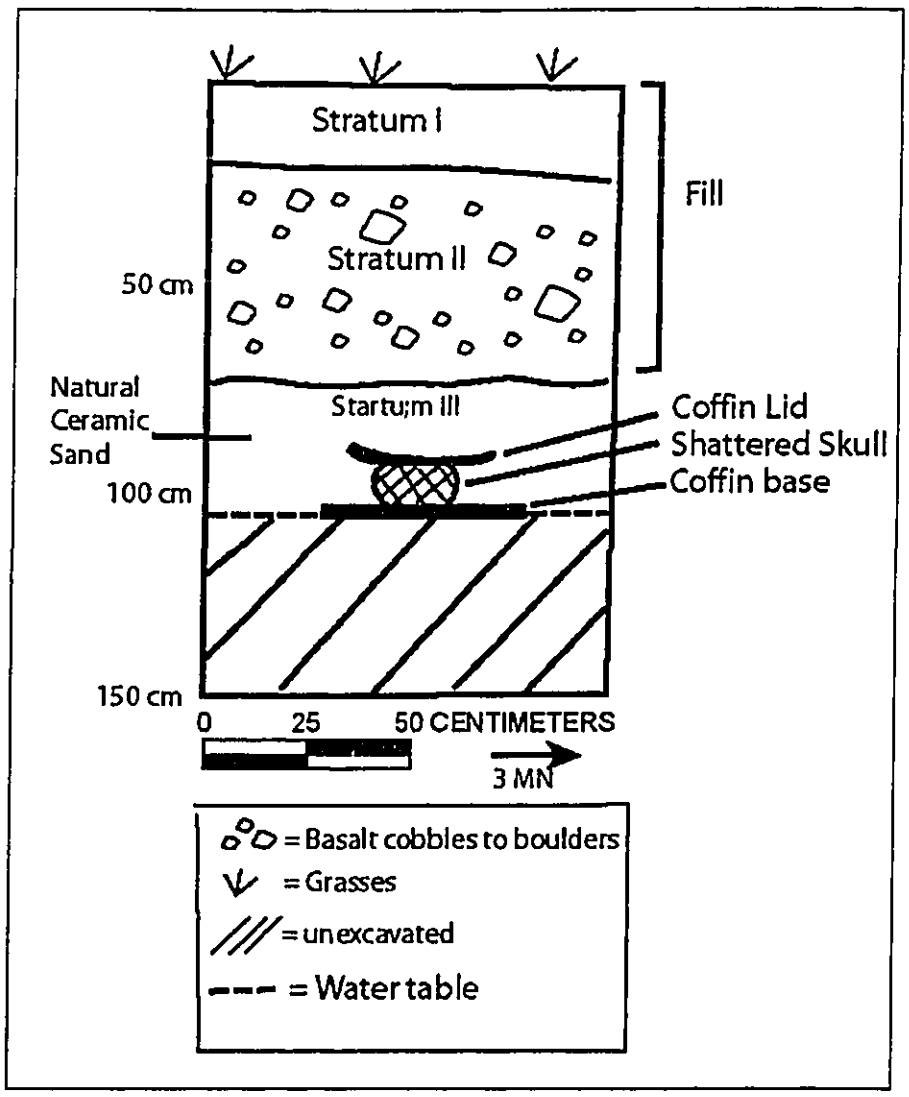

Figure 21. Profile of Trench 2, south face

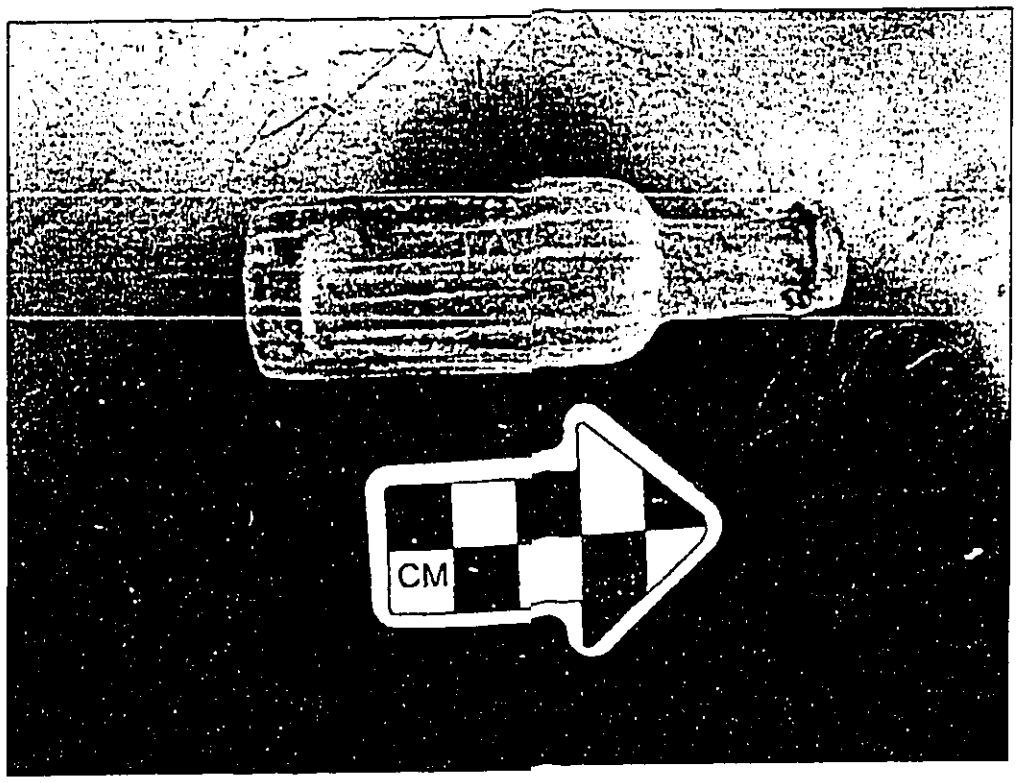

Figure 22. Opium bottle from Trench 2 (grave goods).

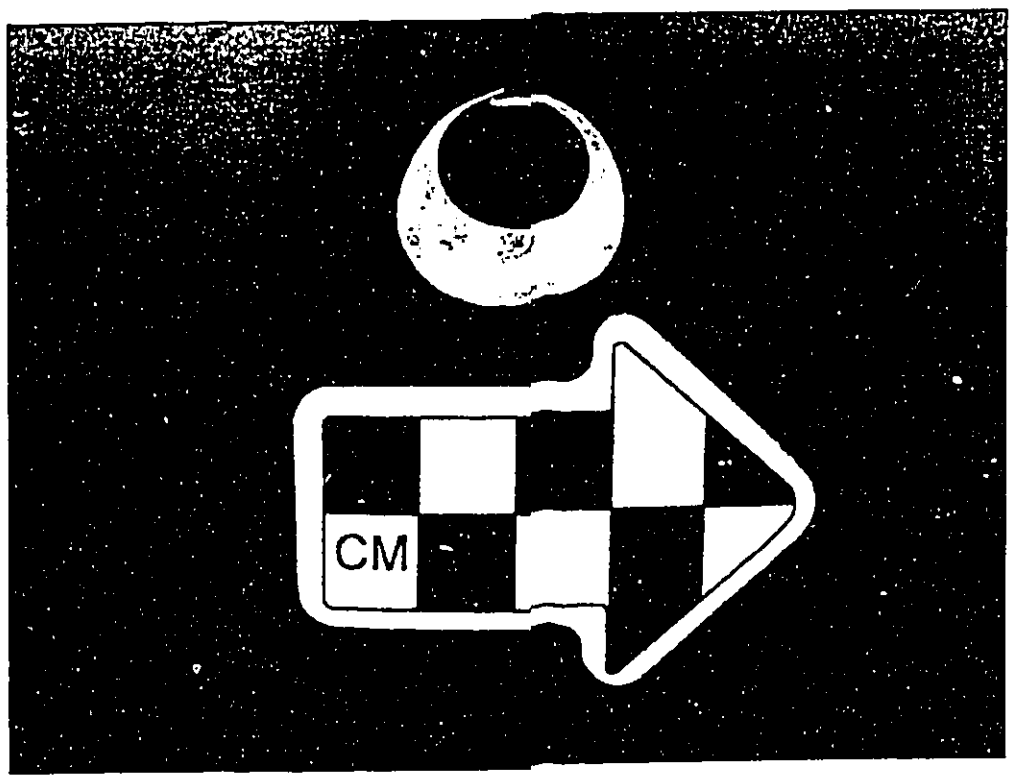

Figure 23. Gold earring from Trench 2 (grave goods).

D. Trench 4

Trench 4 was the northernmost (*mauka*) excavation, closest to the present day Ala Wai Blvd and Ala Wai Canal. Historical maps and L. C. A. testimony place this trench just north of the sea ditch and L.C.A. 99, and just south west of the former location of a fresh water pond (Loko Kuwili).

Trench 4 measured 9 m (29.5 feet). It had a maximum depth of 120 cm (3.93 feet) and a maximum width of 1 m. The trench was oriented north south (183° true north) with the north (*mauka*) end of the trench located near the northern border of the project area. The trench was excavated to the water line and in a 2 m area to the coral shelf. Six strata were noted and described in the excavation (Figure 24). A bulk organic soil sample, weighing 1105.63 grams was collected from Stratum IV at 90cmbs. A sample of this enriched organic sediment, which likely represents a former pond or marsh, but could also represent sediments related to the "sea ditch" shown on historic maps, was sent for radiocarbon dating. This was done to establish the age of these remnant pond or marsh deposits (Stratum IV) and their potential for containing data regarding environmental change over time; for example, a record of changes in ambient pollen over time.

Stratum (cmbs):

Backhoe Trench #4 East Sidewall Stratum I: 0-30	2.5yr 3/4, dark brown; sandy loam; weak, fine, crumb structure; weakly coherent dry consistency; non-plastic; no cementation; clear smooth lower boundary.
Backhoe Trench #4 East Sidewall Stratum II: 30-75	10yr 5/1, gray; coarse, sand; structureless, loose dry consistency; non-plastic; no cementation; abrupt wavy lower boundary; 30% basalt cobbles.
Backhoe Trench #4 East Sidewall Stratum III: 75-90	10yr 8/1, white; coraline gravel/sand, sand; structureless, non-sticky wet consistency; non-plastic; no cementation; abrupt wavy lower boundary; marine shell inclusions.
Backhoe Trench #4 East Sidewall Stratum IV: 90-100	7.5yr, very dark gray; marsh gleyed sand, sandy clay; structureless, sticky wet consistency; plastic; no cementation; clear irregular lower boundary; marsh snail inclusions. This layer represents a deposit of pond or marsh sediment.
Backhoe Trench #4 East Sidewall Stratum V: 100-120	7.5yr 6/0, gray; coarse to very coarse, sand; structureless, non-sticky wet consistency; non-plastic; no cementation; base of excavation, lower boundary; marine shell inclusions.
Backhoe Trench #4 East Sidewall Stratum VI: 70-100	10yr 6/4, dark yellowish brown; medium, sand; structureless, non-sticky wet consistency; non-plastic; no cementation; marine shell inclusions.

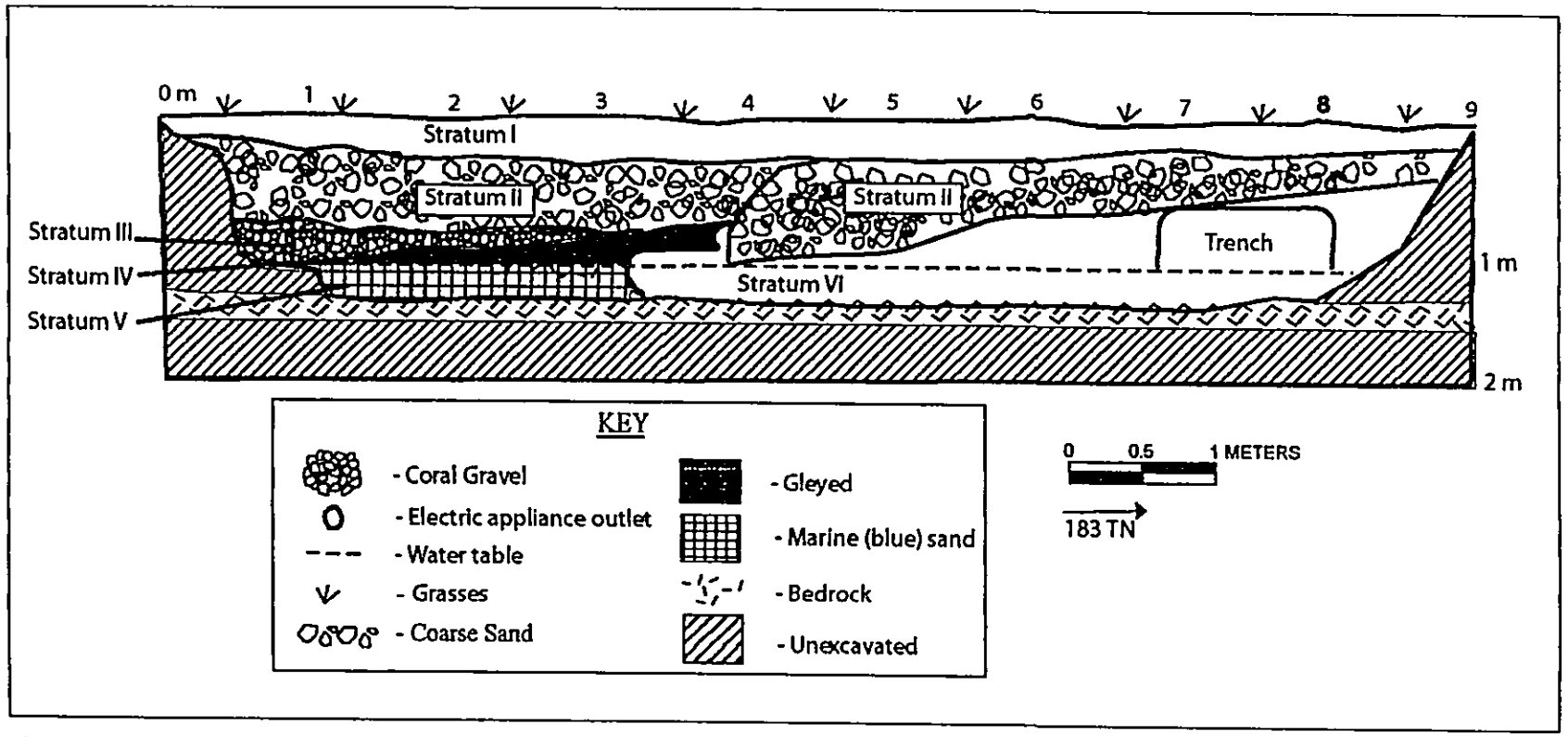

Figure 24. Profile of Trench 4, East Sidewall

E. Trench 5

Trench 5 was excavated in the northwestern portion of the project area. Historical maps show Trench 5 to be in the vicinity of the sea channel. This trench was excavated to identify the bounds of the sea channel.

Trench 5 measured 16 m (52.5 feet). It had a maximum depth of 200 cm (6.6 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented north-south (3° true north) with the north (*mauka*) end of the trench located near the northern boundary of the project area. The trench was excavated just below the coral shelf. Six strata were noted and described in the excavation (Figure 25). Strata I through IV are most likely fill deposits dating to the construction of the Ala Wai Canal. The underlying Strata V and VI are older sediments and likely related to the "sea ditch" that extended through this portion of the project area.

Stratum (cmbs):

Backhoe Trench #5 East Sidewall Stratum I: 0-42	2.5yr 3/6, dark red; fine, silt; moderate, fine to coarse (>5cm), crumb structure; hard dry consistency; very plastic; weak cementation; very abrupt wavy lower boundary.
Backhoe Trench #5 East Sidewall Stratum II: 10-48	10yr 3/4, dark yellowish brown; sandy silt; structureless, coarse, single grain structure; loose dry consistency; non-sticky wet consistency; non-plastic; no cementation; very abrupt irregular & discontinuous lower boundary.
Backhoe Trench #5 East Sidewall Stratum III: 25-75	10yr 2/1, black; very coarse, silty sand; structureless, coarse or thick, loose dry consistency; non-plastic; no cementation; very abrupt irregular lower boundary; this unit consists of volcanic cinder ranging in size from a fine silt to pebbles.
Backhoe Trench #5 East Sidewall Stratum IV: 55-120	10yr 7/1, light gray; gravelly, crushed coral gravel; structureless, non-sticky wet consistency; non-plastic; no cementation; very abrupt lower boundary; base course fill.
Backhoe Trench #5 East Sidewall Stratum V:	10yr 6/1, gray; natural, sandy clay loam; structureless, sticky wet consistency; slightly plastic; no cementation; below water table.
Backhoe Trench #5 East Sidewall Stratum VI:138-200	10yr 3/1, very dark gray; natural, sandy clay loam; structureless, sticky wet consistency; non-plastic; no cementation; below water table, potential buried A horizon or alluvial deposit related to a stream or pond.

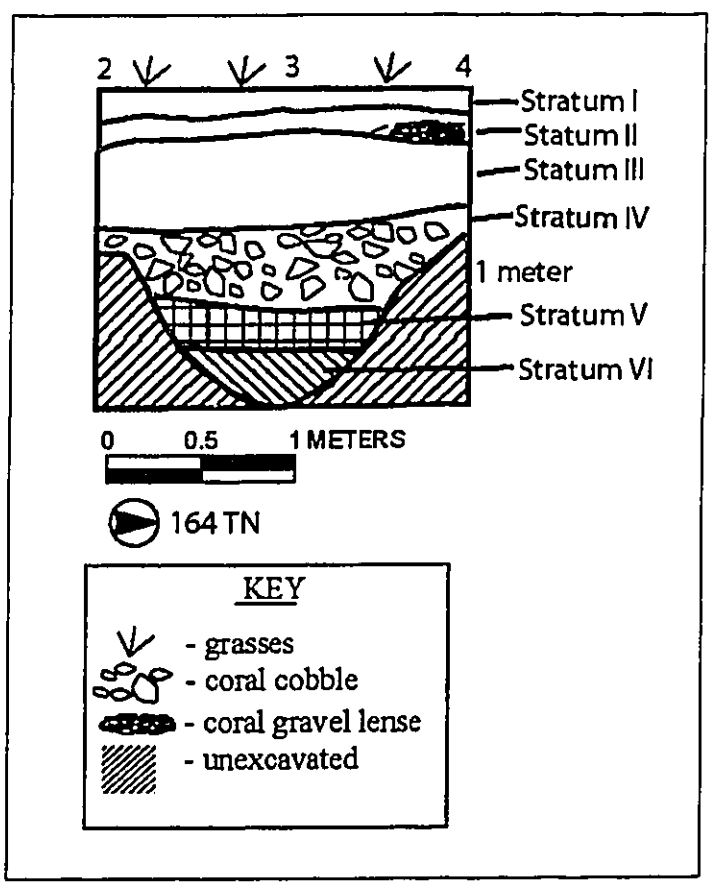

Figure 25. Profile of Trench 5, East Sidewall

F. Trench 6

Trench 6 was excavated in southeastern quadrant of the project area. Historical maps and L. C. A. testimony clearly state that this excavation is over an area that had formerly been a freshwater pond that was home to fish and waterfowl and was probably used as a for irrigation as well. Trench 6 was excavated to locate pond sediments.

Trench 6 measured 12 m (39.4 feet). It had a maximum depth of 90 cm (2.95 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented roughly north-south (126° true north) with the southern (*makai*) end of the trench located less than 2 m from Trench 15. The trench was excavated to the water table. Two strata were noted and described in the excavation (Figure 26). These strata are most likely both fill sediments imported to the project area. Pond sediments may well be located below the water table.

Stratum (cmbs):

Backhoe Trench #6 East Sidewall Stratum I: 0-39	2.5yr 3/6, dark red; fine-coarse, sandy silt; weak, coarse, subangular blocky structure; slightly hard dry consistency; slightly plastic; no cementation; distinct wavy lower boundary.
Backhoe Trench #6 East Sidewall Stratum II: 37-90	10yr 4/6, dark yellowish brown; sandy silt; structureless, coarse (7.5cm), pebbly structure; loose moist consistency; slightly plastic; no cementation; unknown lower boundary; upper portion of this layer contains an abundance of historic rubbish.

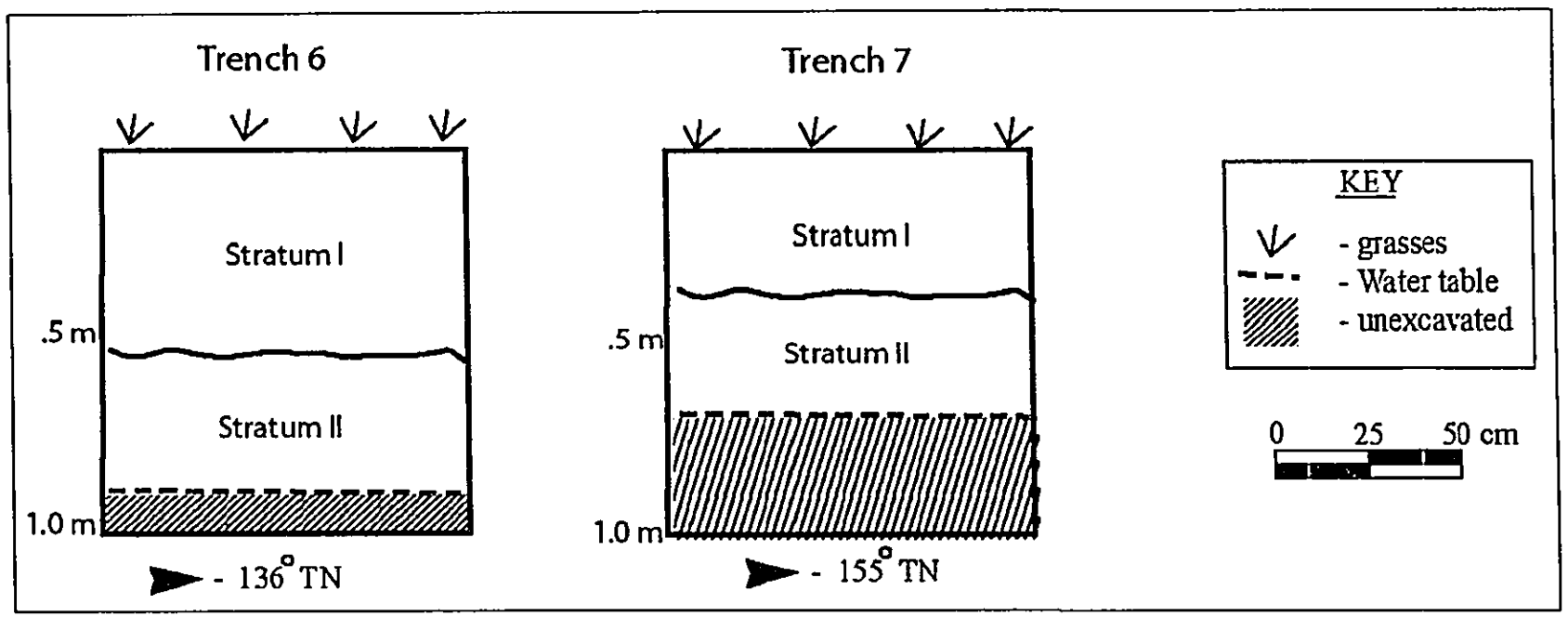

Figure 26. Profile of Trenches 6 & 7, East Sidewalls

G. Trench 7

Trench 7 was excavated in the southeastern quadrant of the project area. Historical maps and L. C. A. testimony clearly state that this excavation is over an area that had formerly been a freshwater pond, that was home to fish and waterfowl and was probably used for irrigation as well. Trench 7 was excavated to locate pond sediments.

Trench 7 measured 11 m (36.1 feet). It had a maximum depth of 90 cm (2.95 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented north-south (155° true north) with the north (*mauka*) end of the trench located just south of Trench 15 and Trench 6. This trench was excavated to the water table. Two strata were noted and described in the excavation (Figure 26).). These strata are most likely both fill sediments imported to the project area. Pond sediments may well be located below the water table.

Stratum (cmbs):

Backhoe Trench #7 East Sidewall Stratum I: 0-39	2.5yr 3/6, dark red; fine to coarse, sandy silt; weak, coarse, subangular blocky structure; slightly hard dry consistency; plastic; weak cementation; distinct wavy lower boundary.
Backhoe Trench #7 East Sidewall Stratum II: 37-90	10yr 4/6, dark yellowish brown; pebbly, sandy silt; structureless, coarse (about 7.5cm), pebbly structure; loose moist consistency; slightly plastic; no cementation; upper portion of this layer contains abundant historic trash and debris.

H. Trench 8

Trench 8 was excavated in the southeastern corner of the project area. Historical maps and L. C. A. testimony clearly state that this excavation is over an area that had formerly been a freshwater pond, that was home to fish and waterfowl and was probably used for irrigation as well. Trench 8 was excavated to locate pond sediments.

Trench 8 measured 11 m (36.1 feet). It had a maximum depth of 92 cm (3.01 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented east-west (71° true north), between Trench 15 to the west and Trenches 9 and 10 to the east. The trench was excavated to the water table. Two strata were noted and described in the excavation (Figure 27). Stratum I appears to be a fill sediment; Stratum II has been disturbed historically.

Stratum (cmbs):

Backhoe Trench #8 North Sidewall Stratum I: 0-40	2.5yr 3/6, dark red with lots of gray inclusions; coarse, sandy silt; weak, coarse, subangular blocky structure; slightly hard dry consistency; plastic; weak cementation; unknown coral fragment inclusions.
Backhoe Trench #8 North Sidewall Stratum II: 39-92	10yr 3/1, very dark gray; 50/50 sand/clay, sandy clay loam; structureless, loose moist consistency; non-plastic; no cementation; unknown high organic content, possibly a pond related sediment or an agricultural soil. The upper portion of this stratum contains abundant historic trash and debris.

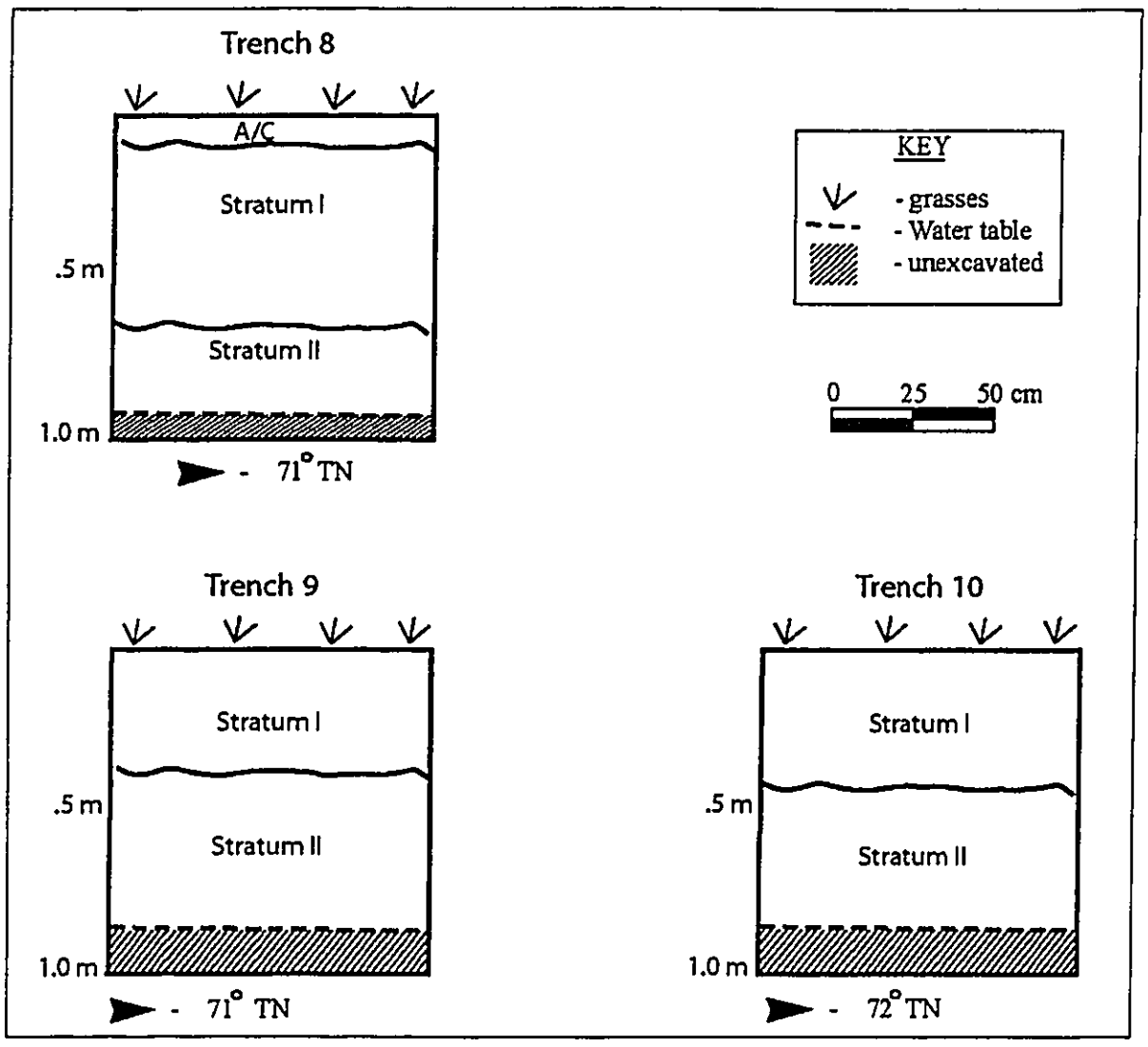

Figure 27. Profile of Trench 8, 9, & 10: North Sidewalls

I. Trench 9

Trench 9 was excavated in the southeastern corner of the project area. Historical maps and L. C. A. testimony clearly state that this excavation is over an area that had formerly been a freshwater pond that was home to fish and waterfowl and was probably used for irrigation as well. Trench 9 was excavated to locate pond sediments.

Trench 9 measured 10 m (32.8 feet). It had a maximum depth of 92 cm (3.01 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented east-west (71° true north) located east of Trench 8 and west of Trench 10. The trench was excavated to the water table. Two strata were noted and described in the excavation (Figure 27).

Stratum (cmbs):

Backhoe Trench #9 North Sidewall Stratum I: 0-41	2.5yr 3/6, dark red with lots of gray inclusions; coarse, sandy silt; weak, coarse, subangular blocky structure; slightly hard dry consistency; plastic; weak cementation; inclusions of coral fragments.
Backhoe Trench #9 North Sidewall Stratum II: 39-92	10yr 3/1, very dark gray; 50/50 sand/clay, sandy clay loam; structureless, loose moist consistency; non-plastic; no cementation. The upper portion of this stratum contains and an abundance of historic trash and debris. Organic rich, a possible pond related sediment or agricultural layer.

J. Trench 10

Trench 10 was excavated in the southeastern corner of the project area. Historical maps and L. C. A. testimony clearly state that this excavation is over an area that had formerly been a freshwater pond that was home to fish and waterfowl and was probably used for irrigation as well. Trench 10 was excavated to locate pond sediments.

Trench 10 measured 10 m (32.8 feet). It had a maximum depth of 92 cm (3.01 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented east west (72° true north) with Trench 9 to the west and the eastern boundary of the project area to the east. This trench was excavated to the water table. Two strata were noted and described in the excavation (Figure 27).

Stratum (cmbs):

Backhoe Trench #10 North Sidewall Stratum I: 0-41	2.5yr 3/6, dark red with lots of gray inclusions; coarse, sandy silt; weak, coarse, subangular blocky structure; slightly hard dry consistency; plastic; weak cementation; inclusions of coral fragments.
Backhoe Trench #10 North Sidewall Stratum II: 39-92	10yr 3/1, dark gray; 50/50 sand/clay, sandy clay loam; structureless, loose moist consistency; non-plastic; no cementation; the upper portion of this stratum contains an abundance of historic trash and debris possibly and agricultural layer.

K. Trench 11

Trench 11 was excavated in the central portion of the project area. This excavations location was selected based historical maps and native testimony that document the house lot from L.C.A. 99 in this spot or general vicinity (Figure 9).

Trench 11 measured 16 m. It had a maximum depth of 100 cm and a maximum width of 1 m (3.28 feet). The trench was located south of Trench 3 and northwest of Trench 2. It was oriented north-south (3° true north). Six strata were noted and described in the excavation (Figure 28). Two bulk, charcoal-enriched, soil samples were collected; one from Stratum III at 30 cmbs and the other from Stratum III at 60-70 cmbs. These samples were collected from areas of dense charcoal enrichment that were likely remnants of discrete burning episodes. Charcoal extracted from each of these charcoal enriched sediment samples was radiocarbon dated to provide an age for the development of this culturally enriched former land surface. The Stratum III buried A horizon was pronounced and clearly culturally enriched. Based on the results of radiocarbon dating and the types of cultural materials observed in Stratum III, this buried A horizon represents the precontact and historic land surface within the project area. This buried A horizon is in geographic association with LCA 99 (refer to the historic background section).

Stratum (cmbs):

Backhoe Trench #11 Sidewall Stratum I: 0-40cmbs	5yr 3/4, dark reddish brown; 10% basalt pebbles and gravel, clay loam; structureless, loose dry consistency; slightly plastic; no cementation; clear wavy lower boundary; fill sediment.
Backhoe Trench #11 Sidewall Stratum II: 40-43cmbs	10yr 8/1, white; crushed coral fill lens; structureless, hard dry consistency; non-plastic; no cementation; abrupt smooth lower boundary.
Backhoe Trench #11 Sidewall Stratum III: 43-62/80cmbs	10yr 2/2-2/3, dark grayish black loamy sand; structureless, loose dry consistency; non-sticky wet consistency; non-plastic; no cementation; inclusions include marine shell midden, fishbone, historic glass, and large mammal bones (thought to be pig, but potentially goat); abrupt wavy and discontinuous lower boundary; this pronounced buried A horizon was documented throughout the trench.
Backhoe Trench #11 Sidewall Stratum IV: 62/80-85cmbs	10yr 7/3, very pale brown, well sorted medium corraline sand, structureless, dry loose consistency, nonplastic, no cementation, clear smooth lower boundary.
Backhoe Trench #11 Sidewall Stratum V: 85-90cmbs-	10yr 7/1, light gray stained medium sand, well sorted, structureless, loose dry consistency, non plastic, no cementation, abrupt smooth lower boundary.
Backhoe Trench #11 Sidewall Stratum VI: 90-96cmbs	10yr6/1, gray medium sand, well sorted, structureless, moist nonsticky consistency, non plastic, no cementation, abrupt, smooth lower boundary at waterline.

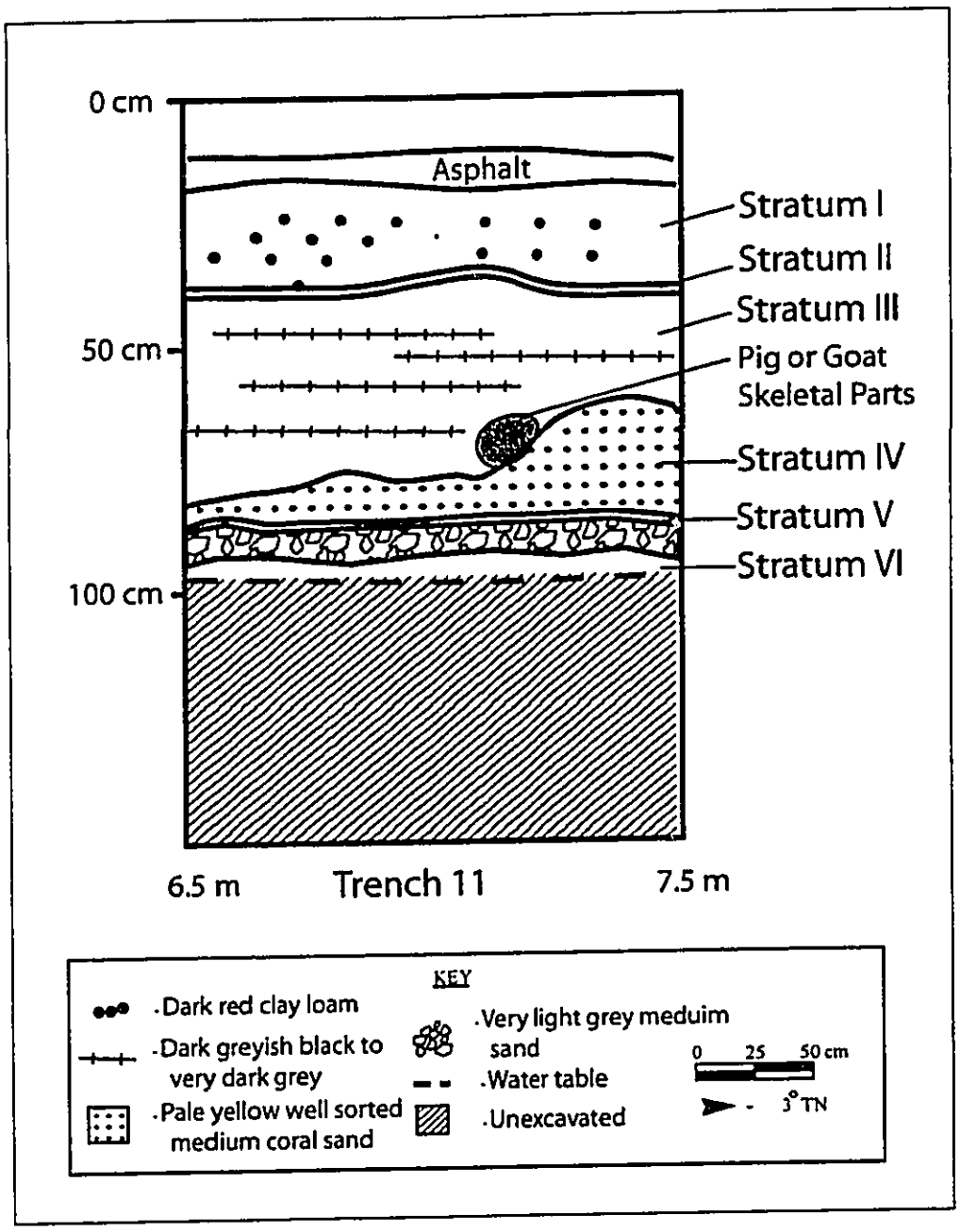

Figure 28. Profile of Trench 11, North Sidewall

L. Trench 12

Trench 12 was excavated in the northeastern quadrant of the project area. Historical maps and L. C. A. testimony clearly show that in the past this area was part of the boundary of L.C.A. 99 and the sea ditch (Figure 9). Trench 12 was excavated to find the significance and association (if any) of the area surrounding the burial found in Trench 3.

Trench 12 measured 6 m (19.7 feet). It had a maximum depth of 110 cm (3.61 feet) and a maximum width of 2 m (6.56 feet). The trench was oriented north-south (162° magnetic north) situated just south of Trench 14 and ran parallel to the west of Trench 3. The trench was excavated to just below the water line. Four strata were noted and described in the excavation (Figure 29).

Stratum (cmbs):

Backhoe Trench #12 East Sidewall Stratum I: 0-25	2.5yr 3/6, dark red; fill, silt; moderate, fine, crumb structure; hard dry consistency; slightly plastic; weak cementation; very abrupt wavy lower boundary.
Backhoe Trench #12 East Sidewall Stratum II: 20-75	2.5yr 3/6, dark red; fill, silt; strong, fine to medium, crumb to subangular blocky structure; hard dry consistency; slightly plastic; weak cementation; very abrupt wavy lower boundary; 40% basalt cobbles and small boulders.
Backhoe Trench #12 East Sidewall Stratum III: 64-71	10yr 6/3, pale brown; silty sand; structureless, loose moist consistency; non-sticky wet consistency; non-plastic; no cementation; abrupt smooth lower boundary; buried A horizon with no cultural context.
Backhoe Trench #12 East Sidewall Stratum IV: 65-110	10yr 3/4, pale brown; natural, coraline sand; structureless, loose moist consistency; non-sticky wet consistency; non-plastic; no cementation; abrupt smooth lower boundary; contains shell inclusions.

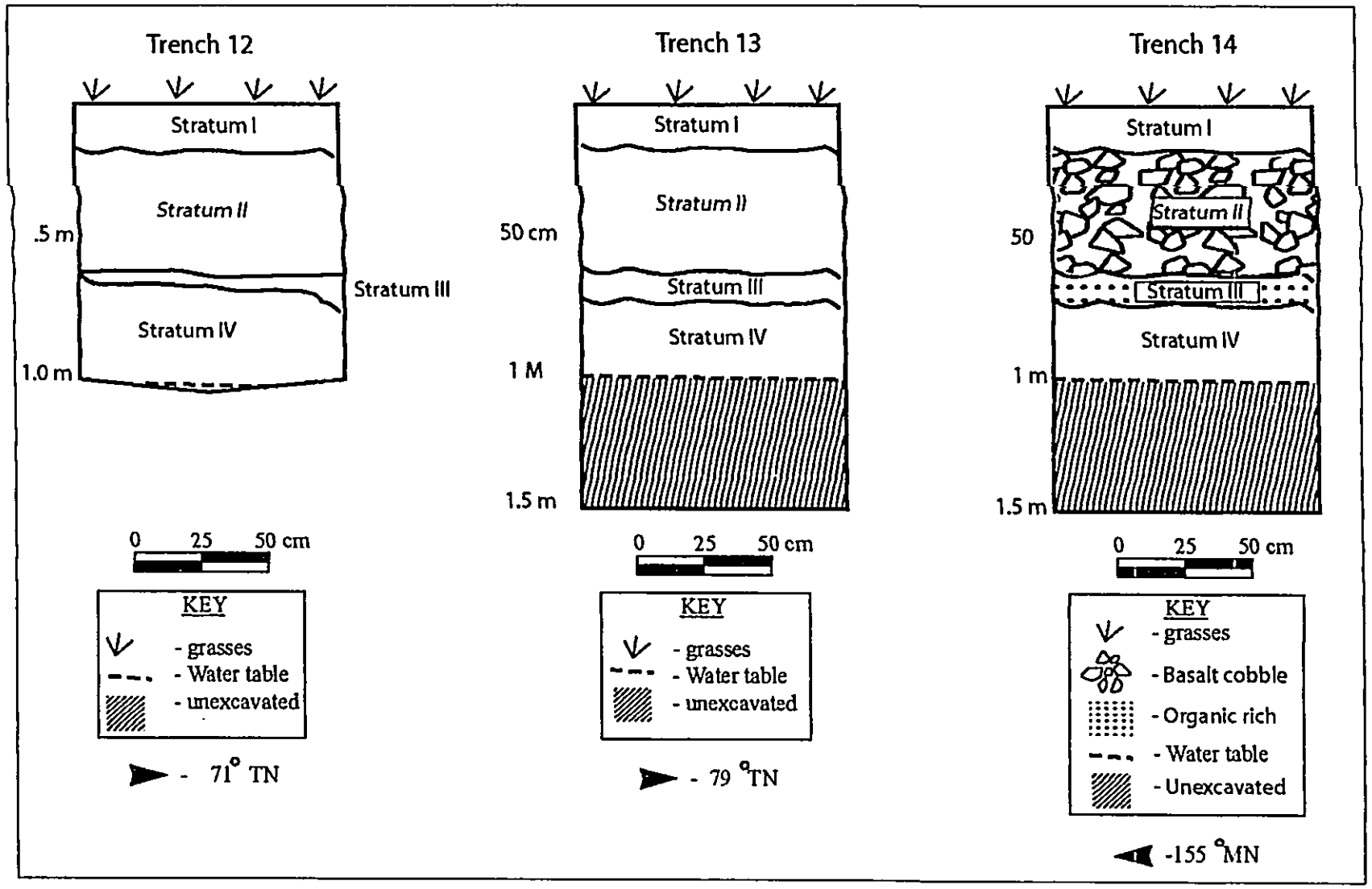

Figure 29. Profile of Trenches 12, 13, & 14

M. Trench 13

Trench 13 was excavated in the northeastern quadrant of the project area. Historical maps and L. C. A. testimony clearly show that in the past this area was part of the boundary of L.C.A. 99 and the sea ditch (Figure 9). Trench 13 was excavated to find the significance and association (if any) of the area surrounding the burial found in Trench 3.

Trench 13 measured 6 m (19.7 feet). It had a maximum depth of 105 cm (3.44 feet) and a maximum width of 2 m (6.56 feet). The trench was oriented north-south (155° true north) located just south of Trench 14 ran parallel to the east of Trench 3. The trench was excavated to just below the water line. Four strata were noted and described in the excavation (Figure 29).

Stratum (cmbs):

Backhoe Trench #13 West Sidewall Stratum I: 0-15	2.5yr 3/6, dark red; fine, silt; moderate, fine, crumb structure; hard dry consistency; slightly plastic; weak cementation; very abrupt wavy lower boundary.
Backhoe Trench #13 West Sidewall Stratum II: 20-65	2.5yr 3/6, dark red; silt loam; strong, medium, crumb to subangular blocky structure; hard dry consistency; slightly plastic; weak cementation; very abrupt wavy lower boundary; 40% basalt cobbles & smaller boulders mixed in with silt.
Backhoe Trench #13 West Sidewall Stratum III: 65-85	A Horizon; 10yr 6/3, pale brown; silty sand; structureless, loose moist consistency; non-sticky wet consistency; non-plastic; no cementation; abrupt smooth lower boundary; buried organic rich layer.
Backhoe Trench #13 West Sidewall Stratum IV: 85-105	10yr 3/4, pale brown; sand; structureless, loose moist consistency; non-sticky wet consistency; non-plastic; no cementation; abrupt smooth lower boundary; some shell inclusions.

N. Trench 14

Trench 14 was excavated in the northeastern quadrant of the project area. Historical maps and L. C. A. testimony clearly show that in the past this area was part of the boundary of L.C.A. 99 and the sea ditch (Figure 9). Trench 14 was excavated to find the significance and association (if any) of the area surrounding the burial found in Trench 3.

Trench 14 measured 6 m (19.7 feet). It had a maximum depth of 114 cm (3.74 feet) and a maximum width of 2 m (6.56 feet). The trench was oriented east west (79° true north) just south of Trench 4. The trench was excavated to the water table. Four strata were noted and described in the excavation (Figure 29).

Stratum (cmbs):

Backhoe Trench #14 North Sidewall Stratum I: 0-24	2.5yr 3/6, dark red; fine, silt; moderate, fine, crumb structure; hard dry consistency; slightly plastic; weak cementation; very abrupt wavy lower boundary.
Backhoe Trench #14 North Sidewall Stratum II: 24-71	2.5yr 3/6, dark red; 40% basalt coobbles and small boulders, silt; strong, fine to medium, crumb & subangular blocky structure; hard dry consistency; slightly plastic; weak cementation; very abrupt wavy lower boundary.
Backhoe Trench #14 North Sidewall Stratum III: 71-85	A Horizon; 10yr 6/3, pale brown; silty sand; structureless, loose moist consistency; non-sticky wet consistency; non-plastic; no cementation; abrupt smooth lower boundary; buried A horizon with no cultural content observed.
Backhoe Trench #14 North Sidewall Stratum IV: 85-114	10yr 3/4, pale brown; natural, coraline sand; structureless, fine to medium, sand structure; loose dry consistency; loose moist consistency; non-sticky wet consistency; non-plastic; no cementation; base of excavation at water line. Naturally deposited inclusions of shell fragments.

O. Trench 15

Trench 15 was excavated in the southeastern portion of the project area. Historical maps and L. C. A. testimony clearly state that a pond previously existed in this location (just east of L.C.A. 99).

Trench 15 measured 7 m (23 feet). It had a maximum depth of 92 cm (3 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented roughly east-west (71° true north). Trench 15 was located south of Trench 6, north of Trench 7 and west of Trench 8. A Livingstone Piston corer was used to sample the stratigraphy below the water table. Two strata were noted and described in the excavation (Figure 30).

The trenches excavated at the location of the former pond, located in the east-southeastern portion of the project area (Trenches 6, 7, 8, 9, 10, and 15), had little success documenting the presence or absence of buried pond sediments. This was largely because of the difficulty of documenting stratigraphy below the water table. Accordingly, in Trench 15 a Livingstone Piston corer was used to sample the stratigraphy below the water table (refer to Figure 18 for the core's location). The 7 cm diameter core was extracted from a manufactured surface within Trench 15 that was immediately above the water table, which was at 92 cmbs. The core penetrated to a depth of 110 cmbs. The 18 cm long sediment column retrieved by the core consisted of largely undifferentiated fine-grained alluvial sediments—silts and fine sands. The relatively shallow penetration of the core is the result of the shallowness of the project area's underlying Pleistocene reef deposits. The results of this core indicate that remnant pond sediments are preserved in this portion of the project area.

Stratum(cmbs):

Backhoe Trench #15 Stratum I: 0-41	Fill, 2.5yr 3/6, dark red with lots of gray inclusions; coarse, sandy silt; weak, coarse blocky subangular structure; dry slightly hard consistency; plastic; weak cementation; very unknown lower boundary; mixed origin of sediments; plentiful roots and rootlets.
Backhoe Trench #15 Stratum II: 39-92	Fill, 10 yr 3/1, very dark gray; sandy clay; structureless; moist loose consistency; non plastic; no cementation; very unknown lower boundary; mixed origin of sediments; high organic content, possibly agricultural layer; upper portion of stratum contains abundant historic rubbish.

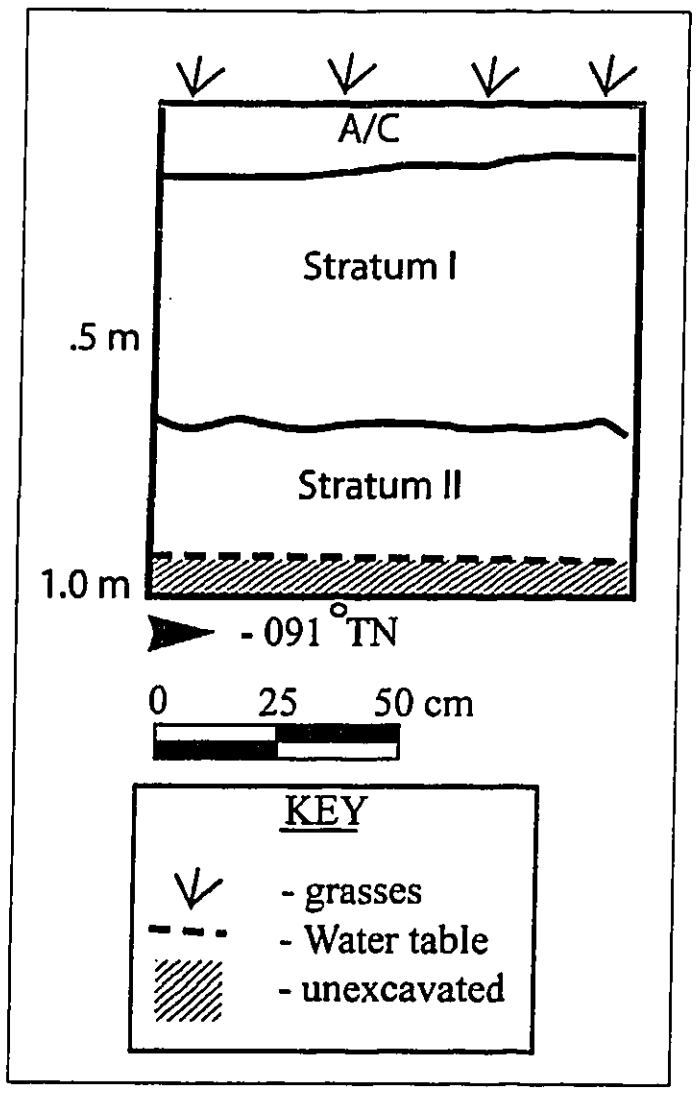

Figure 30 Profile of Trench 15, north sidewall

P. Trench 16

Trench 16 was excavated in the northwestern portion of the project area. Trench 16 was excavated per the SHPD's request in order to perform additional subsurface testing and to allow for a closer interval between trenches.

Trench 16 measured 10 m (32.8 feet). It had a maximum depth of 90 cm (2.95 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented roughly east-west (77° true north). Trench 16 was located east of Trench 5, and west of Trenches 18 and 19. The trench was excavated to the waterline. Four strata were noted and described in the excavation (Figure 31).

Stratum(cmbs):

Backhoe Trench #16 West Sidewall Stratum I: 0-29	Fill, 2.5yr 3/6, dark red; fine to very coarse silty clay; strong, fine to medium subangular blocky structure; dry loose consistency; slightly plastic; weak cementation; very abrupt wavy lower boundary; terrestrial origin of sediments; roots and rootlets.
Backhoe Trench #16 Stratum II: 26-36	Fill, 10yr 4/3 to 4/6, dark brown to dark yellowish brown; fine to coarse loamy sand; structureless; dry loose consistency; non plastic; no cementation; very abrupt wavy lower boundary; mixed origin of sediments; discontinuous coral gravel lenses; roots, rootlets, basalt and coral fragments.
Backhoe Trench #16 Stratum III: 34-74	Fill, 10yr 2/1, black; fine to medium volcanic basaltic cinder; structureless, dry loose consistency; non plastic; no cementation; abrupt wavy lower boundary; terrestrial origin of sediments; roots and rootlets.
Backhoe Trench #16 Stratum IV: 74-water table	Fill, 5yr 8/1, white; fine to very coarse coral; structureless, moist loose consistency; non plastic; no cementation; unknown lower boundary; marine origin of sediments; coral fill, fine to cobble and boulder size.

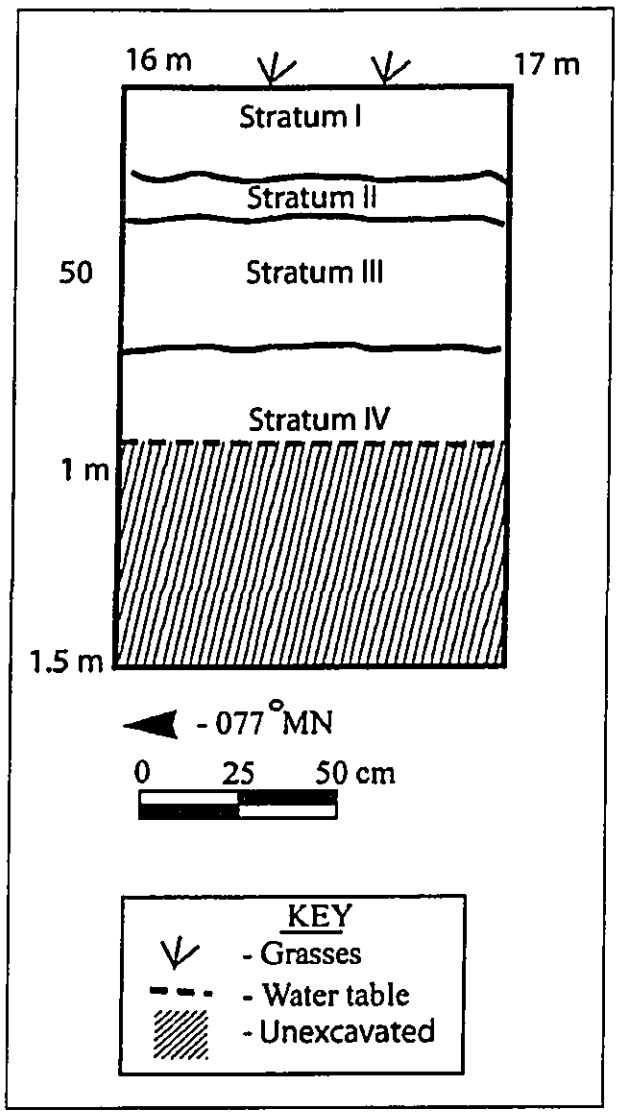

Figure 31. Profile of Trench 16, north sidewall

Q. Trench 17

Trench 17 was excavated in the northwestern portion of the project area. Trench 17 was excavated per the SHPD's request in order to perform additional subsurface testing and to allow for a closer interval between trenches.

Trench 17 measured 10 m (32.8 feet). It had a maximum depth of 87 cm (2.6 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented roughly east-west (87° true north). Trench 17 was located east of Trench 5, near the northern boundary of the project area. Four strata were noted and described in the excavation (Figure 32).

Stratum (cmbs):

Backhoe Trench #17 Stratum I: 0-18	Fill, 2.5yr 3/6, dark red; fine to very coarse silty clay; strong, fine to medium, subangular blocky structure; dry loose consistency; slightly plastic; weak cementation; very abrupt wavy lower boundary; terrestrial origin of sediments; roots and rootlets.
Backhoe Trench #17 Stratum II: 9-25	Fill, 10yr 4/3 to 4/6, dark brown to dark yellowish brown; fine to coarse basaltic unsorted loamy sand; structureless; dry loose consistency; non plastic; no cementation; very abrupt irregulary lower boundary; mixed origin of sediments; roots, rootlets, basalt and coral fragments.
Backhoe Trench #17 Stratum III: 17-84	Fill, 10yr 2/1, black; fine to medium volcanic basaltic cinder; structureless, dry loose consistency; non plastic; no cementation; abrupt wavy lower boundary; terrestrial origin of sediments; discontinuous horizon, coral gravel lenses; roots and rootlets.
Backhoe Trench #17 Stratum IV: 77-87	Fill, 5yr 8/1, white; coral; structureless, moist loose consistency; non plastic; no cementation; unknown lower boundary; marine origin of sediments; coral fill, fine to cobble and boulder size.

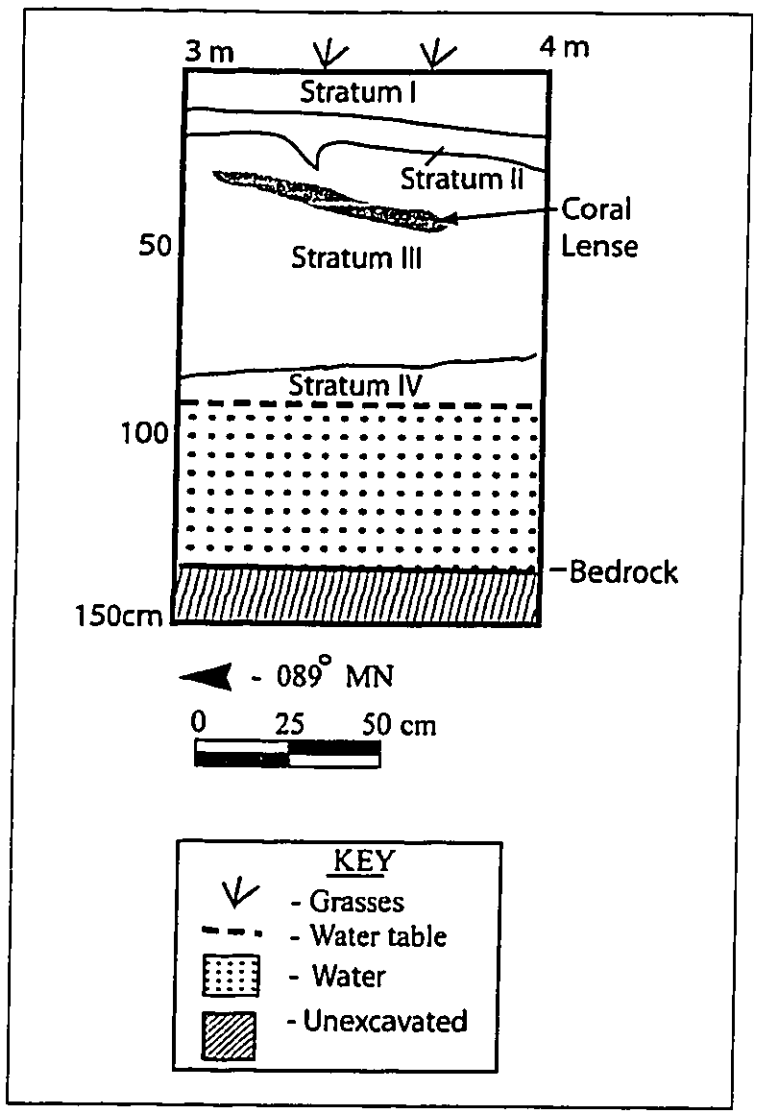

Figure 32. Profile of Trench 17, north sidewall

R. Trench 18

Trench 18 was excavated in the northwestern portion of the project area. Trench 18 was excavated per the SHPD's request in order to perform additional subsurface testing and to allow for a closer interval between trenches.

Trench 18 measured 13 m (42.7 feet). It had a maximum depth of 95 cm (3.1 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented roughly north-south (356° true north). Trench 18 was located east of Trenches 5 and 16, and west of Trench 14. The trench was excavated to the waterline. Four strata were noted and described in the excavation (Figure 33).

Stratum (cmbs):

Backhoe Trench #18 Stratum I: 0-24	Fill, 2.5yr 3/6, dark red; fine to very coarse silty clay; fine to strong subangular blocky structure; dry loose consistency; slightly plastic; weak cementation; very abrupt wavy lower boundary; terrestrial origin of sediments; roots and rootlets.
Backhoe Trench #18 Stratum II: 17-50	Fill, 10yr 4/3 to 4/6, dark brown to dark yellowish brown; fine to coarse basaltic unsorted loamy sand; structureless; dry loose consistency; non plastic; no cementation; very abrupt irregulary lower boundary; mixed origin of sediments; roots, rootlets, cobble size basalt and coral fragments.
Backhoe Trench #18 Stratum III: 38-79	Fill, 10yr 2/1, black; fine to medium volcanic basaltic cinder; structureless, dry loose consistency; non plastic; no cementation; abrupt wavy lower boundary; terrestrial origin of sediments; non horizontal coral lenses.
Backhoe Trench #18 Stratum IV: 76-water table	Fill, 5yr 8/1, white; coral; structureless, moist loose consistency; non plastic; no cementation; unknown lower boundary; mixed origin of sediments; very irregular surface contains cemented and basalt fragments.

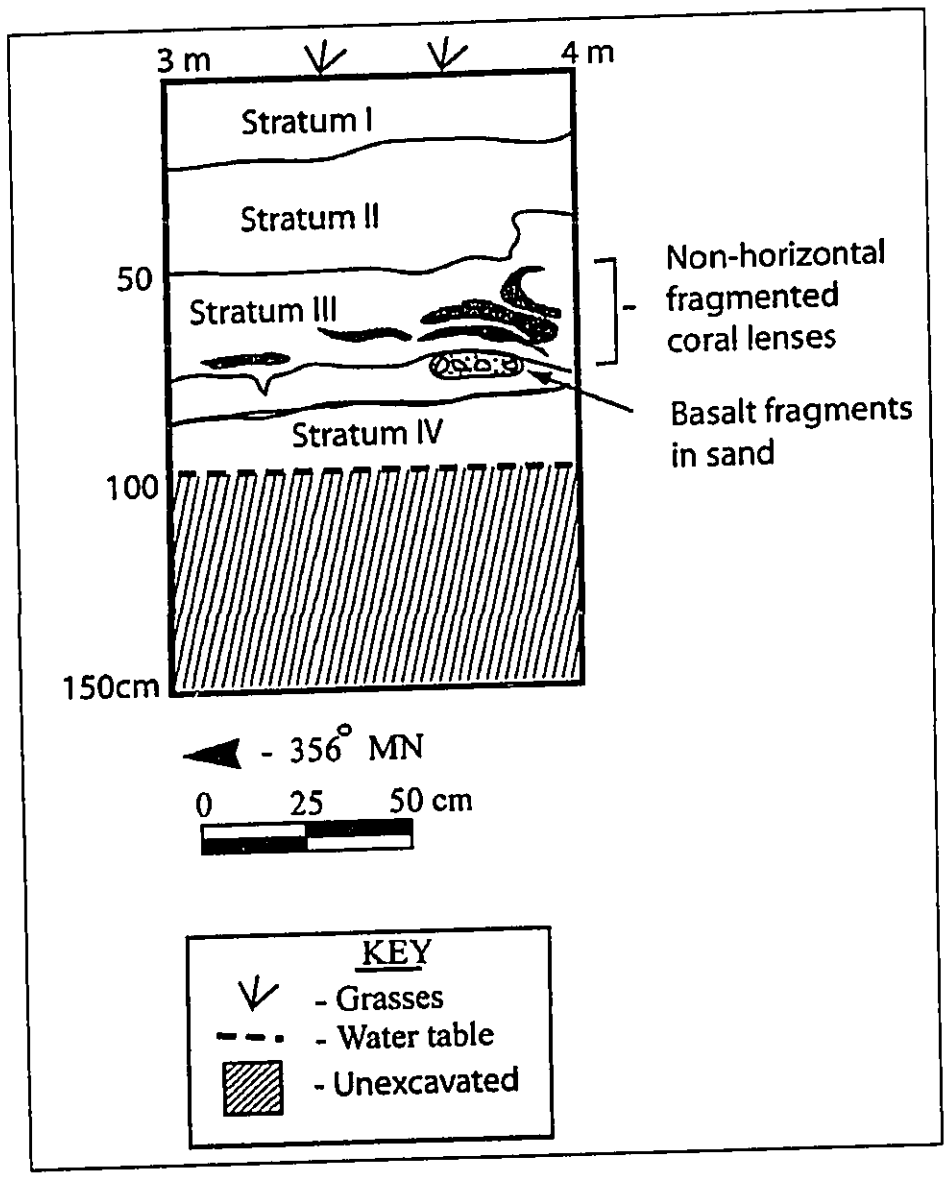

Figure 33. Profile of Trench 18, west sidewall

S. Trench 19

Trench 19 was excavated in the northwestern portion of the project area. Trench 19 was excavated per the SHPD's request in order to perform additional subsurface testing and to allow for a closer interval between trenches.

Trench 19 measured 13.5 m (44.3 feet). It had a maximum depth of 114 cm (3.7 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented roughly north-south (11° true north). The trench was oriented roughly north-south (356° true north). Trench 18 was located east of Trenches 5, 16 and 18, and west of Trench 14. The trench was excavated to the water line. Four strata were noted and described in the excavation (Figure 34).

Stratum (cmbs):

Backhoe Trench #19 Stratum I: 0-25	Fill, 2.5yr 3/6, dark red; fine to very coarse silty clay; strong, fine to medium, subangular blocky structure; dry loose consistency; slightly plastic; weak cementation; very abrupt wavy lower boundary; terrestrial origin of sediments; roots and rootlets.
Backhoe Trench #19 Stratum II: 25-30	Fill, 10yr 4/6, dark yellowish brown; gravelly sandy loam; structureless; dry loose consistency; non plastic; no cementation; very abrupt wavy lower boundary; mixed origin of sediments; roots, rootlets.
Backhoe Trench #19 Stratum III: 30-57	Fill, 5yr 8/1, white; coral; structureless, moist loose consistency; non plastic; no cementation; unknown lower boundary; mixed origin of sediments; very irregular surface contains cemented and basalt fragments.
Backhoe Trench #19 Stratum IV: 30-57	Other, 10yr 4/3 to 4/6, dark brown to dark yellowish brown; fine to coarse basaltic unsorted loamy sand; structureless; dry loose consistency; non plastic; no cementation; very abrupt irregular lower boundary; mixed origin of sediments; roots, rootlets, basalt fragments.
Backhoe Trench #19 Stratum V: 57-79	Other, 10yr 3/4, dark brown; loamy sand; structureless; moist loose consistency; non plastic; no cementation; very abrupt wavy lower boundary; mixed origin of sediments; large coral fragments.
Backhoe Trench #19 Stratum VI: 79-90	Other, Gley 5B 4/1, dark greenish gray; medium coarse sandy gley clay; structureless; moist loose consistency; non plastic; weak cementation; very abrupt wavy lower boundary; mixed origin of sediments; unsorted sand and clay mixture.
Backhoe Trench #19 Stratum VII: 110-114	Other, 10yr 3/4, dark brown; loamy sand; structureless; moist loose consistency; non plastic; no cementation; very abrupt wavy lower boundary; mixed origin of sediments; large coral fragments.

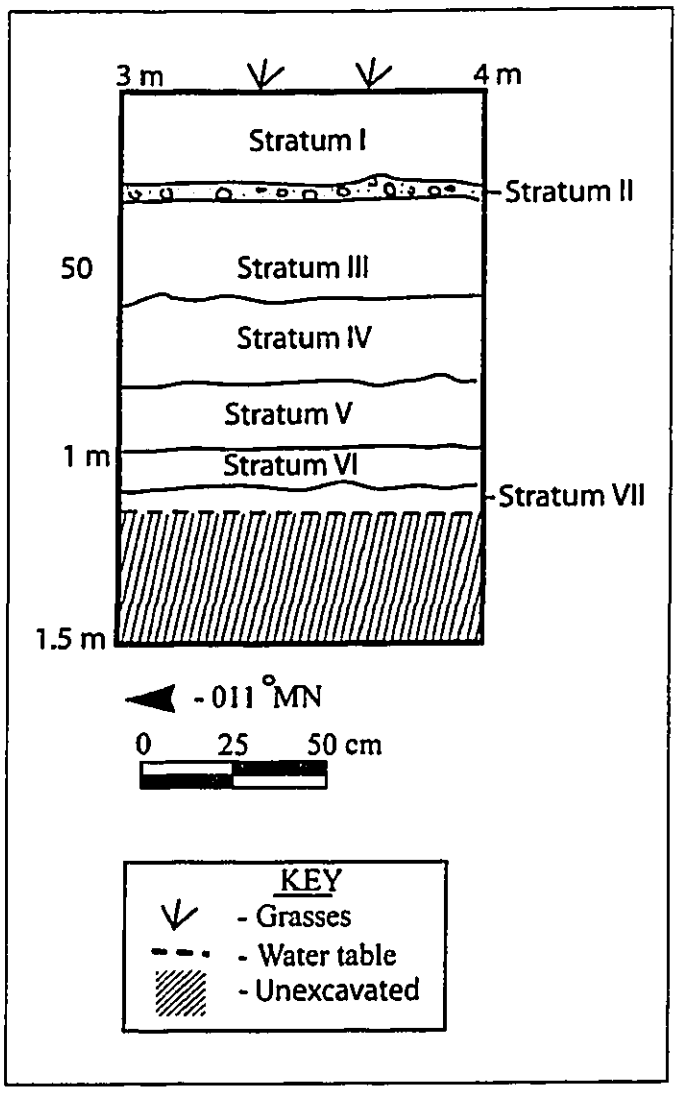

Figure 34. Profile of Trench 19, east sidewall

T. Trench 20

Trench 20 was excavated in the southern portion of the project area. Trench 20 was excavated per the SHPD's request in order to perform additional subsurface testing and to allow for a closer interval between trenches.

Trench 20 measured 11.5 m (37.7 feet). It had a maximum depth of 1 m (3.3 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented roughly northwest-southeast (356° true north). Trench 20 was located southeast of Trenches 6 through 10 and south of trenches 11 and 2. The trench was excavated to the waterline. Four strata were noted and described in the excavation (Figure 35).

Stratum (cmbs):

Backhoe Trench #20 Stratum IA: 0-10	Compacted fill, 10yr 4/2, dark gray brown; sandy loam; structureless; dry slightly hard consistency; non plastic; no cementation; abrupt smooth lower boundary; mixed origin of sediments.
Backhoe Trench #20 Stratum IB: 10-55	Fill, 10yr 5/2, grayish brown; silty sand; structureless; dry loose consistency; moist loose consistency; non plastic; no cementation; clear wavy lower boundary; mixed origin of sediments; a mottled sand layer with 20% silt.
Backhoe Trench #20 Stratum IC: 50-70	Fill, 10yr 8/1, white; crushed coral; structureless, dry loose consistency; non plastic; no cementation; clear smooth lower boundary; mixed origin of sediments.
Backhoe Trench #20 Stratum II: 60-80	Other, 10yr 3/1, very dark gray; loam; structureless, moist very friable consistency; slightly plastic; no cementation; abrupt wavy lower boundary; mixed origin of sediments; charcoal, marine shell, a cultural layer with historic trash.
Backhoe Trench #20 Stratum III: 70-water table	Other, 5yr 6/3, pale olive; fine to medium sand; structureless; dry loose consistency, moist very friable consistency; non-plastic; no cementation; abrupt smooth lower boundary; marine origin of sediments; coraline sterile sand.
Backhoe Trench #20 Stratum IV: 85-90	Other, 10yr 7/1, light gray; fine sand; structureless; wet non-sticky consistency; non-plastic; no cementation; unknown lower boundary; marine origin of sediments; sand under water table.

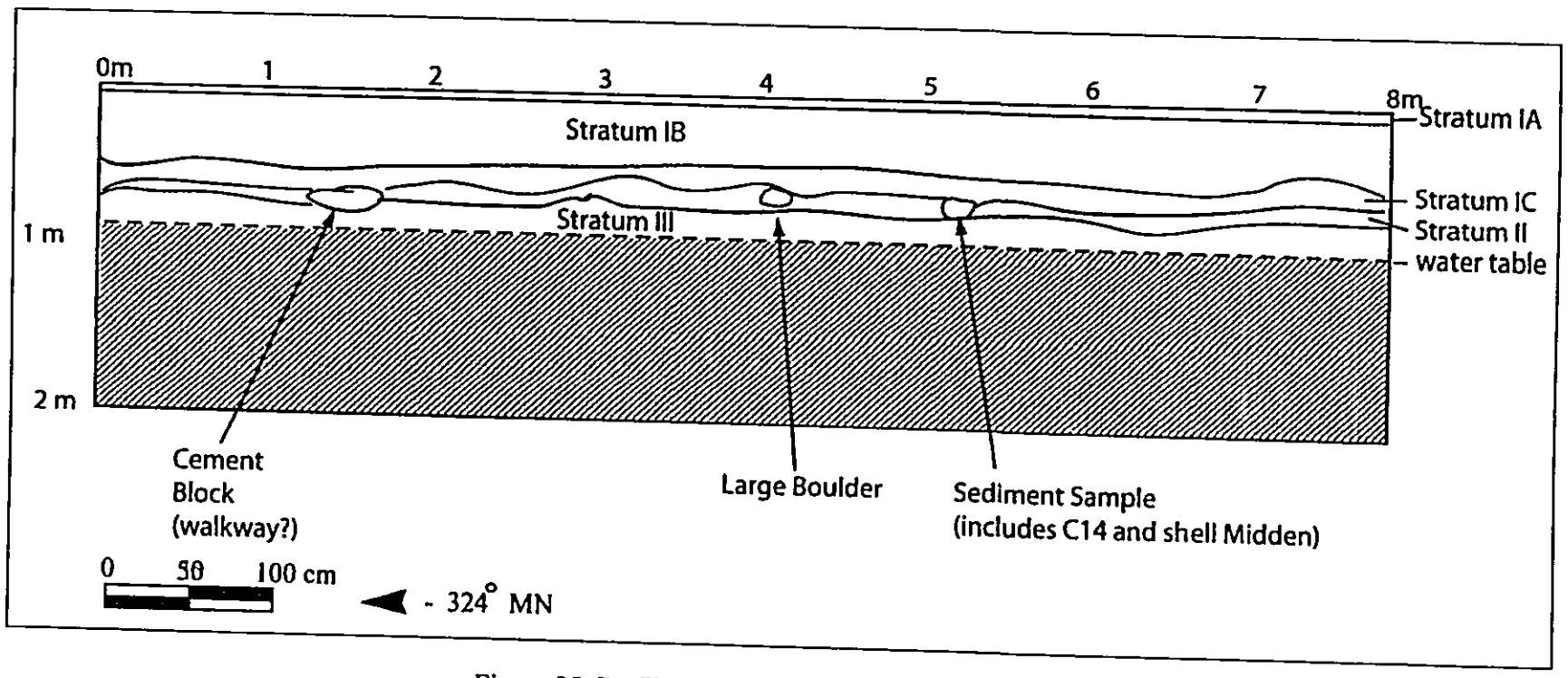

Figure 35. Profile of Trench 20, southwest sidewall

U. Trench 21

Trench 21 was excavated in the southern portion of the project area. Trench 21 was excavated per the SHPD's request in order to perform additional subsurface testing and to allow for a closer interval between trenches.

Trench 21 measured 11 m (36.1 feet). It had a maximum depth of 90 cm (2.95 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented roughly north-south (14° true north). Trench 21 was the southernmost trench. The trench was excavated to the waterline. Four strata were noted and described in the excavation (Figure 36).

Stratum (cmbs):

Backhoe Trench #21 Stratum IA: 0-10	Compacted fill, 10yr 4/2, dark gray brown; sandy loam; structureless; dry slightly hard consistency; non plastic; no cementation; abrupt smooth lower boundary; mixed origin of sediments.
Backhoe Trench #21 Stratum IB: 10-55	Fill, 10yr 5/2, grayish brown; silty sand; structureless; dry loose consistency; moist loose consistency; non plastic; no cementation; clear wavy lower boundary; mixed origin of sediments; a mottled sand layer with 20% silt.
Backhoe Trench #21 Stratum IC: 50-70	Fill, 10yr 8/1, white; crushed coral; structureless, dry loose consistency; non plastic; no cementation; clear smooth lower boundary; mixed origin of sediments.
Backhoe Trench #21 Stratum II: 60-80	Other, 10yr 3/1, very dark gray; loam; structureless, moist very friable consistency; slightly plastic; no cementation; abrupt wavy lower boundary; mixed origin of sediments; charcoal, marine shell, a cultural layer with historic trash.
Backhoe Trench #21 Stratum III: 70-water table	Other, 5yr 6/3, pale olive; fine to medium sand; structureless; dry loose consistency, moist very friable consistency; non-plastic; no cementation; abrupt smooth lower boundary; marine origin of sediments; coraline sterile sand.
Backhoe Trench #21 Stratum IV: 85-90	Other, 10yr 7/1, light gray; fine sand; structureless; wet non-sticky consistency; non-plastic; no cementation; unknown lower boundary; marine origin of sediments; sand under water table.

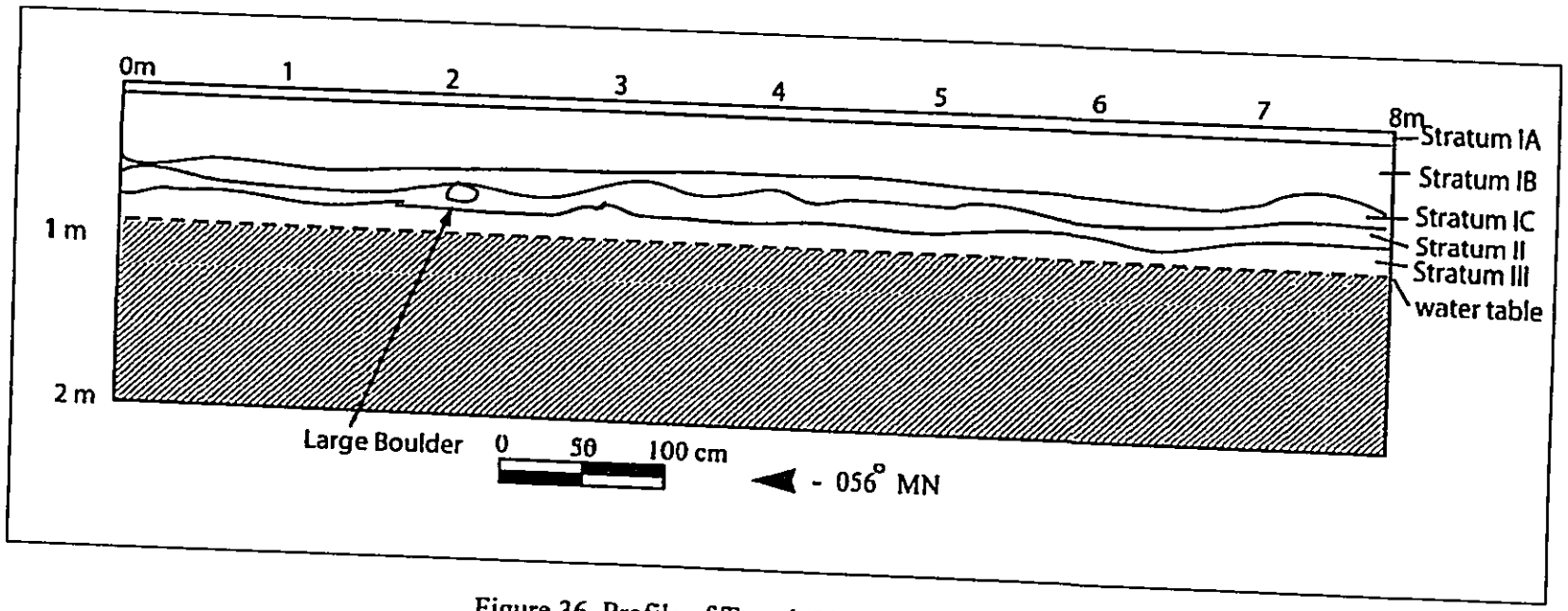

Figure 36. Profile of Trench 21 ,northwest sidewall

V. Trench 22

Trench 22 was excavated in the southern portion of the project area. Trench 22 was excavated per the SHPD's request in order to perform additional subsurface testing and to allow for a closer interval between trenches.

Trench 22 measured 12 m (39.4 feet). It had a maximum depth of 1 m (3.3 feet) and a maximum width of 1 m (3.28 feet). The trench was oriented roughly east-west (315° true north). Trench 22 was located southeast of Trenches 6 through 10 and northeast of Trench 21. The trench was excavated to the waterline. Three strata were noted and described in the excavation (Figure 37).

Stratum (cmbs):

Backhoe Trench #22 Stratum I: 0-55	Fill, 5yr 3/3, dark brown; sandy clay; structureless; dry loose consistency; plastic; no cementation; abrupt smooth lower boundary terrestrial origin of sediments.
Backhoe Trench #22 Stratum II: 70-80	Buried A Horizon, 10yr 4/2, dark gray brown; sandy loam; structureless; moist loose consistency; non plastic; no cementation; abrupt smooth lower boundary; marineorigin of sediments; rusted metal, trash; cultural historic layer.
Backhoe Trench #22 Stratum III: 55-70, 80-100	Other; 2.5yr 6/3, light gray brown; fine to medium sand; structureless, wet non-sticky consistency; non-plastic; no cementation; abrupt smooth lower boundary; mixed origin of sediments; sterile coraline sand.

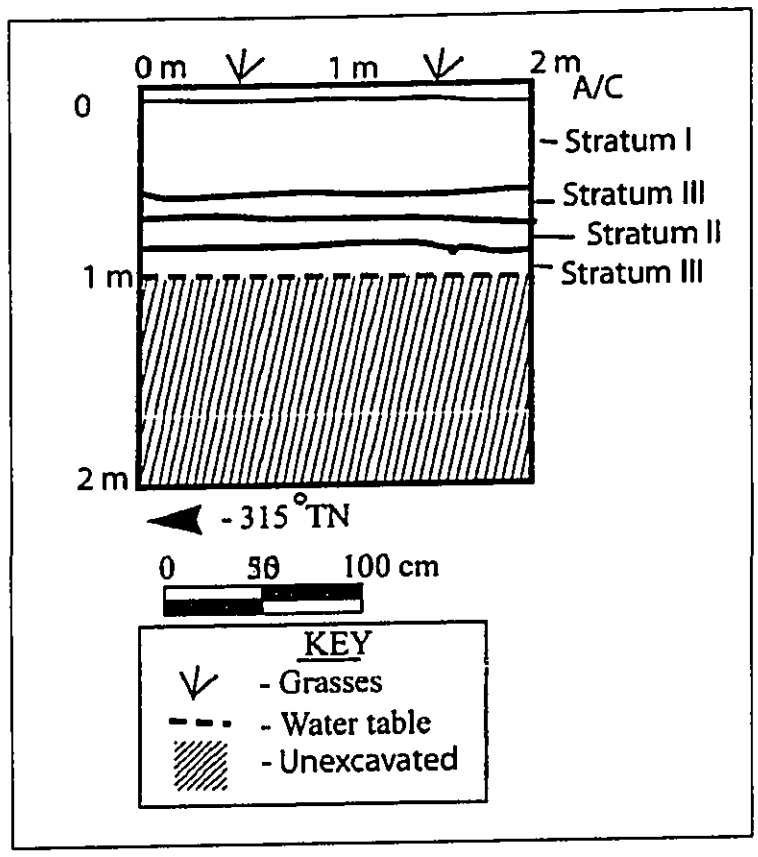

Figure 37. Profile of Trench 22, west sidewall

W. Radiocarbon Dating Results

The results of the radiocarbon dating analysis are summarized in Table 2. Sample Beta-195900, from the buried, culturally enriched A-horizon documented within Trench 11, yielded a conventional age of 220+/-50 years BP (Before Present). The Ox-Cal calibration resulted in a multiple probability date range, with a 46% probability of being between AD 1720 and 1890, a 30% probability of being between AD 1620 to 1710, a 11.6% probability of being between AD 1910 and 1960, and a 7.8% probability of being between AD 1520 and 1590.

Carbon sample Beta-195901, also from the buried, culturally enriched A-horizon documented in Trench 11, yielded a conventional age of 260+/-40 years BP (Before Present). The Ox-Cal calibration resulted in a multiple probability date range, with a 78.6% probability of being between AD 1490 and 1680, a 14.2% probability of being between AD 1760 to 1810, a 2.7% probability of being between AD 1930 and 1950.

Both of these dates are consistent with expectations. The buried A horizon (described as Site –6702 below) appears to date to the late historic or early historic period. It most likely represents the relatively stable land surface that formed and was culturally enriched throughout the late pre-contact and historic occupation of Waikīkī.

Carbon sample Beta-195902, comprised of organic gleyed pond or marsh sediment from Stratum IV in Trench 4, yielded a conventional age of 730+/-60 years BP (Before Present). The Ox-Cal calibration resulted in a multiple probability date range, with a 78.3% probability of being between AD 1180 and 1330, and a 17.1% probability of being between AD 1340 and 1400.

It is important to point out that Beta-195902 does not date cultural activity. Based on the available information in the field, Stratum IV in Trench 4 was not culturally enriched. Instead, this sample was selected for radiocarbon dating to establish the time depth of these pond or marsh sediments and their potential to document environmental change over time; for example, changes in ambient pollen over time with increasing human land use in the vicinity. As the pond or marsh sediments most likely date to between AD 1180 and 1330, it is possible that the pollen record from these sediments would contain information regarding the past environment.

Table 2. Results of Radiocarbon Analysis

Beta *Analytic ID* #	Sample *Material*	Provenience	Conventional *Radiocarbon Age*	C13/C12 *Ratio*	Oxcal Calibrated *Calender Age** (2 sigma)
Beta-195900	Charred material	Trench 11 Stratum III 30 cmbs SIHP site –6702	220 +/- 50 BP	-26.4 o/oo	(7.8%) 1520-1590 AD (30.0%) 1620-1710 AD (46.0%) 1720-1890 AD (11.6%) 1910-1960 AD
Beta-195901	Charred material	Trench 11 Stratum III 60-70cmbs SIHP site -6702 Culturally enriched A horizon	260 +/- 40 BP	-12.2 o/oo	(78.6%) 1490-1680 AD (14.2%) 1760-1810 AD (2.7%) 1930-1950 AD
Beta-195902	Organic sediment	Trench 4 Stratum IV 90 cmbs	730 +/- 60 BP	-22.3 o/oo	(78.3%) 1180-1330 AD (17.1%) 1340-1400 AD

VII. SITE DESCRIPTIONS AND SUMMARY OF FINDINGS

A. Site Descriptions

Four sites were identified within the project area (Figure 30). In two locations (Trenches 1 and 2), disturbed and incomplete human remains were encountered during testing. An in situ coffin burial, with grave goods, was uncovered in Trench 3. A culturally enriched buried A horizon in geographic association with LCA 99 was observed in Trench 11. The remnants of a historically recorded fishpond were documented in Trench 15. The following is a more detailed account of these sites.

SIHP site #: 50-80-14-6700

Site Type: Previously disturbed human skeletal remains

Function: Burial

Features (#): 1

Age/Ethnicity: Undetermined, but likely pre-contact or early historic Native Hawaiian

Description: This site consists of fragmentary human skeletal remains (long bone and flat bone fragments) documented within a disturbed, potentially fill sediment. Approximately five fragments were observed in two adjacent trenches (Trenches 1 and 2) in same area of the project parcel (refer to Figure 18). These fragmented skeletal remains were clearly disturbed prior to the excavation of backhoe Trenches 1 and 2. They may have been imported to the project area within a fill sediment. All remains were replaced in the location where they were found and reburied. The remains were found during an archaeological inventory survey and, therefore, are considered "previously identified" under State of Hawai'i burial law (Hawai'i Revised Statutes Chapter 13-300). There treatment falls under the jurisdiction of the O'ahu Island Burial Council. The appropriate burial notification procedures were followed and SHPD burials staff made a site visit.

SIHP site #: 50-80-14-6701

Site Type: Human skeletal remains and associated grave goods

Function: Burial

Features (#): 1

Age/Ethnicity: Historic/Unknown

Description: This apparently intact, previously undisturbed coffin burial with associated grave goods was located in the north end of Trench 3 (refer to Figure 18). Based on the associated burial goods (refer to the trench 3 description above), this burial most likely dates to the mid-19th Century. Based on the burial's geographic location and apparent age, this burial is likely associated with inhabitants of LCA 99 FL, to Urna (refer to the historic background section of this report). All remains were replaced in the location where they were found and reburied. The remains were found during an archaeological inventory survey and, therefore, are considered "previously identified" under State of Hawai'i burial law (Hawai'i Revised Statutes Chapter 13-

300). There treatment falls under the jurisdiction of the O'ahu Island Burial Council. The appropriate burial notification procedures were followed and SHPD burials staff made a site visit.

SIHP site #: 50-80-14-6702

Site Type: Culturally enriched, buried A-horizon

Function: Habitation

Features (#): 1

Age: Most likely pre-contact and historic

Description: This dark grayish brown loamy sand stratigraphic layer was observed throughout trench 11. The layer represents a portion of Waikīkī's former land surface, prior to the introduction of fill sediments around the time of the construction of the Ala Wai Canal. Diverse cultural material was observed within the cultural layer, including marine shell midden, fishbone, charcoal, historic glass, and fragments of large mammal bone (most likely pig, but possibly goat). Clearly, both pre-contact and historic land use occurred on this former land surface. The layer's lower boundary has a pronouncedly, undulating, wavy appearance that was most likely the result of the repeated excavation of pits into and below this stratigraphic layer. The results of radiocarbon dating on charcoal samples from this layer clearly indicate that the layer accumulated in the late pre-contact or early historic period (most likely post AD 1650). The A horizon is geographically associated with a house site shown on a 19th century map with LCA 99 (refer to the historic background section).

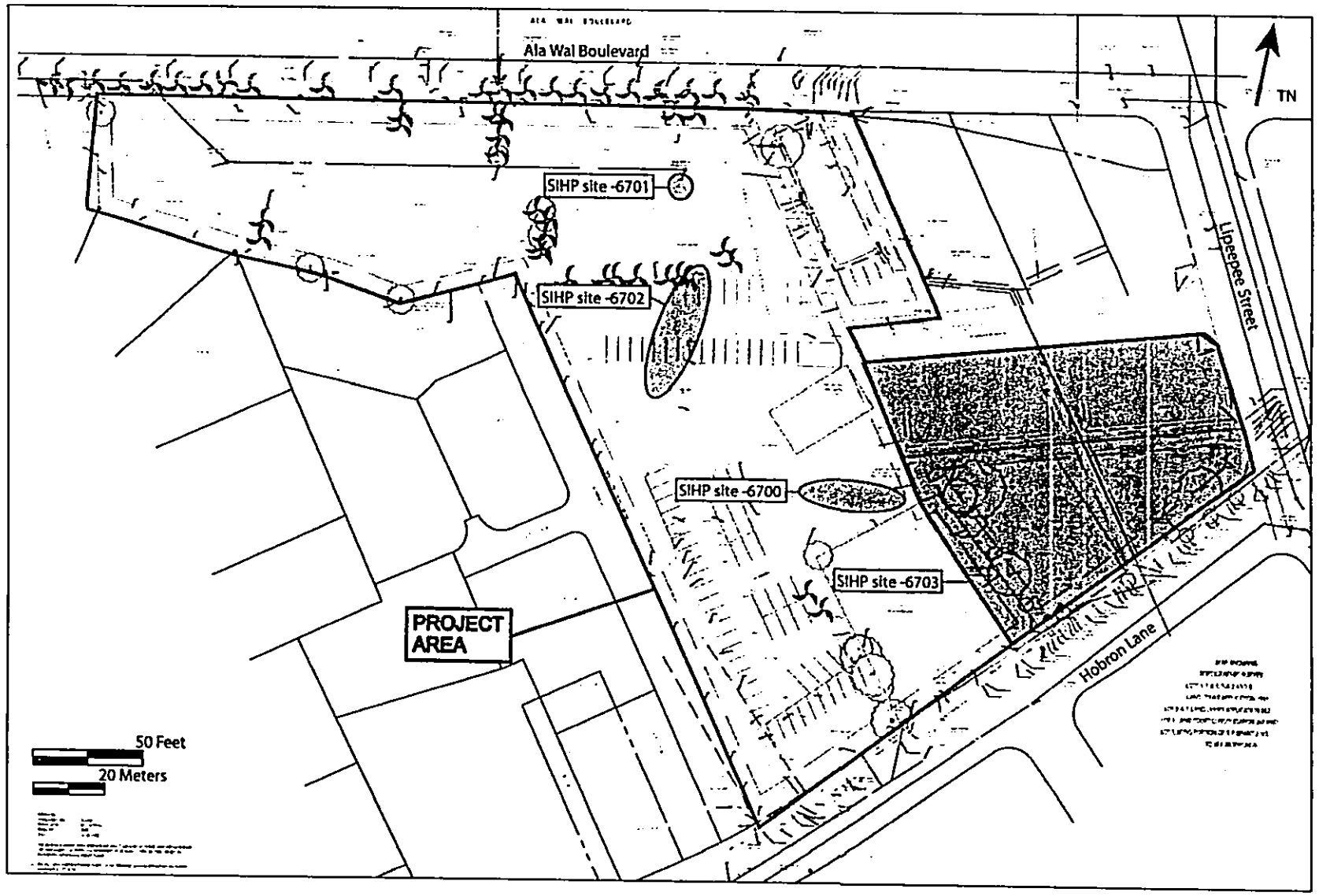

Figure 38. Project map showing locations of historic properties located within project area (projected boundaries of site –6703, within the current project area and based on historic maps, are depicted)

SIHP site #: 50-80-14-6703

Site Type: Fishpond remnant

Function: Aquaculture

Features (#): 1

Age: Most likely utilized prehistorically, with use continuing into the historic period

Description: Historic maps and LCA testimony (refer to the historic background section of this report) document a former fishpond in the east-southeast portion of the project area. This pond had been filled in the early 20th century in association with the construction of the Ala Wai Canal. Largely through the use of a Livingstone Piston corer, which is designed to sample mucky, fine-grained sediments below the water table, the remnant alluvial sediments associated with this pond were sampled in Trench 15. Based on historic maps, the boundary of the pond within the current project area was reconstructed (refer to Figure 30). These pond sediments have the potential to yield important paleoenviromental information, including a record of changes to ambient pollen over time.

Documented deposits not assigned State Inventory of Historic Properties (SIHP) numbers

The marsh or pond sediments documented and radiocarbon dated in trench 4, Stratum IV demonstrated the potential time depth for pond sediments within the project area. These sediments, however, did not appear to be culturally modified. Accordingly, these sediments were not given a SIHP number. It is possible that later research in the project area, or its vicinity, will further document these deposits and provide them with a site number based on their documentation results.

The mixed fill sediments observed in Trenches 1, 2, 20, 21, and 22 all contained historic refuse and construction materials related to the development of the project area after the construction of the Ala Wai Canal (post 1927). These sediments may very well contain cultural material related to activity that is over 50 years old; however, these sediments lack depositional integrity and the potential to contribute to the land use history of the subject parcels. These sediments were not given a SIHP number.

B. Summary

Excavation findings were generally consistent with predictions based on historic maps and documents that were synthesized prior to the fieldwork. At the northwest end of the parcels, along Ala Wai Boulevard, stratigraphic evidence of the old meandering stream is present as well as evidence of the dredge material from construction of the Ala Wai Canal in the 1920s and fill layers for the construction of apartment buildings on this part of the parcel. An unexpected find here was an apparently isolated coffin burial (SIHP site –6701) of a single individual buried sometime in the mid-19th century. Additional research will be conducted to locate people with any possible knowledge of this burial as part of the project's burial treatment plan.

In the north central area of the parcels at the north end of existing asphalt paving is a buried A horizon (SIHP site –6702) that is likely associated with certainly the house lot of the

LCA 99 to Uma that is shown on the historic maps of the area. At the south end of this parking lot, adjacent to Hobron Lane, a buried A horizon is also present and it contains evidence of use in the twentieth century such as concrete slabs and mortar and boulder foundation remnants along with historic trash including window and bottle glass and metal. A mixed layer associated either with the construction of the twentieth century houses or the existing parking lot is also evident in these trenches and along the east edge of the paved areas. In this mixed layer in backhoe trench 1 and 2 fragments of human skeletal material were found (SIHP site –6700). This disturbed context of the ground and inarticulate context of the skeletal fragments strongly suggests that the skeletal fragments were previously disturbed by past construction activities. It is possible that these skeletal remains were brought into the project area as a fill sediment.

The excavated trenches in east extreme of the property along Hobron Lane to Līpe'epe'e Street identified sediments associated with a large pond (SIHP site –6703) corroborating information shown on historic maps. The pond was filled in with alluvial sediments probably imported from areas outside of the Kalia, Waikīkī area and houses were built here in the early twentieth century. Evidence of this modern use was present in the form of concrete slabs and trash pits of metal and historic bottles from the 1940s and 1950s.

Appendix A of this report is a cultural impact evaluation. Based on this study, the only cultural impacts of the proposed condominium development are related to burial issues.

VIII. SIGNIFICANCE AND RECOMMENDATIONS

A. Significance

A total of four sites, representing four distinct historic properties, were documented in the project area. Historic property significance are summarized in Table 3. Sites were evaluated for significance according to the five broad criteria of the Hawai'i State Register of Historic Places. The five criteria are:

A Site reflects major trends or events in the history of the state or nation.

B Site is associated with the lives of persons significant in our past.

C Site is an excellent example of a site type.

D Site may be likely to yield information important in prehistory or history.

E Site has traditional cultural significance to an ethnic group; includes religious structures and/or burials.

All four historic properties are all considered significant under Criterion D for their information potential. Two sites are significant under multiple criteria. The disturbed human skeletal remains (SIHP site –6700) and the historic coffin burial (SIHP site –6701) are considered significant under Criterion E, as well as D, for their traditional cultural importance.

Table 3. Summary of Sites Identified and Significance

SIHP Site #	Nature of Site	Posited Function	Significance
-6700	Human skeletal remains	Burial	D, E
-6701	Human skeletal remains and associated grave goods	Burial	D, E
-6702	Buried A-horizon soil deposits	Habitation	D
-6703	Buried fishpond sediments	Aquaculture	D

*Note prefix for all SIHP sites is 50-80-14

B. Recommendations

With the exception of the burial issue, no impacts to current cultural practices within the project area were identified as a result of this investigation (refer to Appendix A). The appropriate mitigation of the burial issue will involve the preparation and execution of an SHPD-approved burial treatment plan (as required by Hawai'i Revised Statutes Chapter 6E-43 and Section 13-300), see discussion below.

CSH's project specific effect recommendation is "effect with mitigation commitments." The proposed condominium development will adversely affect significant historic properties (SIHP sites -6700, 6701, 6702, and 6703) located with the project's area of potential effect. Significant historic properties are historic properties that meet the criteria for inclusion on the Hawai'i Register of Historic Places. The significant historic properties documented within the project area (described above) are part of an extensive archaeological landscape, including *'auwai* (irrigation ditches), *lo'i* (pond fields), fishponds, human burials, and other remnants of pre-contact and historic land use. This archaeological landscape has been documented throughout much of Waikīkī. The four documented historic properties indicate that the project area was the site of traditional Hawaiian land use, both prehistorically and historically. Because these significant historic properties are subsurface, they will be affected by the ground disturbance that is proposed throughout all, or most, of the project area. The following mitigation measures are recommended to minimize the project's effect to these historic properties.

To alleviate the proposed project's adverse effect on significant historic properties, CSH recommends that an SHPD-approved burial treatment plan be implemented. It should detail the treatment of the known skeletal remains within the project area (Sites –6700 and 6701) and any additional skeletal remains that could potentially be uncovered during the proposed project. As an appropriate archaeological data recovery method, CSH recommends that an archaeological monitoring package be implemented during the ground disturbing phases of the project. The monitoring methods should be developed in coordination with SHPD and should document additional information from exposed archaeological/paleoenvironmental deposits and facilitate the identification and treatment of any additional burials discovered within the project area. The recommended archaeological monitoring program will provide an excellent opportunity to sample and analyze the subsurface deposits related to Sites –6702 (the buried A horizon associated with LCA 99) and –6703 (the buried fishpond sediments). It is recommended that the proposed monitoring program include provisions for the collection and laboratory analysis of archaeological and/or paleoenvironmental samples from these two sites.

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X. APPENDIX A

Cultural Impact Evaluation for the

Waikiki Gateway Project Site

Kālia, Waikīkī, O'ahu

TMK: ([1] 2-6-011: 1, 2, 4, 32, 37, and 40)

by

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Prepared for
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by
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I. INTRODUCTION

A. Project Background

At the request of Irongate Ala Wai Investors, LLC, Cultural Surveys Hawai'i (CSH) is conducting a cultural impact evaluation for the proposed Waikīkī Gateway Site in the *'ili* of Kālia, Waikīkī Ahupua'a, Kona District, Island of O'ahu (TMK 1-2-6-011: 1, 2, 4, 32, 37 and 40) (Figures 1 and 2). The project area is bound by Ala Wai Boulevard on the north, Hobron Lane on the south, developed lots adjacent to Ala Moana Boulevard on the west, and developed lots adjacent to Līpe'epe'e Street to the east.

B. Methods

CSH's previous archaeological assessment work on this parcel (O'Hare et al. 2004) indicated that the project area, that lies within urban Waikīkī, was quite developed by 1951 and there were unlikely to be any cultural impact issues other than the possibility of archaeological sites or burials. Accordingly, CSH recommended a modest study, a cultural impact evaluation, to assess the project's potential impacts to ongoing cultural impacts. The cultural impact evaluation includes a review and summarization of perceived cultural impacts with some consultations, but does not involve formal interviews and oral histories. We anticipated consultation with the O'ahu Island Burial Council, recognized lineal and cultural descendants of Waikīkī and the Office of Hawaiian Affairs. This investigation scope was thought appropriate for a project area that 1) has been so developed for so long, and 2) for which there were unlikely to be any cultural impact issues other than the possibility of archaeological sites or burials.

Potential cultural impact issues relating to archaeological sites, burials, sacred sites, trails, and access to traditional resources were evaluated. In general terms our Cultural Impact Study follows the guidelines of three documents:

- The National Park Service's "*Preservation Brief 36 Protecting Cultural Landscapes*",
- The Secretary of the Interiors *"Standards for the Treatment of Historic Properties with Guidelines for the Treatment of Cultural Landscapes*" and
- The State of Hawai'i Department of Health Office of Environmental Quality Control "*Guidelines for Assessing Cultural Impacts*" adopted by the Environmental Council State of Hawai'i November 19, 1997

The cultural impact evaluation methodology is summarized as follows:

1) Examination of historical documents Land Commission Awards, historic maps, and other primary sources with the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal and other resources or agricultural pursuits as may be indicated in the historic record.
2) Review of archaeological, biological, cultural impact assessment and oral history information pertaining to the project lands as they may allow us to reconstruct traditional land use activities and identify and describe the cultural resources, practices and beliefs associated with the parcel and identify present uses, if appropriate.
3) Consultation with a number of parties focused on individuals recommended by the State Historic Preservation Division Culture and History Branch.

II. COMMUNITY CONTACT PROCESS

Throughout the course of this study, an effort was made to contact and consult with Hawaiian cultural organizations, government agencies, and individuals who might have knowledge of and/or concerns about traditional cultural practices specifically related to the project area. This effort was made by letter, e-mail, telephone and in person. In the majority of cases, letters along with a map and an aerial photograph of the project area were mailed with the following text:

At the request of Irongate Ala Wai Investors, LLC Cultural Surveys Hawai'i is conducting a cultural impact evaluation for the proposed Wakīkī Gateway Project Site in the *'ili* of Kālia, Waikīkī Ahupua'a, Kona District, Island of O'ahu (TMK 1-2-6-011:1, 2, 4, 32, 37 and 40, (Figures 1 and 2).

The project area is bound by Ala Wai Boulevard on the north, Hobron Lane on the south, developed lots adjacent to Ala Moana Boulevard on the west, and developed lots adjacent to Līpe'epe'e Street to the east.

The purpose of the cultural impact evaluation we are conducting is to evaluate potential impacts of the proposed project to traditional cultural resources, beliefs and practices.

We are seeking your input regarding the following issues:

Identification of traditional Hawaiian activities including gathering of native plants, animals and other resources.

Identification of existing archaeological or cultural sites, trails, burials etc., which may be impacted by the proposed project.

Cultural associations with the study area through legends, traditional use or otherwise.

The individuals, organizations, and agencies attempted to be contacted and the results of any consultations are presented in the table below. Cultural Surveys Hawai'i is still in the consultation process. We are still awaiting responses from individuals and organizations in the Waikīkī community.

Joanne Kahanamoku Sterling

Joanne Kahanamoku Sterling participated in a telephone interview with Cultural Surveys Hawai'i Inc. on October 1, 2004. Joanne Kahanmoku Sterling was born to Samuel Alapa'i Kahanamoku and Sara Tenamoieta of Tahiti. She was raised in Waikīkī on what is now the Ala Moana Boulevard where the Hilton is today southwest of the present project area. Joanne Kahanmoku Sterling presently resides in Kailua-Kona on the island of Hawai'i.

Joanne Kahanamoku Sterling specifically commented:

> Our family home was where the Hilton is today in Waikīkī. It was all Paoa from the Hilton up to where Budget was. Other families included Kahanamoku, Bartelt and Harbottles. It was so beautiful where we lived. We used to call the area where your project is the "Dog Patch". I have a cousin Clark Robert Paoa who keeps up on all the family history and is very familiar with the area.
>
> We used to know everybody and we never really went out of our area. We used to walk the waterway to the beach. In front of the 'Ilikai Hotel was all coral swamp. The beach was used by many families in the past to gather *limu*, fish and of course swim. I do not remember any burials in or around our area in my youth. The project area had many *kiawe* trees in those days.
>
> Others in the neighborhood were the Furtados from Maui. They owned a shop collecting things from the monarch period. Anne was her name. There was also the Wise and the Keaweamahi families in the area near the project area. Another *kupuna* to contact would be Kawena Rubilite Johnson. She is very knowledgeable about that area.

Robert Clark Paoa

CSH conducted an interview with Mr. Robert Clark Paoa on October 4, 2004 at the project site bordered by Hobran Street to the south, Līpe'epe'e Street to the east and Ala Wai Boulevard to the north. Robert Clark Paoa was born in Waikīkī, Kalia (where the Ilikai is today) Kona District on the island of O'ahu in 1937. He was raised by his parents Mr. Malcom Paoa and Mrs. Ellen Clark Paoa on their family land just south of the current project area. Mr. Paoa worked for the Federal Government National Guard. Today he resides in Moanalua Gardens and is a member of the Moanalua Gardens Community Association.

Mr. Paoa specifically commented:

> The family land was obtained during the *mahele* 1848. My Grandfather Paoa (his grandfather only had one name Paoa) was awarded that land in 1848. Later King David Kalākaua reconveyed the land to Paoa again 1877. We do not know why. It was a legal document. I have not been able to find it. My father and mother purchased the lot *makai* of us from my father's family. The fourth lot down from us was owned by Nainoa Thompson's family the Harbottles. His mother is still alive and his father recently passed. Duke Kahanamoku owned his land but rented it out.

In the '50s or 1951, where the Kobe's Steak House is today, the road in front of our house, (Beach Road, now Ala Moana) was changed from two lanes to four lanes. The road work took our entire front yard. As they were working they found *iwi*. I only saw one long bone. As a child you do not notice too much like. In those times they called the Coroner. They were old burials according to the Coroner. The Coroner did not know what to do with the *iwi*, so my father said to move them into his yard. The bones are still there.

I doubt that they were still burying people in the project area. Maybe someone buried a family member in their yard. My family was buried where the Princess Kai'iulani Hotel is today. There was a church there, a branch of Kawaiha'o Church. The church had a piece of land and plots for different families. Most of the Hawaiians from this area were buried there. They later re-interred them at the Kawaiha'o Church. Richard Paliaqwan can tell you more about that.

My family and others used to fish in the ocean and gather *limu*. We did not trust fishing in the canal. The Japanese used to fish in the canal for mullet. You see, when war broke out in the 1940s that stopped any kind of cultural practices. When the war came there was black outs, rules and curfew in which it stopped the normal lifestyle. Where Hobran Street and what was Ala Moana to the Ala Wai was a base yard taken over by the Army from 1942-1945. There used to be all *kiawe* trees in this area.

It is really too late to interview the elders of that period most of them have past away. There was man by the name of Warren Nishimoto from the University of Hawai'i that I worked with before. I led him to families of that period and he did all the oral histories of this area. Some of the names were my Uncle and Aunty Fred Paoa and Mary Paoa Clark and Rebecca Kahale Kapule. If you can find the oral histories that Warren conducted they will tell you of this area. I will be willing to talk to you in more depth at another time if you need.

I don't remember any sites like *heiau* in this area. There was no pond during my time. It was all filled in. They did build the KHON radio tower in 1947 which is no longer there (looking east of the project area).

We used to call this place the "Dog Patch". My mother told us that a strong Hawaiian man used to raise dogs to eat in this area. They were still eating dogs. Some Hawaiians still enjoyed the meat. My mother said on Sundays the kids would watch by the fence and see them *pulehu* the dog and drink *okolehao*. This was in the 1920s. Some of the people do not like to hear the story because they feel sort of shame and looked down upon.

(As we [CSH] looked at the photographs from 1927, 1945, 1948 and 1949, Mr. Paoa had this to say:

You see the area behind our land? (Pointing to the sandy areas behind their homesteads in the 1927 photograph) Dillingham owned property there. He used the coral from the dredging of Kewalo to fill his land (they paid him to do it so he made money two ways).

I was 8 years old in 1945, this is how I remember it looking (glancing at the 1945 photograph view SE of project area) like. I remember the 1946 tidal wave wrecked all the boats in the canal. The canal just rose up and broke all the boats. The buildings were called the Alawai Terrace if I remember correctly, but maybe that is the names of the hotels in the project area today. You will have to check on that.

Name	**Organization, Affiliation**	**Comments**
Kahanamoku Sterling, Joanne	*Kama'āina* of Waikīkī	See interview.
Kaleikini, Paulette	*Kama'āina* of Waikīkī	Contact initiated.
Norman, Ted	*Kama'āina* of Kālia	Contact initiated.
Paoa, Clark Robert	*Kama'āina* of Waikīkī	See interview.

III. TRADITIONAL PRACTICES

Traditional cultural practices are based on profound awareness concerning harmony between man and their natural resources. The Hawaiians of old depended on these cultural practices for survival. Based on their familiarity with specific places and through much trial and error, Hawaiian communities were able to devise systems that fostered sustainable use of nature's resources. Many of these cultural practices have been passed down from generation to generation and are still practiced in some of Hawai'i's communities today.

This section will include discussions on different types of traditional practices, cultural resources and *mo'olelo* or stories associated with Kālia. Excerpts from interviews and talk story sessions are incorporated throughout this section where applicable.

A. Burials

The discovery of burials in the Waikīkī area during recent construction projects has been a cause for concern over the last few years.

There are approximately 14,500 records associated with Land Commission Award claims during the *Māhele* of 1847-1853. Of these records, 428 are for claims both awarded and unawarded in Waikīkī. Among these 428 claims, there is only one mention of a graveyard or burial place and it is in Claim 613 (to Kuluwailehua) which is not awarded (*Māhele* database 1998, waihona.com). Although it is uncertain where the reported burial ground is located, based on the boundaries given in the testimony (Native Register, Vol. 2: 299-300), it is speculated that it might be adjacent to the former location of Waikīkī Church, near Ka`iulani Avenue.

It seems the circumstance of the burials discovered in the vicinity of the project area is much more mundane than battle deaths or human sacrifices - namely that the vast majority of the deceased were the common people of Kālia. Withington (1953:16), probably referring to the *`oku`u* plague [circa 1804], says: "A few years of peace settled over the Islands. Kamehameha and other warring chiefs took this opportunity to re-establish their forces, which had been greatly reduced through war and disease. A terrible epidemic of measles had attacked the people of the islands. It is claimed that more than three hundred bodies were carried out to sea from Waikīkī in one day" (Withington: 1953: 16). It is possible that some of the Kālia burials discovered to date reflect such early depopulation by introduced diseases.

Rank seems to have had profound influences on places available for disposal. A king's body, or those of his attendants, could be placed within the district of the king's authority. Many geographical features were available. Fewer were available to lesser chiefs and their attendants, who were presumably limited to their own districts. The number of geographical features available for disposal seems to have decreased as rank decreased. Disposal for members of an extended family living in an *`ili* was restricted to those geographical features located within the land unit, whether broken lava flats, lava tubes, earth plains, or sand dunes (Bowen 1961: 21).

According to Bowen (*Ibid.*), most Hawaiians in the pre-contact period belonged to the *maka`āinana* or commoner class and their bones were usually buried in no other area than their particular *`ili* (land division within an *ahupua`a*).

Burials are commonly reported from clean, consolidated sand deposits, and was clearly a common method of interment practiced by Hawaiians (Cleghorn 1987:42). One of the earliest references to traditional Hawaiian burial practices was made by Urey Lisiansky, who visited

Hawai'i in June, 1804. He notes: "The poor are buried anywhere along the beach . . . " (1814: 122).

Commenting on the nature of burial areas and body positions used in burial, William Ellis (1963: 361-363) says: "The common people committed their dead to the earth in a most singular manner." The body was flexed, bound with cord, wrapped in a coarse mat, and buried one or two days after death. Graves were ". . . either simply pits dug in the earth, or large enclosures . . . Occasionally they buried their dead in sequestered places at a short distance from their habitations, but frequently in their gardens and sometimes in their houses. Their graves were not deep and the bodies were usually placed in them in a sitting posture" (*Ibid.*). Hawaiians placed significance on the *iwi* which were regarded as a lasting physical manifestation of the departed person and spirit. "The bones of the dead were guarded, respected, treasured, venerated, loved or even deified by relatives; coveted and despoiled by enemies" (Pukui *et al.*, 1972:107).

The current inventory survey investigation conducted on the project area located three burials. The burial practices indicate pre and post contact At this time, none of the informants contacted were aware of any burials within the project area.

B. Stream Resources

Before the Ala Wai Canal was built and the streams diverted, the streams feeding into Waikīkī were once abundant in *'o'opu* and *'ōpae*. Local kama'āina attest that by the time they were born these two resources were no longer available. However, stories passed down by their elders and parents indicated the stream was once an important cultural resource for them. Sadly, these two cultural resources are no longer found in Waikīkī today.

C. *Kalo*, the Staff of Life

Kalo or taro, from which *poi* is made, was a major food staple in the traditional Hawaiian diet. Evidence from the *Māhele* Land Commission Awards indicate that *kalo* was cultivated on *kuleana* land in Kālia. Luaiku (LCA #2549) located adjacent to the current project area indicated they maintained 4 *lo'i* on their land. Often, *kalo* was planted along the edges of streams (Handy 1940: 10).

In relation to *kalo*, there are also many associated religious and cultural beliefs. In brief, *kalo* is associated with the god Kāne. There are specific rituals and prayers related to the planting of *kalo*. Hawaiians also believe they are descendants from Hāloanaka, the first *kalo* plant or the elder brother, and from Hāloa – the younger brother. There is a dual relationship between the *kalo* plant and fish in the ocean when making ritual offerings. For example, the red-stalked *kūmū* taro might be substituted for the red kūmū fish. These are only a few of the religious beliefs associated with *kalo*.

D. Hawaiian Aquaculture

The area known as Fort DeRussy (Kālia) contained 10 Hawaiian fishponds used for aquaculture. Hawaiian aquaculture is especially significant, as it was not practiced elsewhere in the Pacific. The majority of fishponds most likely were constructed in the sixteenth century.. The prefix *loko* means "body of water" and the suffix describes the specific type. The four types of ponds are: *loko i'a kalo* (fish and taro raised together in a pond), *loko wai* (inland freshwater fishpond), *loko pu'uone* (isolated shore fishpond formed by a barrier sand berm creating a single elongated ridge parallel to the coast) and *loko kuapā* (seawall on a reef with sluice gates). In

1902 Cobb recorded the fishponds at Kālia as freshwater *loko wai*. Davis labeled the ten fishponds at Fort DeRussy to be *loko pu'uone* with salt-water lens intrusion and fresh water entering from upland *'auwai* (streams). Kāhāwai Pi'inaio was this type of stream. The 10 ponds are inland, swale-based ponds constructed between beach ridges that may have formed along the prograding coast within the last millennium. Existing depressions in the sand were chosen to make the *loko pu'uone*, and brush was cleared out. During traditional times, the ponds were used to farm fish – usually for the Hawaiian *ali`i* (royalty). The *`ama`ama* (mullet) and the *awa* (milkfish) were the two types of fish traditionally raised. During his 1973 archaeological studies Kikuchi categorized the ponds at Kālia as type IIIB; "A man-altered *loko wai* which has a dirt and stone embankment wall separating from a river or stream and which has a sluice gate: (Kikuchi 1973:229).

Kikuchi writes that fishponds evolving "from a simple technological device into a symbol of status and power is significant from the vantage point of the development of stratified societies in the Pacific" (Kikuchi 1976:296). Fishponds were a crucial component of food production as well as symbols of status. Water from *'auwai* would have been used for both agriculture and aquaculture, therefore requiring a cooperative system of water utilization. The types of fish that thrived in the brackish water were the Euryhaline fish mullet (*Mugil cephalus*) and milkfish (*Chanos chanos*). These fish have a natural inclination to swim against currents toward freshwater sources. Maintenance of the ponds would have been constant and necessitated a fulltime caretaker or caretakers.

The ponds were also home to the *kōloa* (native duck) and other native water fowl – such as the *`auku`u* (heron), *`alae `ula* (mudhen), *`alae kea/`alae ke`oke`o* (coot),and the *ae`o* (stilt) (Kanahele 1995: 129.As early as 1828 (50 years after contact), foreign visitors (Duhaut-Cilly; Chamberlain) commented on the state of decline and disrepair of the fish ponds and taro fields in Waikīkī. The French navigator, Auguste Duhaut-Cilly, attributed this decline to the missionaries who coerced the Hawaiians to spend most of their time in school reading the bible rather than working in their fields, and to the sandalwood trade. Hawaiian author, George Kanahele, credits the deterioration of the Waikīkī fish ponds to several negative impacts: introduced diseases which decimated, not only the ponds' caretakers, but the general laborer class who maintained the ponds; and the *Māhele* which altered the land tenure system and diminished the power of the *konohiki* (land manager) to control "*corvee* labor" (1995: 126). No doubt, all of these reasons contributed to a continual decline.

Motivated by business, in the late 1880s, Chinese farmers began leasing the ponds from Hawaiians to raise fish and ducks and the taro fields were converted to rice fields.

Many ponds in the Kālia area were filled in when Fort DeRussy was built and when the Ala Wai Canal was dredged in the 1920s. Earl Vida, whose father supervised the construction of the Ala Wai, related that Dillingham had a dual-purpose scheme, not only to build the canal, but to fill in the ponds. "We don't need the ponds. We need the land" (Earl Vida interview, COH-UHM: 597). The filling in of the ponds (and the taro fields) had dramatic implications for future generations of Hawaiians: it forever altered the traditional landscape and it prevented Hawaiians from being able to return to this traditional way of life in Waikīkī.

E. Marine Resources

The ocean was just as important a gathering place as the land. A study of ocean resources indicated that although the entire coastline along Kālia and Waikīkī was utilized for gathering and subsistence, particular spots seemed richer in certain resources than others. Generally, the whole coastline of Waikīkī was accessed because certain fish are known to frequent certain areas and an experienced fisherman knows where the holes or spots are if he wants to catch a particular fish. Where one chooses to fish might also depend on the crowds at the beach and time of day. In Waikīkī, especially due to the high volume of people on the beaches, many fishermen these days go fishing at night. The more favorable fishing grounds were in front of the old Niumalu Hotel (Hilton Hawaiian Village), the Royal Hawaiian and Halekūlani, and the area fronting the Natatorium. Specifically, the area between Diamond Head and the Kapahulu Groin was considered better fishing grounds than the Outrigger Reef on the Beach/Ft. DeRussy portion of the shoreline. Likewise, the squid grounds are located between the Kapahulu groin and Diamond Head.

Oral information passed down to Bob Paoa from his elders indicated many of the people dwelling along the coast of Kālia were fishermen. The 1890 *Directory of the Kingdom* listed the names of twelve fishermen living in Kālia. Three of the names listed are relatives to Bob Paoa.

Kālia was renowned for the fragrant *limu līpoa*, as well as several other varieties of seaweed such as *manauea, wāwae`iole, `ele`ele, kala* and some *kohu*. The area between the Royal Hawaiian and the Halekūlani was the area where *limu līpoa* was traditionally gathered. Mr. Paoa and Mrs. Sterling confirmed the great fishing and the abundant *limu* in the Kālia area.

The *`ele`ele* existed in relation to Pi`inaio Stream and the two other streams feeding into Waikīkī. It seems this resource is no longer found in Waikīkī today – especially because the streams no longer flow to the sea. *`Ele`ele* normally grows in areas where there is freshwater intrusion, such as where freshwater streams enter the ocean (Abbott 1974: 10).

The oral interviews confirmed that the Waikīkī shoreline was abundant in many varieties of fish and *limu*, certain varieties of crab and lobster, as well as being good squid grounds. Talk-story with fishermen who presently use the Waikīkī coast confirm, for the most part, this is still true today.

F. Trails

John Papa `Ī`ī's account of the ancient trail leading from Honolulu into "lower Waikīkī" places the trail within Kālia, south of the current project area. The project area is situated between two primary access routs, the present day Kalakaua and the shoreline trail, the present day Alamoana Blvd. The trail is described as running " . . . down to Piinaio; along the upper side of Kahanaumaikai's coconut grove, along the border of Kaihikapu Pond, into Kawehewehe; then through the center of Helumoa of Puaaliilii, down to the mouth of the Apuakehau stream . . . (1959:92) (Figure 1).

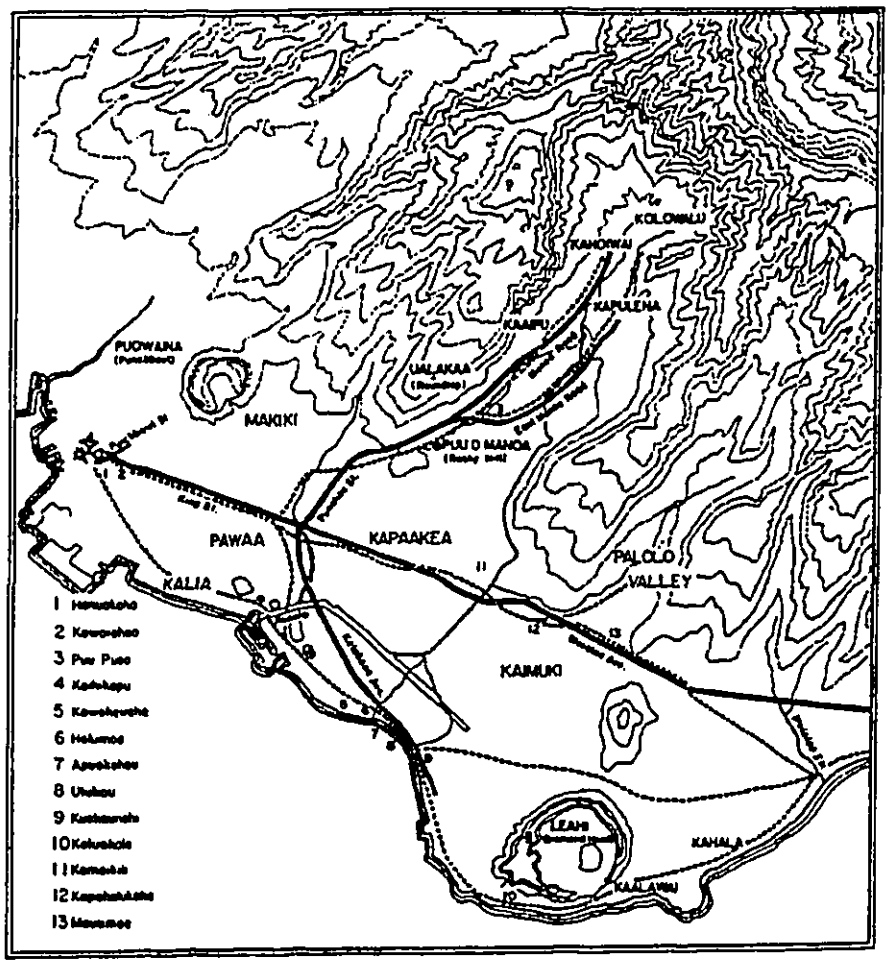

Figure 39 Trails from Punchbowl Street to Waialae as Described by ʻĪʻī. Map by Gerald Ober (ʻĪʻī 1959:93).

G. Summary

Traditional native Hawaiian cultural practices declined with the extensive land modification and urbanization of the greater Waikīkī area. As the wetlands were drained and ponds were filled to accommodate the continuing expansion of urban Honolulu, the traditional way of life for native Hawaiians was no longer possible in Waikīkī. There are, therefore, no on-going traditional cultural practices in the vicinity of the current project area. However, native Hawaiian burial practices were such that the potential for encountering additional human burials within the current project area does exist.

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Archaeological Assessment for the

Kapiolani Akahi Project Site

Kālia, Waikīkī, O'ahu

TMK: ([1] 2-6-011:001, 002, 004, 032, 037, 040)

by

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Hallett H. Hammatt, Ph.D.

Prepared for
Imanaka Kudo & Fujimoto LLC

by
Cultural Surveys Hawai'i, Inc.
March 2004

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I. INTRODUCTION

A. Project Background

At the request of Ms. Naomi Kuwaye of Imanaka Kudo & Fujimoto LLC, 745 Fort Street, Hawai'i Tower Suite 1700, Honolulu, HI 96813, Cultural Surveys Hawai'i (CSH) recently conducted an assessment of the proposed Kapiolani Akahia Project Site in the *'ili* of Kālia, Waikīkī Ahupua'a, Kona District, Island of O'ahu (TMK 1-2-6-011:001, 002, 004, 032, 037, 040) (Figures 1 and 2). The project area is on bound by Ala Wai Boulevard on the north, Hobron Lane on the south, developed lots adjacent to Ala Moana Boulevard on the west, and developed lots adjacent to Līpe'epe'e Street to the east.

B. Scope-of-Work

The scope of work for this assessment included:

1) Historical research to include study of archival sources, historic maps, Land Commission Awards and previous archaeological reports to construct a history of land use and to determine if archaeological sites have been recorded on or near the property.

2) Field inspection of the project area to further assess the potential for impact to subsurface deposits. The goal of the assessment was to identify any sensitive area that might require further investigation or mitigation before the project proceeds.

3) Preparation of a report to include the results of the historical research and the fieldwork with an assessment of archaeological potential based on that research, with recommendations for archaeological work, if appropriate. This report will also provide mitigation recommendations if there are any archaeologically sensitive areas that need to be taken into consideration.

C. Methods

The archaeological assessment for the proposed Kapiolani Akahia Project involved a surface survey of the project area by Cultural Surveys Hawai'i archaeologist, Constance R. O'Hare, on March 3, 2004. Notes on the current ground surface of the lot were taken, and several views of the parcel were photographed. The area is an open lot, bounded by Ala Wai Boulevard on the north, Hobron Lane on the south, and four to five story apartment buildings on the east and west. Historical background research included study of archival sources, Land Commission Awards and historic maps, as well as a review of past archaeological research in the vicinity to construct a history of land use. From these sources, a predictive model was developed to give a general idea of pre-contact and historic coastal land use patterns in the coastal area of Waikīkī.

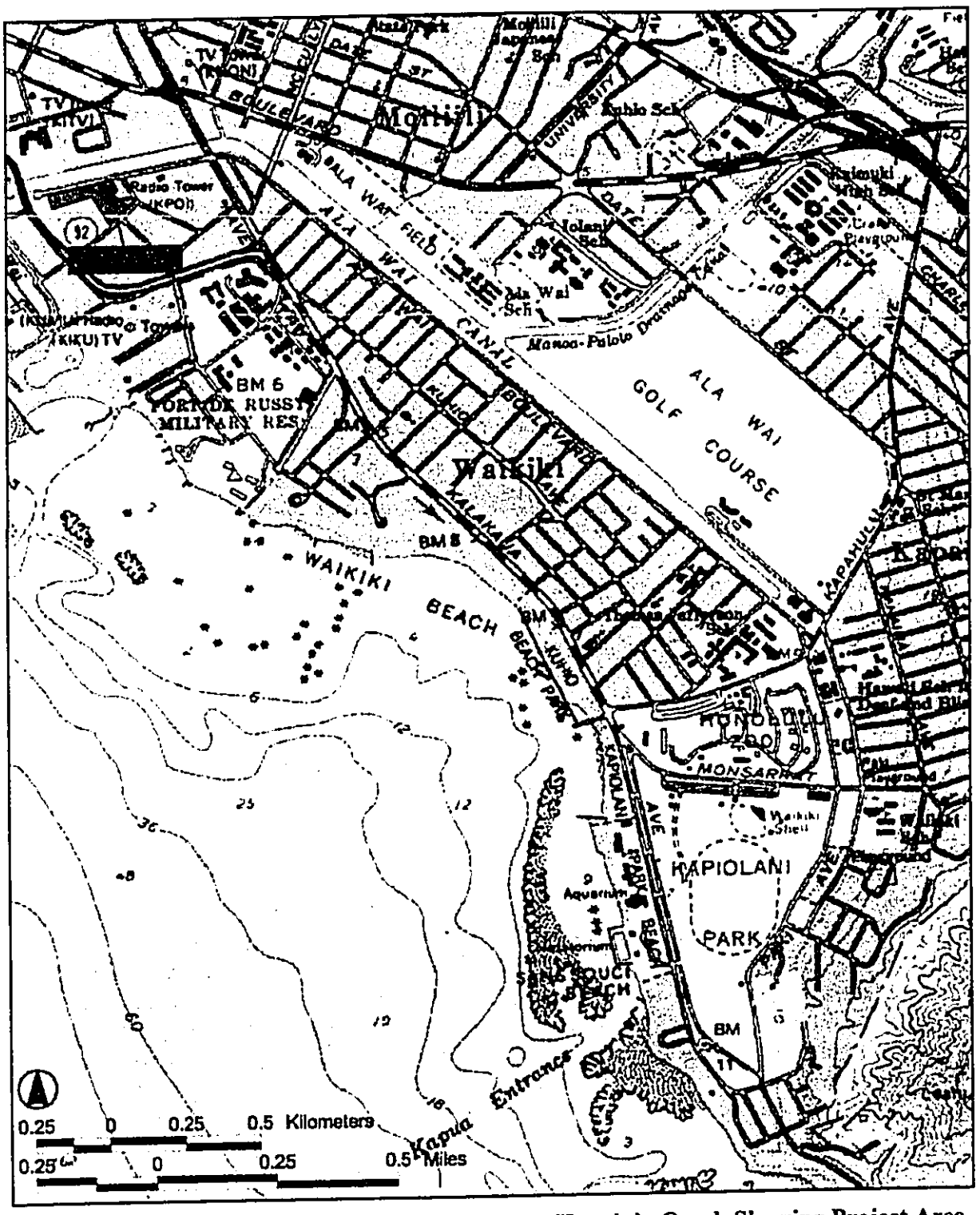

Figure 1 **USGS 7.5 Minute Topographic Map Honolulu Quad, Showing Project Area Location in Waikīkī**

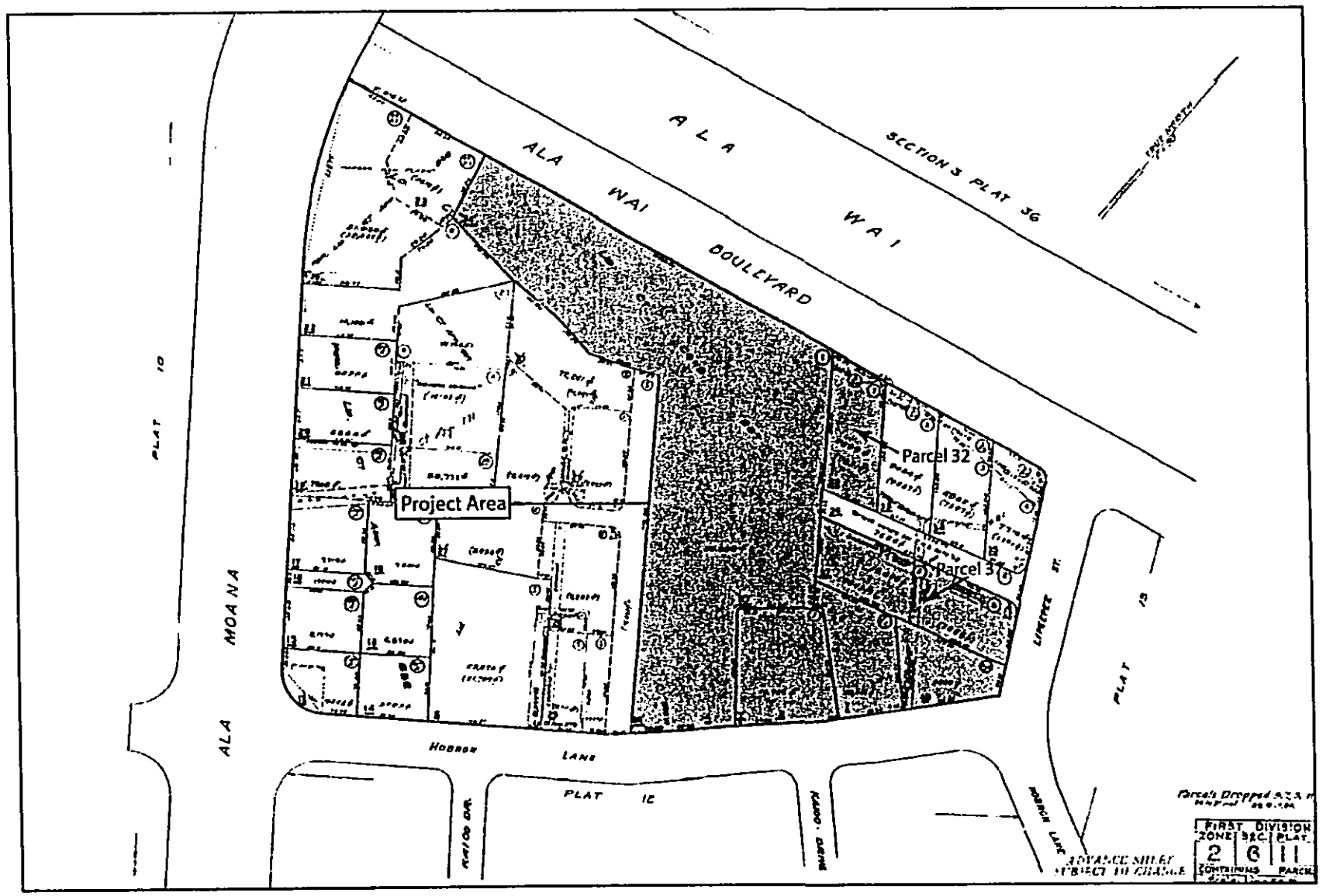

Figure 2 **Tax Map Key 1-2-6-011, Showing Project Area in Lots 1, 2 4, 32, 37, and 40**

D. Natural Setting

The project area is flat and averages 2 to 3 meters above mean sea level. The average rain fall 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). Although the area has been graded and filled (Fill Land), the natural soil deposit is Jaucus sand (JaC) (Foote et al. 1973). Portions of the lot are paved with asphalt or have a gravel surface, which is currently being used as a parking lot (Figure 3). A metal shed covers a portion of the eastern section (Figure 4). The majority of the lot is covered with low grass over a reddish clay loam that is probably a fill layer (Figures 5 and 6). There are a few palm trees along the fenced edges of the lot.

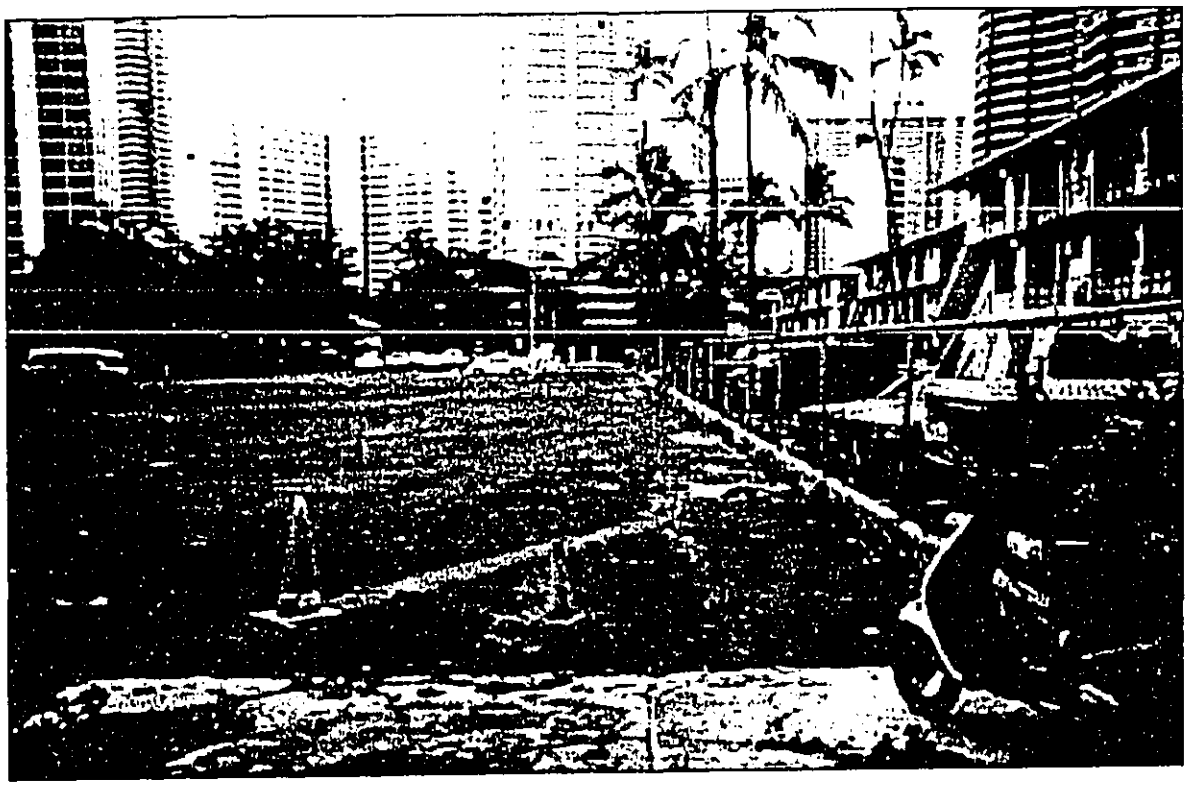

Figure 3 Paved Portion of Project Area, View to South towards Hobron Lane

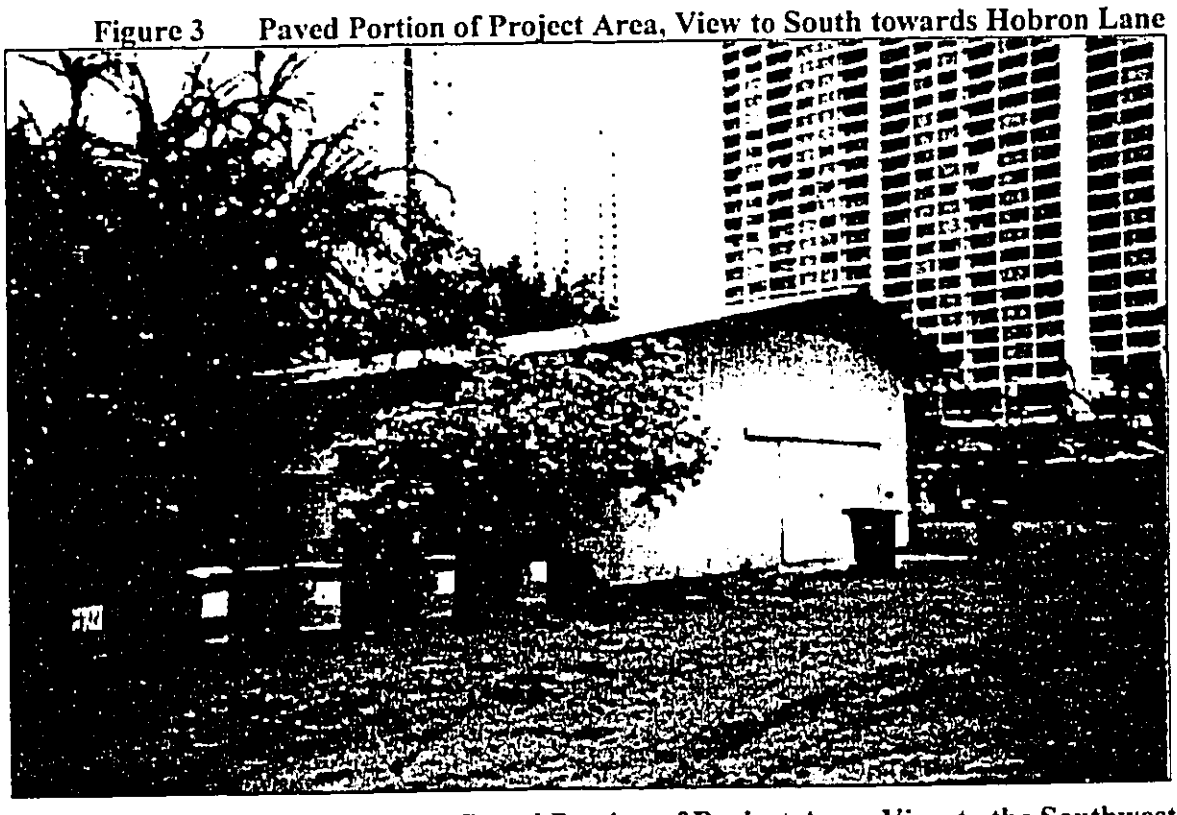

Figure 4 Metal Shed on Paved Portion of Project Area, View to the Southwest

Figure 5 Grassy Portion of Project Area, View to the West towards Ala Moana Boulevard

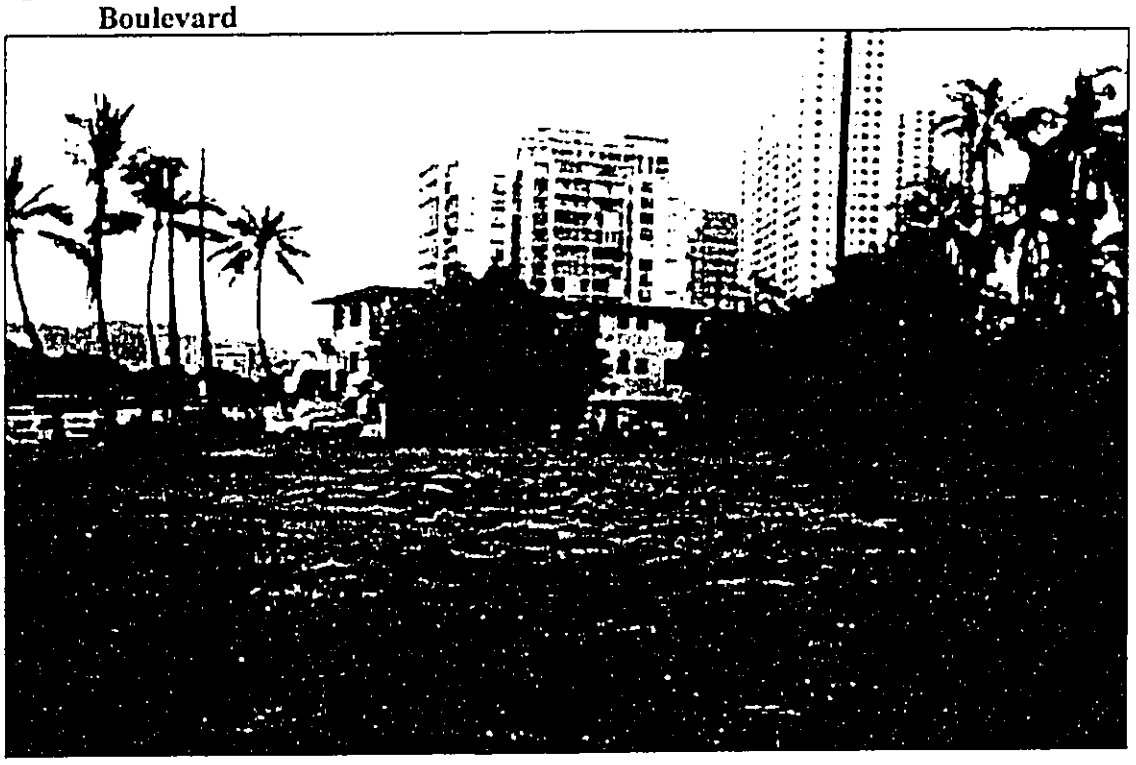

Figure 6 Grassy Portion of Project Area, View to the East towards Līpeʻepeʻe Street

II. WAIKĪKĪ CULTURAL AND HISTORICAL DOCUMENTATION

This section presents a review of the available documentary evidence for the general character of the area presently identified as Waikīkī as it had evolved in the years before western contact in the later eighteenth century. The development of Waikīkī lands adjacent to and including the present project area during the nineteenth century and into the early twentieth century was recorded in increasingly detailed documentation - including government records and maps. Finally, during subsequent decades of the twentieth century, abundant documentation of Waikīkī allows a more precise focus on development of the project area itself.

A. Pre-contact to 1800

Waikīkī is actually the name of a large *ahupua'a* (traditional land division) encompassing lands stretching from Honolulu to Maunalua Bay. Within that *ahupua'a*, by the time of the arrival of Europeans during the late eighteenth century, the area today known as Waikīkī had long been a center of population and political power on O'ahu. According to Martha Beckwith (1940:383), by the end of the fourteenth century Waikīkī had become "the ruling seat of the chiefs of O'ahu." The pre-eminence of Waikīkī continued into the eighteenth century and is confirmed by the decision of Kamehameha, in the midst of unifying control of the islands, to reside there after wresting control of O'ahu by defeating the island's chief, Kalanikupule. The nineteenth century Hawaiian historian John Papa 'I'i (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 . . . ('I'i 1959:17).

'I'i 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" ('I'i 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 [Menzies 1920: 23-24].

These and other early written accounts clearly depict a continuous zone of population and cultivation from the shoreline of present day Waikīkī Beach extending north well into Mānoa Valley.

An early map of O'ahu's south shore depicts the Waikīkī landscape in the first decades following western contact (Figure 7). Lt. Charles Malden surveyed south O'ahu in 1825; his map was published in 1841. It shows a concentration of house sites and coconut trees at "Waiatité (Waikīkī), stretched along the coast and terminating, to the southeast, at a pair of "fresh water ponds."

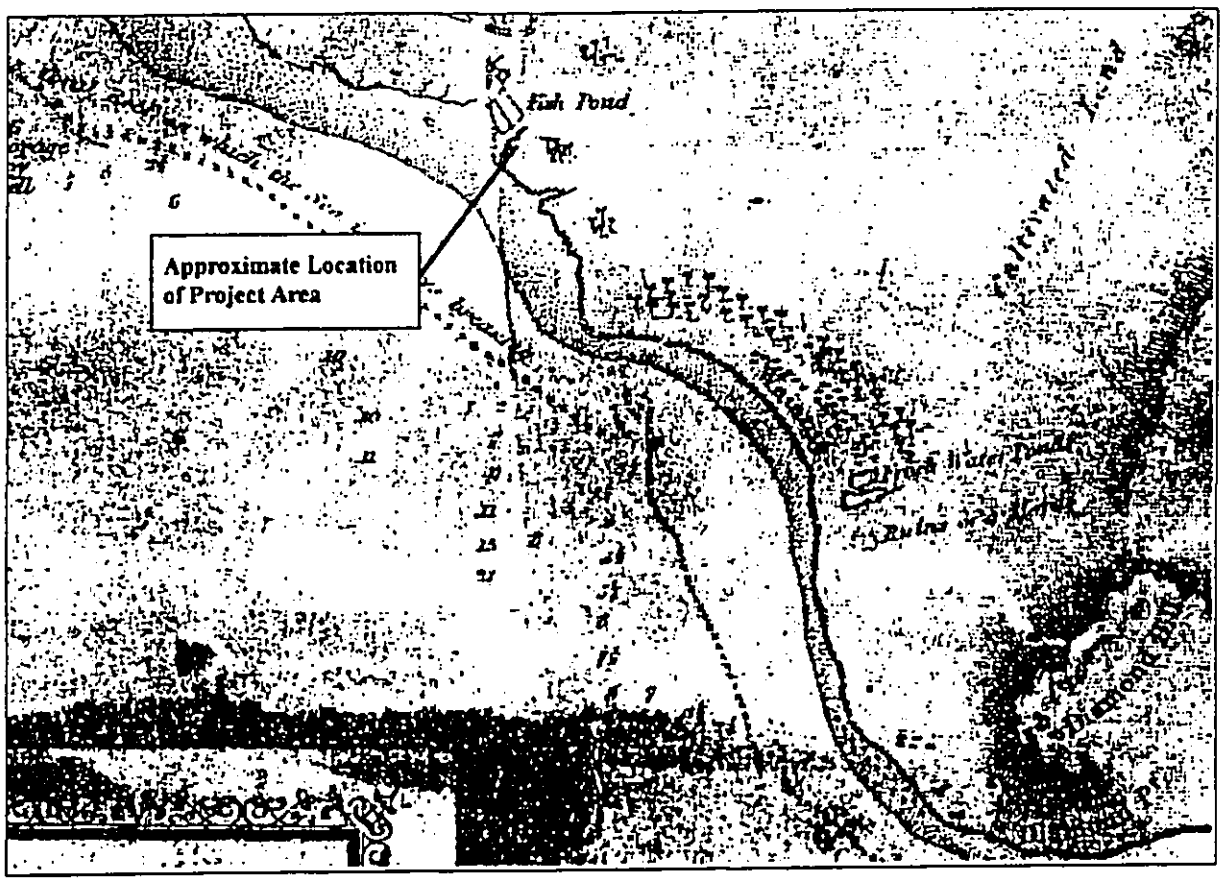

Figure 7 Portion of 1841 Map, Survey by Lt. Charles Malden in 1825, showing Waikīkī Coastline

Already in the 1820s when Malden was drawing his map, the traditional Hawaiian focus on Waikīkī as a center of chiefly and agricultural activities on southeastern O'ahu was changing, 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. The shift in pre-eminence is illustrated by the fact that Kamehameha moved his residence from Waikīkī to Honolulu. Indeed, by 1828, Levi Chamberlain 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 1820s, the population was estimated at 6,000 to 7,000) but also of the European diseases that had devastating effects upon the Hawaiian populace. The depopulation of Waikīkī, however, was not total and the *ahupua'a* continued to sustain Hawaiians living traditionally into the nineteenth century. Land Commission Award (LCA) records from the 1840s indicate awardees continuing to maintain fishponds and irrigated and dry-land agricultural plots though on a greatly reduced scale than had been possible previously with adequate manpower.

An early, somewhat generalized depiction of the pre-contact native Hawaiian shaping of Honolulu and Waikīkī is given on an 1817 map (Figure 8) by Otto von Kotzebue, commander of the Russian ship *Rurick*, who had visited O'ahu the previous year. The map shows taro *lo'i* (rectangular areas depicting irrigated fields) massed around the streams descending from Nu'uanu and Mānoa valleys. The depicted areas of population and habitation concentration (indicated by the trapezoids), however, probably reflect distortions caused by the post-contact shift of Hawaiians to the area around Honolulu Harbor - the only sheltered landing on O'ahu and the center of increasing trade with visiting foreign vessels.

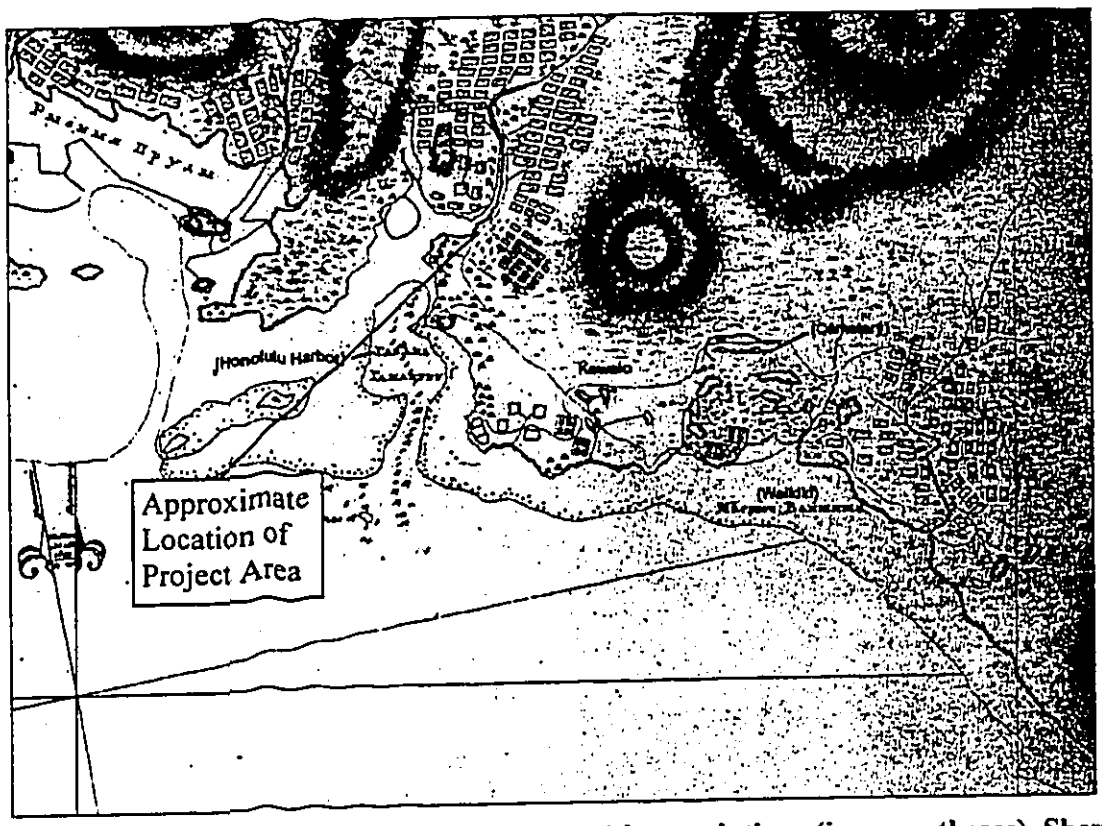

Figure 8 1817 Map by Otto Von Kotzebue with translations (in parentheses), Showing Densely Populated Areas of Honolulu and Waikīkī

B. Mid-Nineteenth Century and the *Māhele*

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, the Hawaiian government, and the *ali'i* (royalty) received their land titles. Subsequently in the *Māhele*, Land Commission Awards (LCAs) for *kuleana* (tenant) parcels were given 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 dry-land agricultural plots, though on a greatly reduced scale than had been previously possible with adequate manpower.

An 1881 Hawaiian Government survey map by S.E. Bishop (with locations of LCA parcels indicated) provides a detailed record of the physical landscape of Waikīkī before the transformations of the twentieth century. The map reveals an extensive complex of irrigated fields, streams and irrigation watercourses, and ponds stretching inland from the Waikīkī shoreline to the plains of Mō'ili'ili. Land Commission Award records for the awards shown on the map document houselots near the shore with associated taro *lo'i* [irrigated plots] located inland and house lots adjacent to inland taro *lo'i*.

An outline of the project area has been overlain (in red) on a portion of the Bishop map (Figure 9). LCA 99 is within the project area (in an area now covered with asphalt), LCA 2549, Lot 3 is just outside the western border, a fishpond was once along the eastern edge, and a "sea ditch" (now covered by the Ala Wai Canal) once flowed through the northern section of the project area.

No. 99 F.L., Uma, Honolulu, 18 March 1852
N.R. 763v3

The Land Commissioners of the Hawaiian Islands, Greetings: I have a house site in the 'ili of Kalia in Waikiki, Oahu, with one house in it. It has not been fenced because it has not been necessary and it is bounded by a pond.

Kindly award this little claim.
With thanks.
UMA X, his mark
Witness: S.P. Kalama

N.T. 304v10
No. 99 FL. Uma, 21 March 1853

Luaiku, sworn, I have seen his land section in Kalia, Waikiki, Kona, Oahu of a house site and a fish pond.

Mauka, Waialae, Makai, Government land
Honolulu, A sea ditch

Land from parents during the time of Kamehameha I. No objections to the present time.

Nainui, sworn, every word above is true. I have known in the same way.

[Award 99 F.L.; Land Patent 8348; Kalia Waikiki Kona; 1 ap.; .73 Ac.]

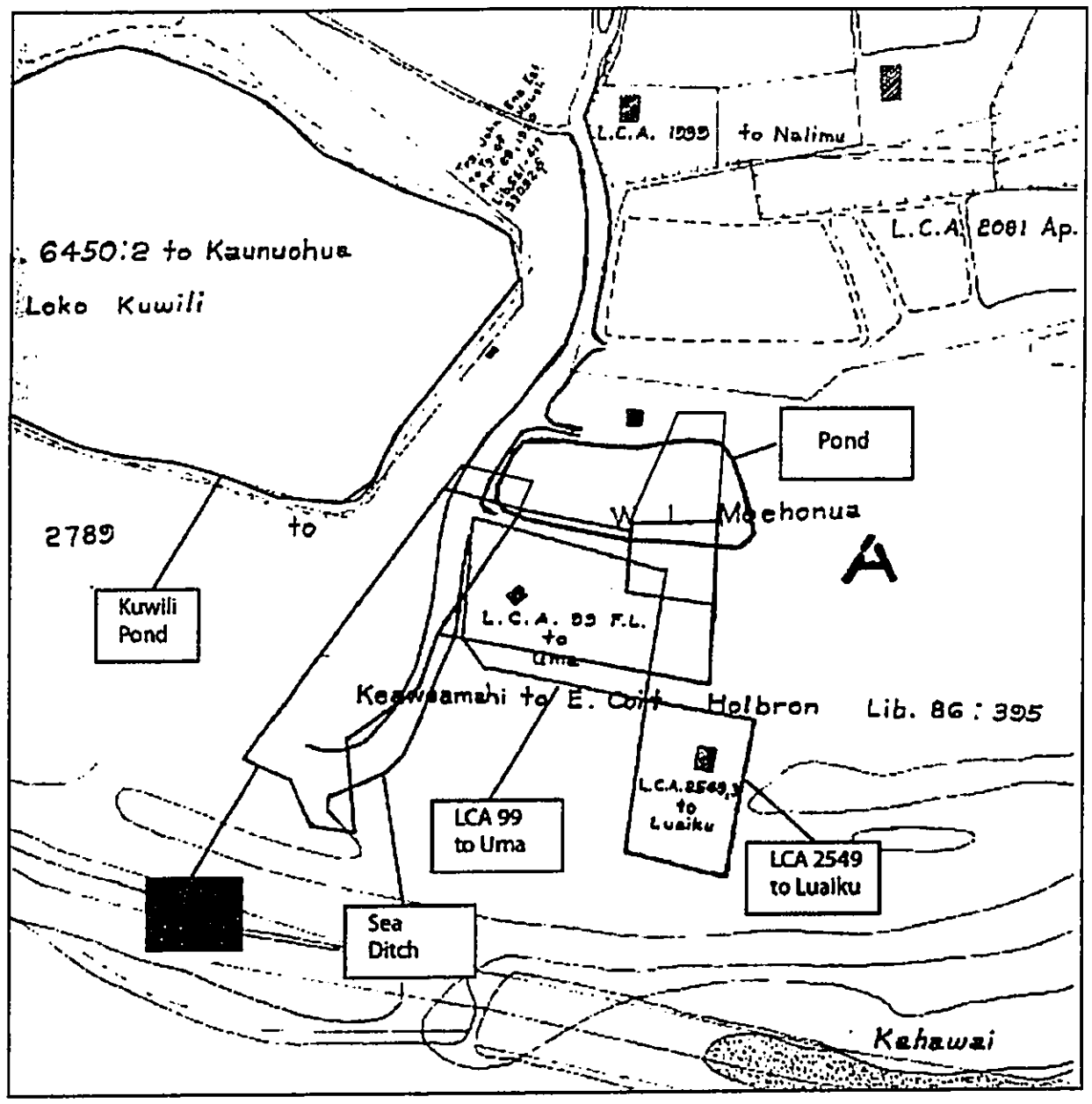

Figure 9 **Portion of 1881 Hawaiian Government survey map by S.E. Bishop showing LCA awards; project area overlain in red**

Land Court Award No. 99 was awarded to Uma, who describes it as a house lot bound by a pond on the mauka (east) side by a pond, on the north by a sea ditch, and on the north side by a sea ditch. Uma described his land thus:

The LCA adjacent to the southwest corner of Uma's land is LCA 2549, which consisted of several scattered lots awarded to Luaiku. Lot (*'āpana*) 3 was described as his house site, which had a watercourse and 4 *lo'i* (irrigated plots).

> Say! I, the one whose name is below, hereby state my little claim in Waikiki, in the 'ili of Maulukikepa. I have 4 lo'i and a section of watercourse and my house site at Kalia. 2 lo'i were from my makuahine, and a kula and her house in that kula. That is my claim which I state to you, to be worked on at the proper time. When I am directed, I will come with the proper witnesses.
>
> LUAIKU
>
> Waikiki, 30 December 1847 Apana 3, kahuahale situated in Kamooloa, ili of Kalia, Waikiki, is bounded:
>
> Mauka by the loko belonging to Mahuka
> Kekaha by the land of Nakai
> Makai by the land Kalia, of Kekuanaoa
> Honolulu by the land of Uma.

During the *Māhele*, the 'ili of Kālia in Waikīkī was one of 52 *'ili* in the Kona district of O'ahu set aside as "fort lands", which were reserved "for the use of the Fort in Honolulu to be cultivated by soldiers and other tenants under the direction of the Governor of Oahu" (Chinen 1958:27). After the *Māhele*, portions of the Government Lands were often sold as a means of obtaining revenue to meet the increasing costs of the Government. Purchasers of these lands were issued documents called "Grants" or Royal Patent Grants." On the Bishop map (see Figure 9), the area surrounding LCAs 99 and 2549:3 was owned by W. L. Moehonua through Royal Patent Grant No. 2785. W. L. Moehonua was an uncle of David Kalākaua, and husband of Kaunohua, a *kahu* (guardian) of Alexander Liholiho, Kamehameha III (Kame'eleihiwa 1992:264).

C. Mid to Late 1800s

As the nineteenth 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 nineteenth 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 nineteenth 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 nineteenth 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 1880s, 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 1800s 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-nineteenth 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* (inland) of the present Ala Wai Boulevard.

D. 1900 to Present

During the first decade of the twentieth 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 Brigadier General R. E. DeRussy of the Army Corps of Engineers.

> On November 12 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 fish ponds that covered most of the 70 acres of the Fort. The task fell to the Quartermaster Corps, and they accomplished it through the use of a hydraulic dredger that 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].

It was also during the 1920s that the lands, including the present project area, would be transformed when the construction of the Ala Wai Drainage Canal - begun in 1921 and completed eight years later - resulted in the draining and filling in of the remaining ponds and irrigated fields of Waikīkī. 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].

Dredging for the Ala Wai Canal began in 1921 and was completed seven years later. The final result was a "canal three miles long, with an average depth of twenty-five feet and a breadth of two hundred fifty feet" (*Honolulu Advertiser*, 17 October 1928:2:16). Several claims were made against the dredging company, including compensation for destroyed crops and livestock, by farmers living in Waikīkī. For instance, a Chinese tenant farmer named Chang Fow, leasing lands in Waikīkī from the Bishop Trust Company wrote a letter of complaint indicating that the salt water that leached into his lands as a result of the dredging of the canal had devastated his fishponds and stocks of ducks and chickens (letter from Chang Fow to the Bishop Trust Company, 23 May 1922, quoted in Nakamura 1979:100-101). His claims, along with those of other residents of the area, give an impression of the continuing agricultural subsistence base in Waikīkī that lasted into the 1920s, and rapidly became a thing of the past.

Nakamura (1979:85) writes that the government of the Territory of Hawai'i solicited bids, in 1920, for the dredge and fill project planned for the environs of Waikīkī. The plan was to create hundreds of acres of urban land—at the expense of wetland agriculture and aquaculture in the area. The advertisement soliciting bids for the project, put forward by Lyman H. Bigelow, masked the significance of the project by stating that "for Dredging a Drainage Canal and Filling and Reclaiming Certain Unsanitary Lands at Waikiki" (Nakamura 1979:85). He further writes that State laws were passed requiring property owners to pay for the filling in of their lands, which apparently was going to be done whether they wanted it or not. A lien would be fixed against their property and if all payment was not made on time, land would be foreclosed on. Nakamura points out that the cost was so high for some of the property owners that the bank lien could extend into a fifteen year mortgage (Nakamura 1979:89).

Once land that the Territory of Hawai'i government wanted filled in (for state buildings) was complete, any further dredged materials became the property of the dredging company—the

Hawaiian Dredging Company—and they in turn could sell the materials to the property owners, who in turn were forced to buy the product. Walter F Dillingham, of the Hawaiian Dredging Company died in 1963. *Time* magazine, in their article about him and his involvement in the project stated that ". . . Walter Dillingham used the muck dragged up from the sea to fill in low, marshy areas around Honolulu, over the years created 5,000 acres of solid ground that now holds a full third of the city's population" (cited in Nakamura 1979:112).

The land surface of modern Waikīkī is situated on the result of this decade long dredging and fill project of which the creation of the Ala Wai Canal was included. In Nakamura's (1979:113) "The Story of Waikīkī and the "Reclamation" Project" he writes that this land "reclamation" program changed the ecology of Waikīkī from a once viable and important agriculture and aquaculture center. . . destroyed by profit-seeking capitalist entrepreneurs. . . under the subterfuge of "drainage" and "sanitation." Many of the original property owners lost their land or had serious damage to their property as a result of the reclamation activities and/or the costly expense for the mandatory filling in of their properties.

Waikīkī had been changed forever by the Ala Wai Canal. The ancient irrigation systems were gone, the farms were gone, the streams were gone, the mosquitoes were gone, and Waikīkī was separated from the rest of Honolulu by a broad canal. On the new high-and-dry lands behind the hotels, developers laid out tracts of inexpensive homes and garden apartments. Almost overnight Waikīkī became urban (Grant 1996:54).

E. Development of the Project Area

Historic maps and photographs give us some information on the specific development of the present study area. The 1881 Bishop Map (see Figure 9) shows that the project area was bordered on the east by a fishpond, had a house lot in the central area, and a sea ditch running through the northern half. The map also indicates several water channels to the west, surrounding LCA 99 to Uma and the adjacent LCA 2549:3 to Luaiku. A 1914 Sanborn Fire Insurance Map (Figure 10) indicates that the area remained relatively undeveloped into the early twentieth century. There are no houses shown on this large-scale map, but it is possible that a few scattered small houses were still present in the area. The sea ditch is still shown in the northern half of the project area, but no fishponds are illustrated.

An aerial photograph (Figure 11) of the area taken in 1927 shows the general project area after the construction of the Ala Wai Canal. This photograph shows the dredge "Kewalo" carving out tidal flats along the coast. The project area is covered with white coral fill, probably material dredged from Kewalo Basin, the Ala Wai, or from the coast. The 1927 Sanborn Fire Insurance map (Figure 12, left side) illustrates the new straight Ala Wai Canal on the northern boundary of the project area, Piinaio Stream to the west, a few scattered one-story dwellings in the southern section of the project area, and a pond adjacent to the western boundary. This pond does not seem to fit the location of the fishpond described by Uma on the eastern boundary of LCA 99, rather it is within a curve of the sea ditch to the south. When the straight Ala Wai Canal was built, this inward curved section of the ditch may have been made into a pond. It is interesting to note that the dwellings to the east of the project area are built in a curve, possibly suggesting that they were built around a high curved ridge around lower ground. This lower ground may be the remains of the fishpond on the eastern border of Uma's LCA 99 plot.

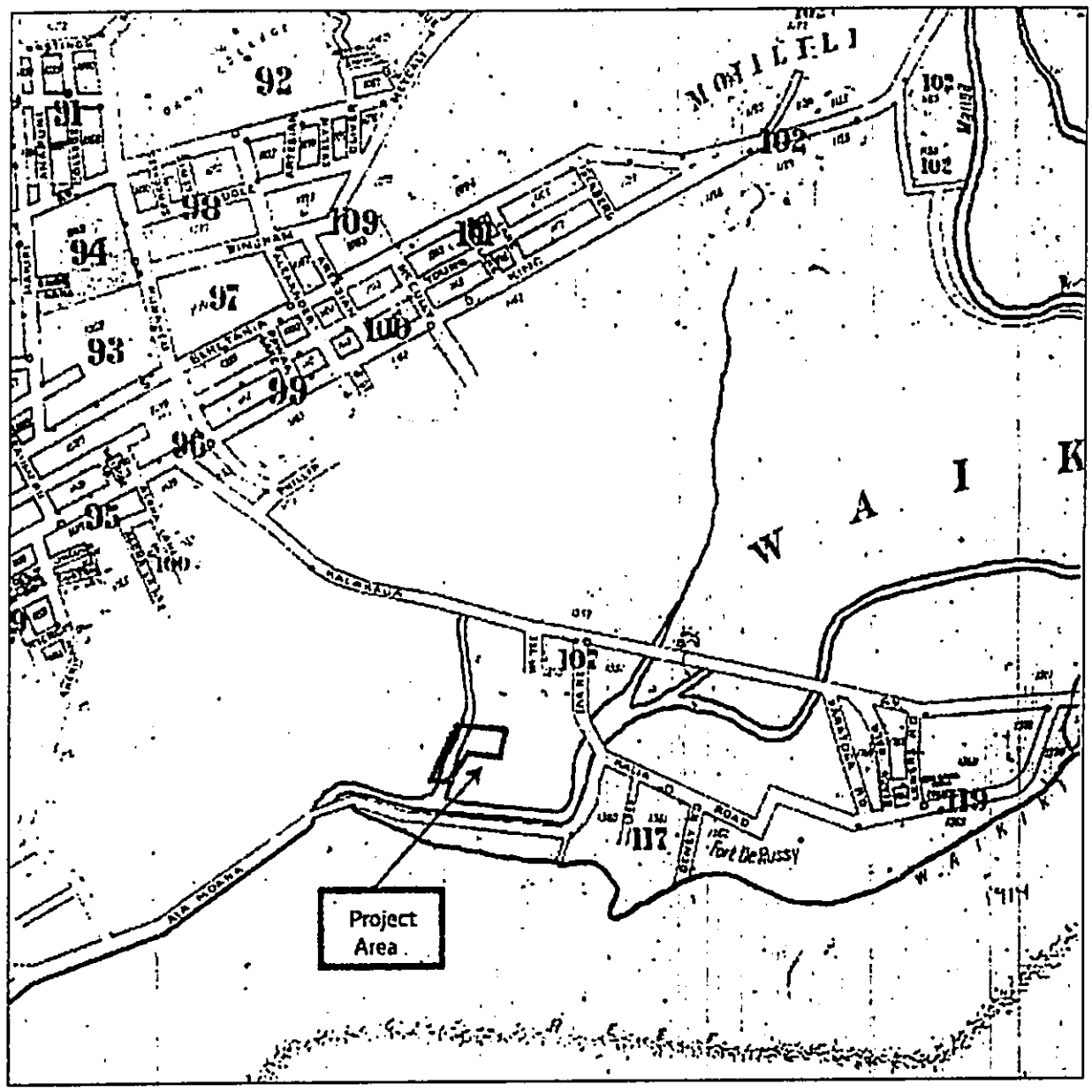

Figure 10 1914 Sanborn Fire Insurance Map Showing Overly of Project Area

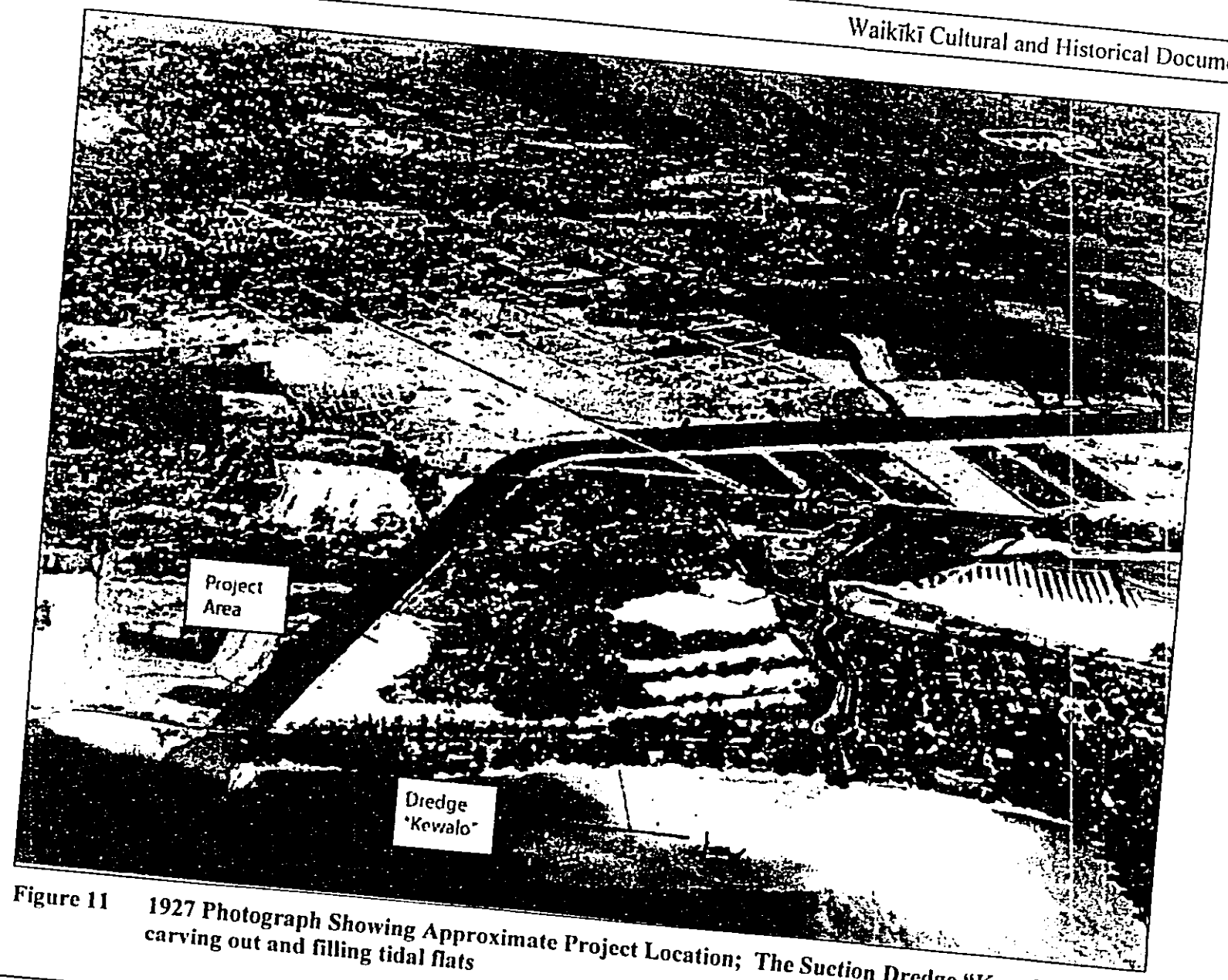

Figure 11 **1927 Photograph Showing Approximate Project Location; The Suction Dredge "Kewalo" is carving out and filling tidal flats**

CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

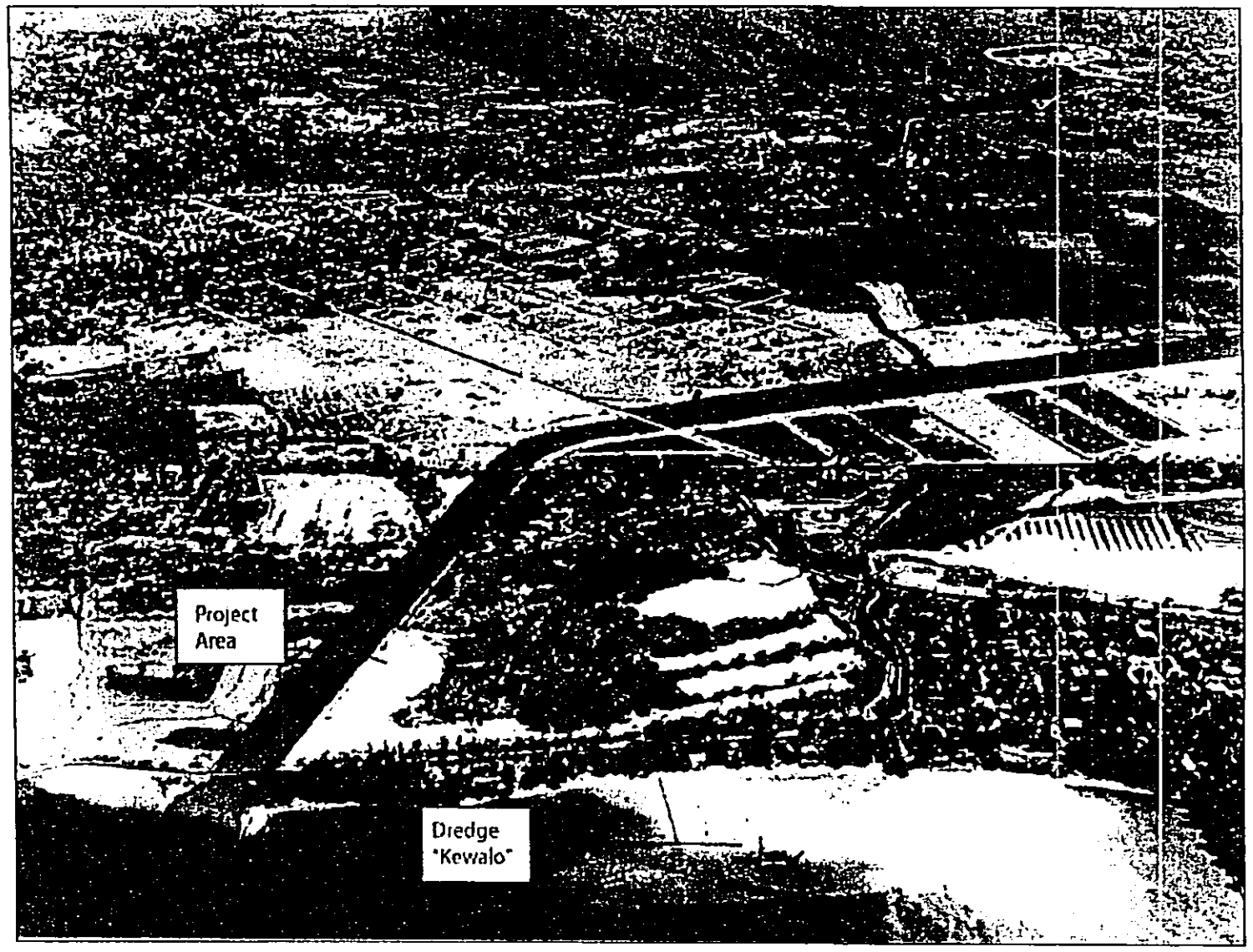

Figure 11 **1927 Photograph Showing Approximate Project Location; The Suction Dredge "Kewalo" is carving out and filling tidal flats**

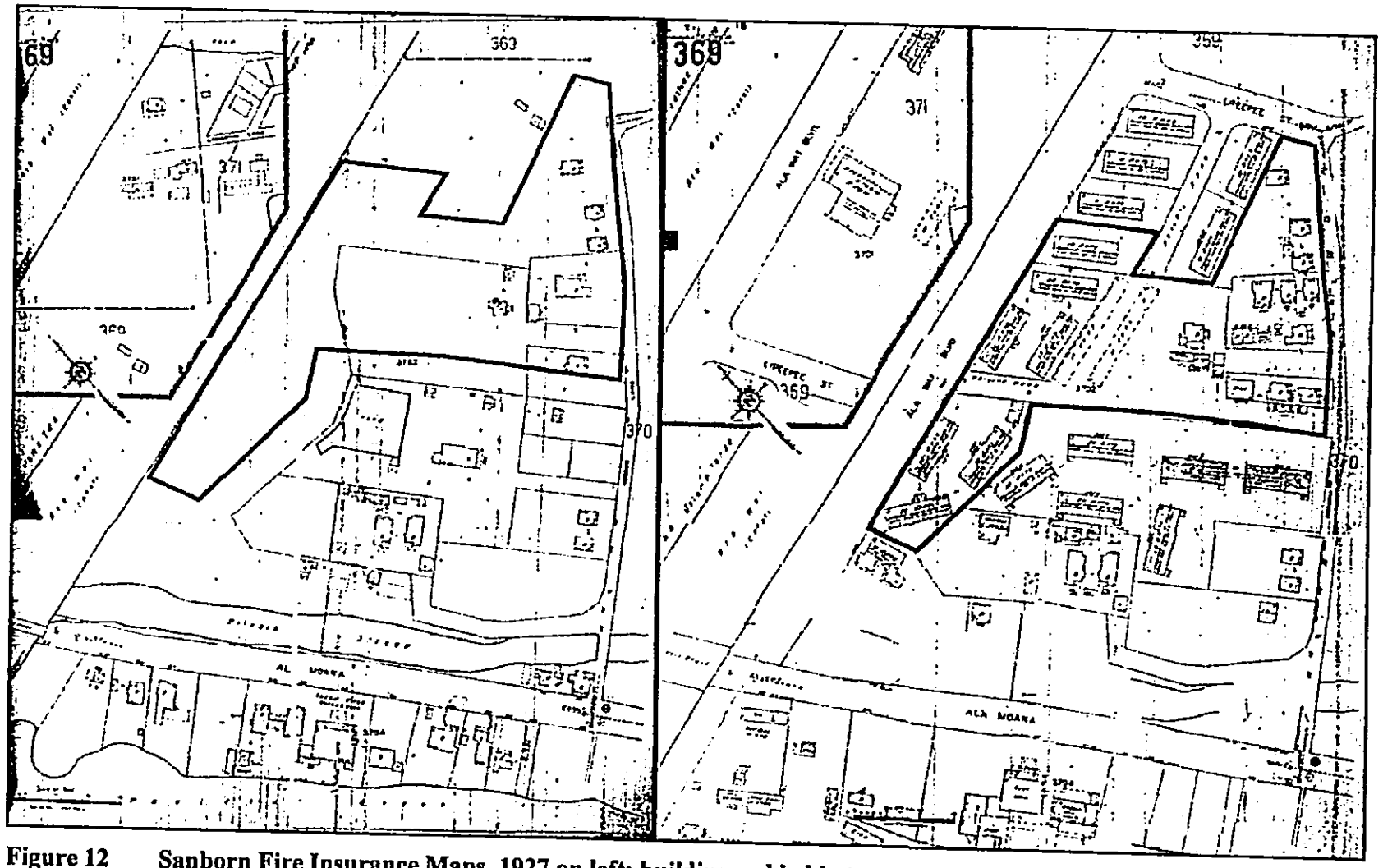

Figure 12 **Sanborn Fire Insurance Maps, 1927 on left; buildings added between 1927 and 1951 on right**

A second Sanborn fire insurance map (Figure 12, right side) illustrates buildings that were built on the property between 1927 and 1951. There are now six large apartment buildings on the north half of the lot, built between 1947 and 1949. The number of small dwellings (two-story) has increased in the southern half of the project area, along with several storage sheds. The pond on the west side has been filled in and the area on the east side is now developed with large apartment buildings. Two photographs taken from the Ala Moana Bridge also illustrate the sudden development of the area in the 1940s. A 1945 photograph (Figure 13) shows only small cottages along the northern boundary of the project area. In a 1948 photograph (Figure 14), four of the six apartment buildings on the project area can be seen. A larger aerial photograph (Figure 15), taken in 1949, shows the extensive development of the project area, with six large apartment buildings along the Ala Wai Canal, two long carport sheds, and a scatter of single-family dwellings in the southern half of the study area.

In summary, the project area in the twentieth century was drastically altered. Fishponds and other low areas were filled with material dredged from streams, ditches, and from the coast. Several single family dwellings were built before 1927, and a rapid construction of large apartment buildings took place in the mid 1940s. These constructions have obliterated any surface remnants of pre-contact to nineteenth century constructions. The upper subsurface probably has several layers of fill, from the Ala Wai Canal construction, and from the later building construction phases. Historic artifacts dating to the early twentieth century may be found in these fill layers, and pre-contact and early post-contact cultural materials may be found in intact sand deposits below these fill layers.

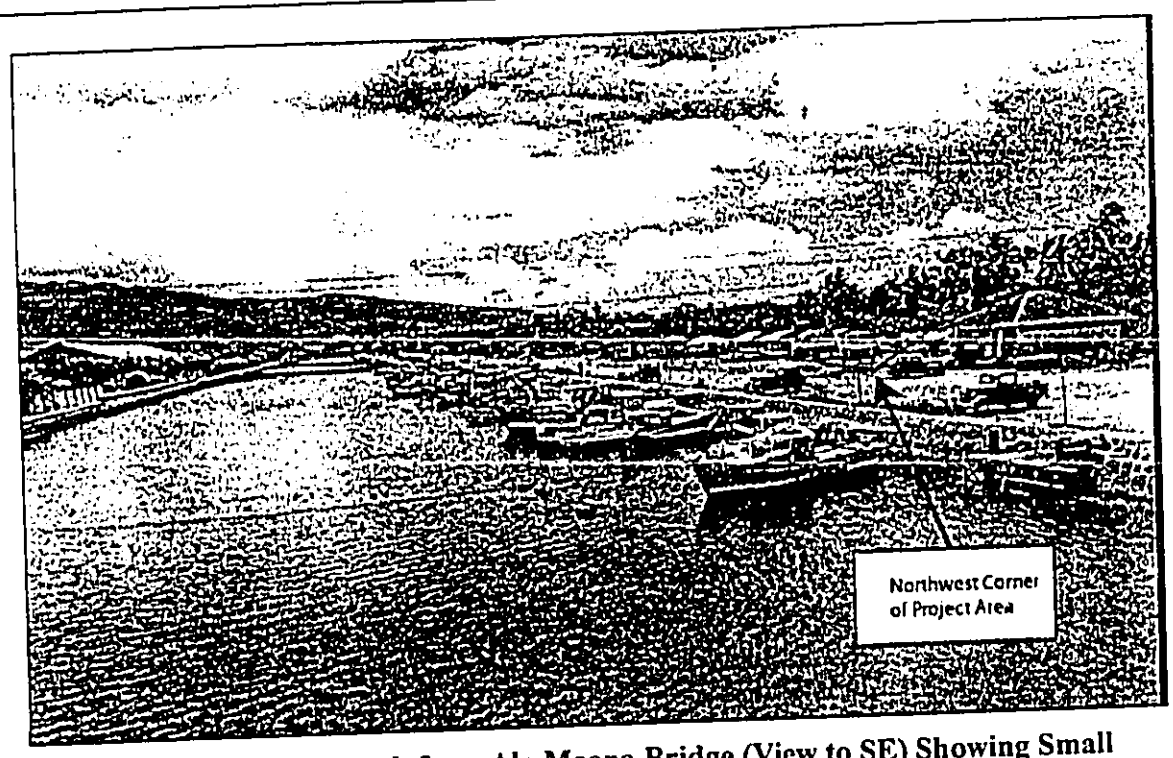

Figure 13 1945 Photograph from Ala Moana Bridge (View to SE) Showing Small Cottages Along the Ala Wai Canal within Project Area

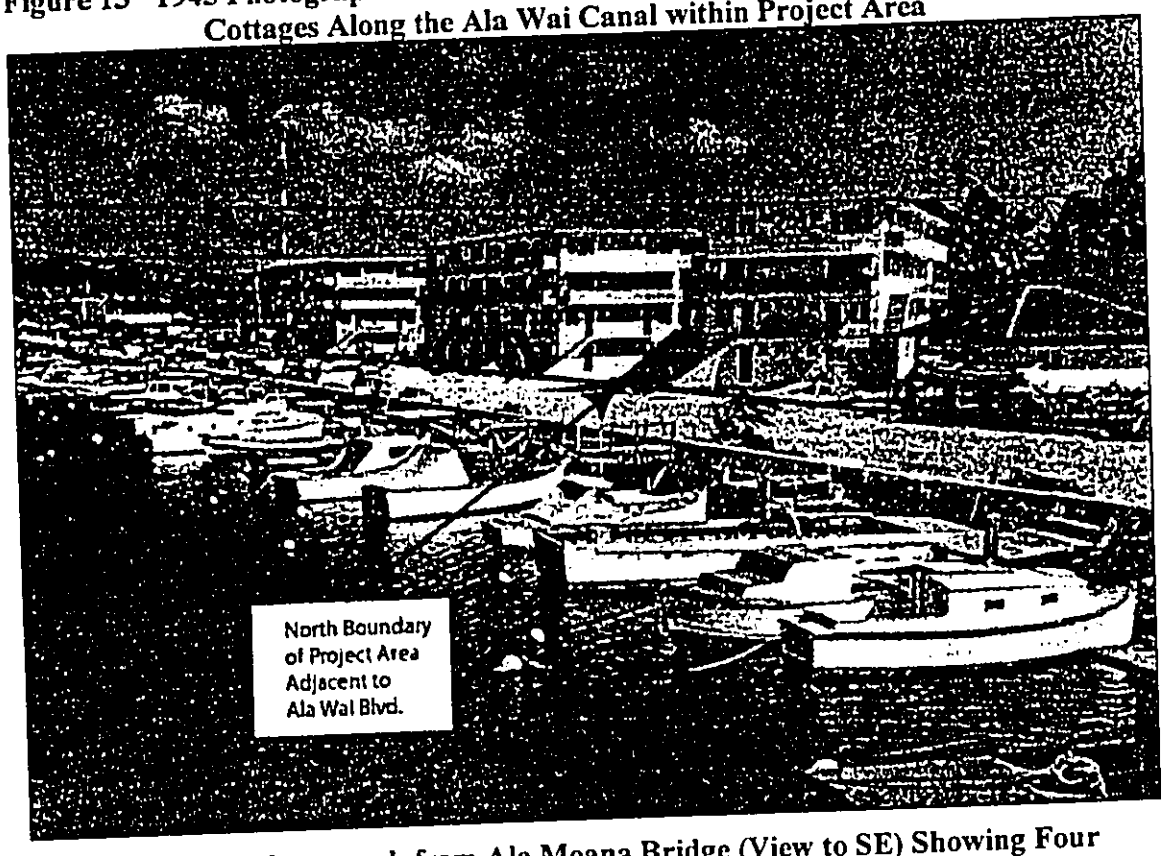

Figure 14 1948 Photograph from Ala Moana Bridge (View to SE) Showing Four Apartment Buildings Fronting the Ala Wai Canal within the Project Area

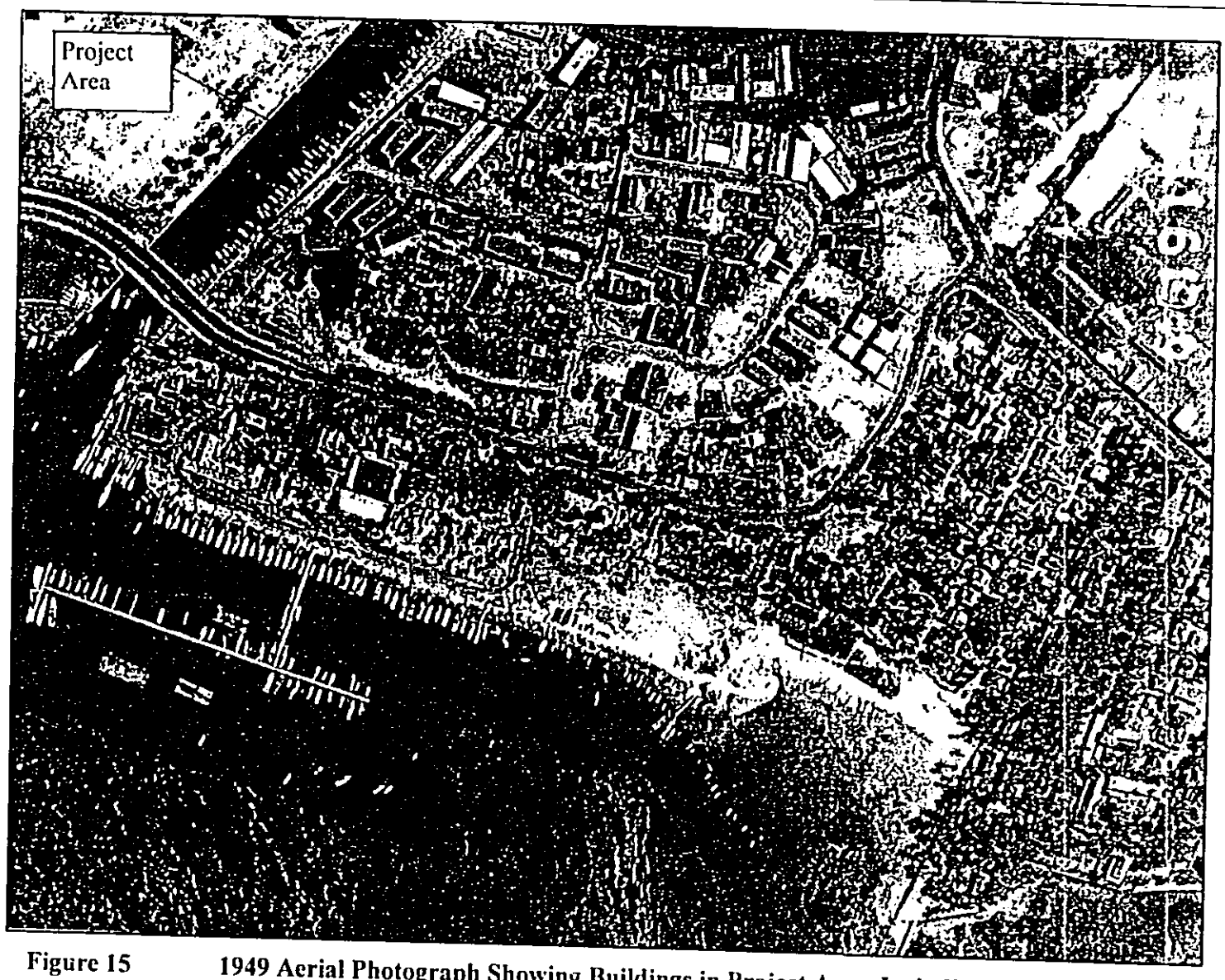

Figure 15 **1949 Aerial Photograph Showing Buildings in Project Area, Including Four Buildings fronting the Ala Wai Canal**

III. 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 12) 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 'I'ī, Kamehameha placed at Papa'ena'ena the remains of an adulterer - "all prepared in the customary manner of that time" ('I'i 1959:50-51).

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).

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	Interim Progress Report on Testing, Excavations, and Monitoring	Halekulani Hotel	Intact cultural deposits found.
Neller 1981	Reconnaissance Survey	Halekulani Hotel	Limited background research on area
Acson 1983	Historical Research, Past and Present Landmarks	'Ewa to Diamond Head end of Waikīkī	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 the 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).

Reference	Type of Investigation	General Location	Findings
Davis 1989	Reconnaissance Survey and 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	Pre-Field Background Literature Search	TMK: 2-6-014:039	List of literature pertaining to Waikīkī area.
Rosendahl 1989	Inventory Survey, Preliminary Report	Fort DeRussy	Historic artifacts, no human remains
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 and Documents 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	TMK 2-6-24:36-40, formerly a corner of the ʻĀinahau estate; remainder of parcels, former *ʻauwai*, *kalo* and rice fields; subsurface test excavations and specific sampling strategy recommended.
Davis 1991	Monitoring Report	Fort DeRussy	See also Davis 1989. No groundwater contamination found; 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 the pollen sequence were interpreted as inverted.

Reference	Type of Investigation	General Location	Findings
SHPD 1991	Public Inquiry	TMK: 2-6-024:036	Bones were determined to be non-human and part of the extensive fill material present in the area.
Simons et al. 1991	Interim Field Study, Monitoring and Data Recovery	Moana Hotel Area	Human skeletal remains, 8 burials, preliminary osteological analysis indicates pre-contact type; artifactual material recovered, both pre- and post-contact types.
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.
Pietrusewsky 1992a	PA Report	Moana Hotel	Right half of human mandible found by hotel guest.
Pietrusewsky 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; not recommended for further work, significant solely for information content.
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	Report on Inadvertent Discovery of Remains	Waikīkī Aquarium	Remains of one human individual, mandible identified.
Dagher 1993	Report on Inadvertent Discovery of Remains	Waikīkī Aquarium	Human remains of at least one person identified, excavation recommended.
Dega and Kennedy 1993	Report on Inadvertent Discovery of Remains	Waikīkī Aquarium	Discovery of unidentified bone fragments, all remains turned over to SHPD.

Reference	Type of Investigation	General Location	Findings
Hammatt and 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 and Shideler 1995	Sub-surface Inventory Surface	Hawai'i Convention Center Site, 1777 Kalākaua Ave.	No further work recommended.
Jourdane 1995	Report of 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, artifact debris, and midden materials collected from 7 occupational 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 and Shideler 1996	Data Recovery	Hawai'i Convention Center Site	No clear evidence that Kuwili Pond sediments present in project area; no further work recommended.

Reference	Type of Investigation	General Location	Findings
McDermott et al. 1996	Inventory Survey	ʻĀinahau Estate	Buried remnants of *ʻauwai* and *loʻi* and human burial found on grounds of ʻĀinahau Estate, ^{14}C dates
Denham et al. 1997	Data Recovery Report	Fort DeRussy	Excavations conducted at fishponds, ^{14}C dates mid-17th C.
Denham and Pantaleo 1997	Monitoring and Excavations Report	Fort DeRusssy	Final Report does not include SHPD recommendations. 10 subsurface features and 9 burial locations found. ^{14}C dates
Beardsley and 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 and 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 and McDermott 1999	Burial Disinterment Plan and Report	Kalākaua Avenue	Two human burials found
Perzinski et al. 1999	Monitoring Report	Along Portions of Ala Wai Boulevard, Kalākaua Avenue, Ala Moana Boulevard, and ʻEna Road	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 and 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 southwestern portion, and archaeological 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

Reference	Type of Investigation	General Location	Findings
			adequately documented.
Perzinski et al. 2000	Burial Findings	Kalākaua Ave. between Kai'ulani and Monsarrat Avenues	44 sets of human remains; 37 disinterred, 7 left in place; believed to be Native Hawaiian, 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
Elmore and Kennedy 2001	Burial Report	Royal Hawaiian Hotel	Human remains found during trench excavations for conduit. In situ remains left in place, remains disturbed reentered with others.
McGuire and Hammatt 2001	Cultural Assessment	Along Lewers St., Beach Walk, Kālia Rd. and Saratoga Rd. Proposed Waikīkī Beach Walk project (Outrigger properties renovations)	Primary cultural concern identified as inadvertent burial discovery. Cultural monitoring recommended for all subsurface work within project area.
Perzinski and Hammatt 2001a	Monitoring Report	Kapi'olani Bandstand	A charcoal layer was observed, more concentrated on the southwest side of the bandstand; recovered indigenous artifact, basalt lamp with a handle, from the southeast end of the bandstand.
Perzinski and Hammatt 2001b	Monitoring Report	Kapi'olani Park	No cultural layer, artifacts, midden or human burials were encountered during the excavations.
Perzinski and 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 archaeological and historical literature.

Reference	Type of Investigation	General Location	Findings
Winieski and 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 encountered during testing; absence of dry Jaucus 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, analysis suggests 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 and Kennedy 2002	Monitoring Report	Fort DeRussy	No findings.
Mann and Hammatt 2002	Monitoring Report	Lili'uokalani Avenue and Uluniu Avenue	5 burial finds of 6 individuals; two historic trash pits.
Putzi and Cleghorn 2002	Monitoring Report	Hilton Hawaiian Village	No findings during monitoring of trench excavations for sewer connections.
Winieski, Perzinski, Shideler and Hammatt 2002	Monitoring Report	Kalākaua Ave. between Ka'iulani and Monsarrat Avenues.	44 human burials encountered, 37 disinterred; buried habitation layer identified which contained traditional Hawaiian artifacts, midden, hearths, firepits, and charcoal concentrations; 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.

Reference	Type of Investigation	General Location	Findings
Winieski, Perzinski, Souza and Hammatt 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 and Dega 2003	Monitoring Report	Waikīkī Marriot	No in situ remains, recommends monitoring if more work to be done, one isolated not in situ possible human bone fragment. Not identifiable.
Tulchin and Hammatt 2003	Archaeological and Cultural Impact Assessment	2284 Kalākaua Ave.	Notes possibility of burials within the project area; recommends an inventory survey with subsurface testing.

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.

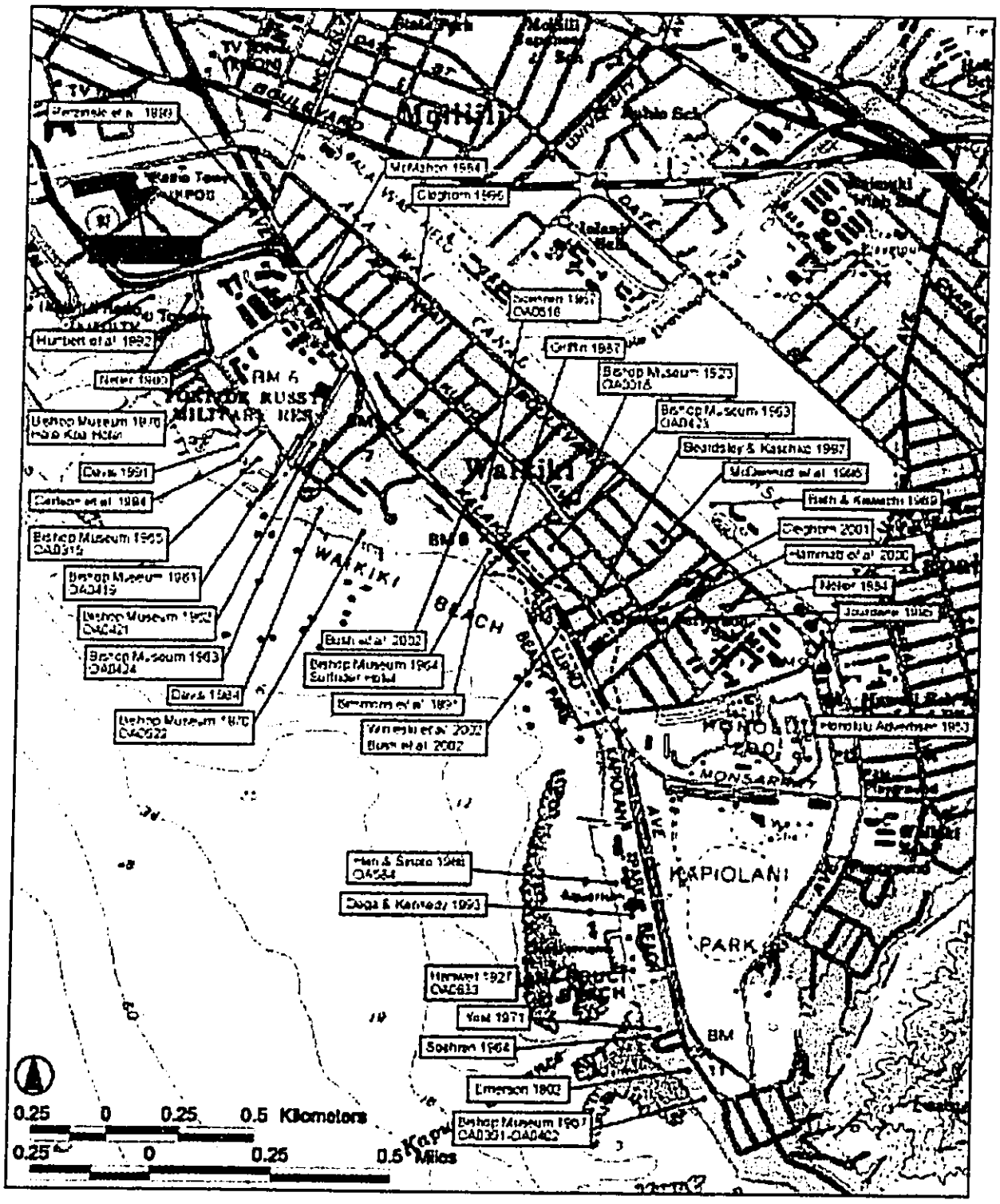

Figure 16 Previous Archaeological Work in Waikīkī Including Location of Burials

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 which 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

which 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 and 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 ʻŌhua 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 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.

IV. PREDICTIVE MODEL

The *ahupua'a* of Waikīkī in the centuries before the arrival of Europeans was an intensely used locale with abundant natural and cultivated resources - including an expansive system of irrigated taro fields - supporting a large population that included the highest-ranking *ali'i*. In the nineteenth century, after a period of depopulation, Waikīkī was reanimated by the Hawaiian *ali'i* and the foreigners residing there and by the farmers continuing to work the irrigated field system which had been converted from taro to rice. This farming continued up to the first decades of this century until the Waikīkī reclamation project drained the remaining ponds and irrigated fields.

Early nineteenth century historic maps (see Figures 7 and 8) show that the northern portion of Waikīkī, in which the current project area is located, was less intensely populated than Honolulu or the southern portion of Waikīkī. Mid-nineteenth century Land Court Award maps and documents do indicate that this area was used for habitation, fishpond agriculture, and irrigated agriculture, probably for taro. A portion of LCA 99 (see Figure 9) awarded to Uma is within the eastern half of the project area. This LCA was bound by a fishpond to the east, and a "sea ditch" to the north, and contained the house of Uma, whose family had lived on this property from the time of Kamehameha I (pre-1819, or before the year of his death). LCA 2549:3 lay just outside the boundaries of the study area. The awardee Luaiku testified that his lot contained a house, an '*auwai* (watercourse), and four *lo'i* for irrigated agriculture.

These two LCAs are between the sea to the west, a pond to the east, and a stream to the north. It is likely that areas around the ponds and streams were low-lying wetlands or marshes. The two houselots must have been on higher ground, on a sandbar that allowed for the formation of the fishpond east of the coast. According to the LCA testimony, the houselots were used for habitation, agriculture, and fishpond aquaculture. Infrequently, houselots were also used by Hawaiians for the burial of family members.

A. Human Burials

Previous and on-going archaeological reports have documented human burials - both pre-contact Hawaiian and historic - throughout the Waikīkī area (Figure 13). Perzinski et al. (1999) found three burials on the corner of Ena Road and Kalākaua Avenue, one block east of the current project area and approximately 350 m (0.2 miles) east. These burials were interpreted as probably pre-contact or early post-contact Hawaiian burials. Isolated pre-contact burials and burial clusters in Waikīkī have been found primarily in sandy deposits, just above the water table and below historic era fill materials. If there are intact Jaucus sand deposits below the nineteenth and twentieth century fills in the project area, it is possible that pre-contact burials may be found. Pre-contact burials will likely be located within pits and be associated with pre-contact habitation deposits.

Three human burials, possibly dated to the mid-1800s, were recorded by Neller in 1980 and later by Hurlbett in 1992. These burials were found one block south of the current project area, near the corner of Ala Moana Boulevard where it fronts the Hilton Hawaiian Village Complex, approximately 250 m (800 ft) south. Post-contact burials will typically be located within extended pits with possible evidence of coffin material and/or grave goods associated

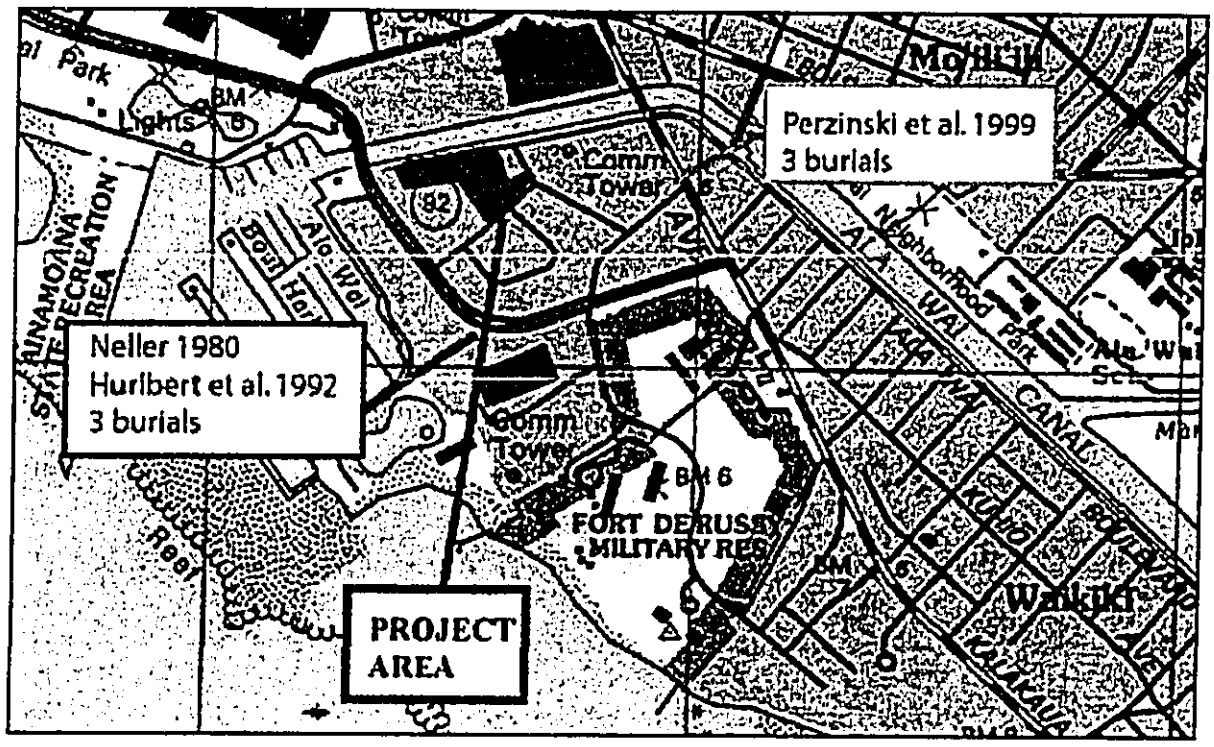

Figure 17 Previous Archaeological Projects Near Current Project Area

with the post-contact period (metal jewelry or other Asian or European objects), which may be present.

B. Pre-Contact and Early Post-Contact Agricultural and Habitation Deposits

According to mid-nineteenth century Land Court Award testimony (LCA 99 to Uma), the project area is located in an area that was once adjacent to a fishpond (on the southeastern edge of the study area), next to a ditch or stream (running through the northern half of the project area) and had a house (middle section of the project area). An adjacent LCA (LCA 2549:3 to Luaiku) also had a house, an *'auwai*, and four irrigated *lo'i* plots. It is predicted, therefore, that features related to habitation, such as a house platform, food residue, and other trash, features related to ponds, such as pond banks and berms, and features related to agriculture, such as *lo'i* (pond fields) and *'auwai* levee remnants, may be found in the project area. Habitation deposits will frequently be evident in the stratigraphy as dark-colored sand with features such as post-holes and firepits, artifacts, and food remains (marine shell, bone, and *kukui* endocarps etc.). Agricultural features such as irrigation ditches, fishponds and irrigated fields, and the sand berms that were often built along the edges of ponds and fields may be found in the trench profiles. *'Auwai* and sand berms will frequently be evident within the stratigraphy as a dip within a stratigraphic layer which could possibly be stone-lined. *Lo'i* will frequently be evident by a silty clay layer within the stratigraphy.

Following the initial years of European contact, Westerners engaged in new massive agricultural ventures. Immigrant workers from Asia were brought to Hawai'i to labor in these new agricultural ventures, and as a result rice also became a major crop in many areas. The

wetlands of Waikīkī were an ideal environment for the cultivation of rice, and the area yielded much of its traditional taro cultivation land to rice production. Features related to rice agriculture may also be present, such as fences to mark field boundaries, or other evidence.

The same area, in the early 20th century, was altered more intensely for land-reclamation plans; the resulting dredge and fill projects obliterated what remained of traditional Hawaiian cultivation processes, in Waikīkī. In the three projects conducted near the current project area (Neller 1980; Hurlbett 1992; Perzinski et al. 1999) post-contact subsurface features with nineteenth and twentieth century artifacts were also recorded, indicating the use of the area in the later post-contact period. The post-contact deposits will likely contain ceramic, metal and glass.

V. RECOMMENDATIONS

A. Summary of Anticipated Findings

In the mid-nineteenth century, a Hawaiian LCA Award with a house site for the family of a man named Uma was present in the southern half of the project area. His land claim was bounded by a fishpond on the east side and a water ditch to the north. An 1881 map (see Figure 9) also shows several water channels to the south and an adjacent LCA, awarded to Luakiu. Luakiu stated in his testimony that he not only had a house on this lot, but also an *'auwai*, used to irrigate his *lo'i* (irrigated plots, probably for taro). The pattern described above is fairly typical for much of Waikīkī. Remnants of agriculture, pre-and post-contact habitation and even burials rarely create major impediments to development, but may require time and money to resolve to the satisfaction of State regulatory agencies.

The current surface of the project area is illustrated as Fill Land (Foote et al. 1973) on O'ahu soil maps, but there may be intact sand strata below one or more fill layers. It is anticipated, based on historical research and previous archaeological projects, that evidence of pre-contact and early post-contact (predating the construction of the Ala Wai Canal beginning in 1921) habitation, agriculture, aquaculture, and possibly burial practices may be found in the project area if intact Jaucus sand deposits remain below nineteenth and twentieth century fill layers. In the 1920s, single-family residences followed by large apartment complexes were built on the lot. It is also anticipated that historic artifacts post-dating 1920, after the completion of the Ala Wai Canal, may be found in twentieth century fill layers.

B. Recommendations

Our recommendations for the project area include an archaeological inventory survey with subsurface testing. Based on past experience, the subsurface testing would utilize a backhoe to more efficiently document subsurface cultural features. Subsurface testing would focus on the paleo-environmental data from the fishpond sediments and habitation-related data from the general location of the mid-nineteenth century LCA house site. Based on the inventory survey results, the SHPD could require additional research in the form of data recovery. Again, based on the results, SHPD may require additional reports, such as a preservation plan and/or a burial treatment plan.

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Appendix A

APPENDIX V

BOTANICAL RESOURCES ASSESSMENT

CHAR & ASSOCIATES
Botanical / Environmental Consultants
4471 Puu Panini Ave.
Honolulu, Hawaii 96816
(808) 734-7828

18 July 2004

CM&D
c/o Kusao & Kurahashi, Inc.
Manoa Market Place
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

Attention: Keith Kurahashi

SUBJECT Ala Wai Gateway
Botanical Resources Assessment Study

Dear Mr. Kurahashi:

The proposed Ala Wai Gateway project site consists of two parcels, TMK 2-6-011: 002 and TMK 2-6-011: 004, bounded by Ala Wai Boulevard to the north and Hobron Lane to the south. Apartment developments are found on the eastern and western borders.

TMK 2-6-011: 002, Parcel 2, is the smaller of the two parcels (13,786 square feet) and is covered by an asphalt parking lot. TMK 2-6-011: 004, Parcel 4, is 116,395 square feet. About one-half of this parcel is paved with asphalt and the remaining half is open, grassy lawn with a few plantings.

Field studies to assess the botanical resources on the proposed Ala Wai Gateway project site were conducted on 15 July 2004. The primary objectives of the field studies were to:

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

Description of the Vegetation

The plant names used in this report follow Wagner et al. (1990) and Wagner and Herbst (1999). The few recent name changes are those reported in the Hawaii

Biological Survey series (Evenhuis and Eldredge, eds., 1999-2002).

Vegetation is only found around the perimeter of the asphalt-covered areas. Along the chainlink fences which run along the perimeter of the asphalt-covered parking areas, there is a weedy mixture of weedy, mostly annual species. The most frequently observed plants include swollen fingergrass (Chloris barbata), coat-buttons (Tridax procumbens), Natal redtop grass (Melinis repens), Chinese violet (Asystasia gangetica), false mallow (Malvastrum coromandelianum), Boerhavia coccinia, and graceful spurge (Chamaesyce hypericifolia).

A few large trees of 'opiuma (Pithecellobium dulce), 35 to 40 feet tall, and two coconut palms (Cocos nucifera) are found between the asphalt-covered areas on Parcel 2 and Parcel 4. Many young trees of 'opiuma, 12 to 15 feet tall, have become established under the taller trees. A tangle of Chinese violet and vines of Coccinea grandis and a Cissus species are found on the fence under the row of 'opiuma trees.

A building and garage structure are found on the east side of Parcel 4. To the south of the structure is a small, weedy, open area with low patches of common sandbur (Cenchrus echinatus), creeping indigo (Indigofera hendecaphylla), Bermuda grass (Cynodon dactylon), lovegrass (Eragrostis amabilis), hairy horseweed (Conyza bonariensis), swollen fingergrass, and spiny amaranth (Amaranthus spinosus); the substrate is a mix of dirt and gravel. Around the structure, there are a few woody components. These include trees of 'opiuma, pink tecoma (Tabebuia pentaphylla), and a small tree of Chinese banyan (Ficus microcarpa), about 20 feet tall. Shrubs of koa haole (Leucaena leucocephala), guava (Psidium guajava), and a row of panax (Polyscias guilfoylei) area also found here.

A row of coconut palms marks the edge of the north end of the asphalt-covered parking lot on Parcel 4. Other woody elements found here include 'opiuma, pink tecoma, and fiddlewood (Citharexylum caudatum).

The open, grassy lawn area on the northern half of Parcel 4 is composed primarily of Bermuda grass and swollen fingergrass along with low, mat-forming weedy species which include creeping indigo, Sida ciliaris, lovegrass, hairy spurge (Chamaesyce hirta), khaki weed (Alternanthera pungens), and three-flowered beggarweed (Desmodium triflorum). Taller species such as Guinea grass (Panicum maximum) and shrubs of koa haole, sourbush (Pluchea carolinensis), and Indian pluchea (Pluchea indica) are less then a foot tall due to the periodic mowing. Scattered patches of sparsely vegetated red soil are common.

Remnant landscape plantings besides the coconut and pink tecoma trees include a variegated Hibiscus cultivar, wedelia (Sphagneticola trilobata), and panax. Along the western perimeter of Parcel 4 are single, large specimens of Cook pine (Araucaria columnaris), coral tree (Erythrina variegata), and 'ulu or breadfruit (Artocarpus altilis).

Discussion

The Ala Wai Gateway project site has been disturbed for a long time and is situated in an urban environment. The site is graded and much of it is covered by asphalt pavement. The open, grassy area supports a few landscape plantings. The vegetation on the two parcels which make up the project site is composed almost exclusively of introduced or alien species. Introduced species are all those plants which were brought to the islands by humans, intentionally or accidentally, after Western contact, that is, Cook's arrival in the islands in 1778. The coconut and 'ulu are originally of Polynesian introduction. The only native species observed on the site is the 'uhaloa (Waltheria indica). 'Uhaloa is indigenous, that is, it is native to Hawai'i and the tropics. In Hawai'i, it occurs in dry, often disturbed sites.

None of the plants found on the Ala Wai Gateway project site is a threatened and endangered species or a species of concern (U.S. Fish and Wildlife Service 1999a, 1999b; Wagner et al. 1999). There are no native plant-dominated communities on the project site. This is not surprising given the location of the project site.

The proposed development of the site is not expected to have a significant negative impact on the botanical resources. However, a few of the larger trees should be preserved. The single specimens of Cook pine, 'ulu, and coral tree along the boundary of Parcel 4 should be retained in place. The coconut palms can be transplanted and reused in the new landscaping for the project. The 'opiuma, pink tecoma, and Chinese banyan are considered somewhat weedy tree species. These can be replaced with other, more ornamental species.

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

Sincerely,

Winona P. Char

Winona P. Char
Principal Investigator

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APPENDIX VI

FAUNAL STUDY

AVIFAUNAL AND FERAL MAMMAL FIELD SURVEY FOR THE ALA WAI GATEWAY PROJECT, WAIKIKI, OAHU

Prepared for:

Kusao and Kurahashi, Inc.

Prepared by:

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22 July 2004

INTRODUCTION

This report presents the findings of a one day (20 July 2004) field survey of birds and mammals at TMK 2-6-011:002 and TMK 2-6-011:004 (Ala Wai Gateway Project, Waikiki, Oahu. References to pertinent published and unpublished sources are also included to provide a broader perspective of birds and mammals known from urban Honolulu. The goals of the field survey were to:

1- Document the species of birds and mammals presently found on or near the property.

2- Note in particular native and migratory species.

GENERAL SITE DESCRIPTION

This site is surrounded by urban development. Scattered trees and some grass covered areas comprise the available wildlife habitats. Apartment buildings cover a significant portion of the property.

METHODS OF THE FIELD SURVEY

The property was surveyed by walking through the entire site. The survey was conducted both early and late in the day when birds were most active and detectable. All species of birds and mammals seen on the survey were recorded. Scientific and common

names of birds and mammals used in this report follow Pyle (2002) and Honacki et al. (1982). These sources follow the current taxonomy.

RESULTS OF THE FIELD SURVEY

Native Land Birds:

No native land birds were recorded nor would any be expected in this area due to its location and elevation (Pratt et al. 1987, Hawaii Audubon Society 1997).

Native Waterbirds:

No native waterbirds were found on the survey. The absence of wetland habitat at this site precludes the occurrence of these species. Black-crowned Night Heron (*Nycticorax nycticorax*) can be seen foraging along the Ala Wai Canal located near this property (Bruner 1997).

Seabirds:

The White Tern (*Gygis alba*) nest in large trees in Waikiki and elsewhere in urban Honolulu. It is listed by the State of Hawaii Department of Land and Natural Resources Division of Forestry and Wildlife (DOFAW) as threatened on Oahu. They are not federally listed as threatened or endangered. VanderWerf (2003) has recently determined the abundance, distribution, and breeding biology of White Terns on Oahu. The nesting

season in the Waikiki area is generally January through June but some pairs will nest at any month of the year (VanderWerf pers. comm.). Hawaii Audubon Society (1997) notes that "most adults arrive in February and depart by September, but some pairs remain on O'ahu year round and nest two or three times". No White Terns were found nesting on this property. They generally prefer large trees with open and easily accessible branches. The trees on this property are probably too small and dense to be attractive nesting sites for White Terns.

Migratory Shorebirds:

No migratory shorebirds were tallied on this survey. This was not unexpected because at this time of year shorebirds are on their breeding grounds in the arctic. The portion of the site without buildings contains habitat suitable for foraging Pacific Golden-Plover (*Pluvialis fulva*). They prefer lawns and open areas where they forage for insects. This species is not threatened or endangered. The Hawaiian name for Pacific Golden-Plover is Kolea. The biology of this species has been extensively studied (Johnson et al. 1981, 1989, 1993, 2001a, 2001b, 2004).

Alien (Introduced) Birds:

A total of ten alien species of birds were tallied on the survey. Table One gives the names of these birds. None of these birds are listed as threatened or endangered. The array of species found on the survey was typical of what might be expected at this location (Hawaii Audubon Society 1997, Bruner 2004).

Mammals:

One Roof Rat (*Rattus rattus*) was seen in a tree during the survey. This alien and ubiquitous rodent causes damage not only to agricultural crops but is a significant nest predator (Tomich 1986). No mice (*Mus musculus*) were observed but likely occurs on this site. In addition, the Norway Rat (*Rattus norvegicus*) can be found in Waikiki and may frequent the property. Feral cats (*Felis catus*) occur in Waikiki and may also occur the property, although none were observed on the survey.

CONCLUSIONS

The typical array of alien birds found in this region of Oahu were observed on the survey. No unexpected species were noted. The absence of native land birds and waterbirds was expected due to an absence of appropriate habitat for these species. The migratory Pacific Golden-Plover may forage in the open areas on the site during August through April. Feral mammal observations were limited to the Roof Rat but other alien mammals likely occur on the property. The development of this property should not significantly alter the relative abundance of alien birds in Waikiki. VanderWerf (pers. comm..) suggested that because the White Tern is not federally listed that concerns about any possible impact the proposed development may have on this species should be directed to David Smith, Oahu Biologist with DLNR DOFAW (808) 973-9787. This survey did not find any White Terns using the trees on this site.

TABLE ONE

Alien (Introduced) birds recorded on a field survey of TMK 2-6-011:002 and TMK 2-6-011:004, Waikiki, Oahu.

COMMON NAME	SCIENTIFIC NAME
Rock Dove	*Columba livia*
Spotted Dove	*Streptopelia chinensis*
Zebra Dove	*Geopelia striata*
Red-vented Bulbul	*Pycnonotus cafer*
Re-whiskered Bulbul	*Pycnonotus jocosus*
Japanese White-eye	*Zosterops japonicus*
Common Myna	*Acridotheres tristis*
Red-crested Cardinal	*Paroaria coronata*
House Sparrow	*Passer domesticus*
Java Sparrow	*Padda oryzivora*

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VanderWerf, E.A. (Ecological Services USFWS Honolulu)

APPENDIX VII

ENVIRONMENTAL NOISE ASSESSMENT

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

Project No. 04-57

ENVIRONMENTAL NOISE ASSESSMENT REPORT
ALA WAI GATEWAY RESIDENTIAL PROJECT
HONOLULU, O'AHU, HAWAII

July 2004

Prepared for
Construction Management & Development, Inc.
Honolulu, Hawaii

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CONTENTS

1.0 EXECUTIVE SUMMARY

1.1 The Ala Wai Gateway residential project is proposed to offer approximately 228 units in a residential tower condominium. Any existing structures will be demolished prior to erecting the new building.

1.2 Continuous ambient noise levels on the existing property were measured at two locations for approximately 4 days. One noise measurement location (Location 1) was near Hobron Lane, approximately 35 feet from the center of the road. The second location (Location 2) was near the existing private road in the middle of the property, approximately 135 feet from the centerline of Ala Wai Boulevard. The results from the noise measurements show a daytime average L_{eq} noise level of 62 dBA at Location 1, and 56 dBA at Location 2. The nighttime average L_{eq} was 58 dBA at Location 1 and 52 dBA at Location 2. Dominant sources of noise at the project site generally include vehicular traffic in the area, occasional aircraft flyover, pedestrians, and nearby construction noise.

1.3 During the construction phase of the project, typical construction noises will be audible in the area. Noise from construction activities must comply with State Department of Health noise regulations as specified for construction related activities.

1.4 After construction is complete, noise generated by the residential tower must meet the State Department of Health noise regulations, which allow adjustments for existing ambient noise levels.

1.5 Noise from vehicular traffic in the area due to the project is not expected to significantly increase over the existing ambient noise levels. The increase in project generated traffic noise was calculated to be less than 1 dB.

2.0 PROJECT DESCRIPTION

The Ala Wai Gateway project proposes to add approximately 228 residential units in a condominium tower, located in Waikiki. The new condominium tower will have typical residential services, such as indoor/outdoor parking, outdoor pool, etc. Commercial or retail shops are not included in the design.

During construction, the project site will be closed to the public. Typical construction equipment will be on-site throughout the construction of the new tower.

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, Department of Health, Community Noise Control

The State of Hawaii Department of Health Community Noise Control Statute [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., and equipment related to agricultural, construction, and industrial activities. These 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 1. With respect to mixed zoning districts, the statute specifies that the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level.

For special conditions where the ambient sound level is greater than the maximum permissible sound level, the DOH allows for an adjustment of the maximum level. The DOH will consider the ambient noise level as the maximum permissible sound level.

3.2 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 2]. 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.

3.3 U.S. Federal Highway Administration (FHWA)

The FHWA defines four land use categories and assigns corresponding maximum hourly equivalent sound levels, L_{eq}, for traffic noise exposure [Reference 3], which are listed in Figure 2. 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.

3.4 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 4]. 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.

4.0 EXISTING ACOUSTICAL ENVIRONMENT

Ambient noise level measurements were conducted simultaneously at two locations from July 19, 2004 to July 23, 2004. The first measurement location was near Hobron Lane, and the second was near the existing private road in the middle of the property. The measurement locations are shown in Figure 3. At each location, the microphone was mounted on a tripod, approximately 5' above grade, and the sound level meter was secured in a weather resistant case.

Continuous, hourly, equivalent sound levels, L_{eq}, were recorded during the measurement period. The measurement was 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 results are graphically presented in Figures 4 and 5, which show the measured equivalent sound levels, L_{eq}, in A-weighted decibels (dBA). The sound levels generally ranged between 50 dBA during the nighttime or early morning hours to 65 dBA during

the daytime and high traffic times. The daytime average L_{eq} was 62 dBA at Location 1 and 56 dBA at Location 2. The nighttime average L_{eq} was 58 dBA at Location 1 and 52 dBA at Location 2. The 3-day average day-night level, L_{dn}, was 65 dBA at Location 1 and 59 dBA at Location 2. The day-night level is a 24 hour measurement that assigns a 10 dB penalty for noises during the nighttime hours (10:00 p.m. to 7:00 a.m.).

The existing sound levels exceed the DOH maximum permissible noise levels of 55 dBA during the daytime hours and 45 dBA during nighttime hours. Therefore, the maximum permissible noise levels should be increased to existing measured noise levels.

Presently, the dominant sources of noise include vehicular traffic in the area, an occasional aircraft flyover, pedestrians, and nearby construction. Other noise sources include wind, birds, and other urban environment activities.

5.0 POTENTIAL NOISE IMPACTS DUE TO THE PROJECT

5.1 Project Construction Noise & On-Site Equipment

Development of project areas will involve excavation, grading, and pile driving during construction of the new building. The various construction phases of the project may generate significant amounts of noise. The surrounding residences and businesses may be impacted by the construction noise due to their proximity to the project. 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 6.

5.2 Noise Generated By the Condominium Tower

The new residential tower will incorporate mechanical equipment that is typical for residential housing. Expected mechanical equipment may include air handling equipment, chillers, generators, etc. Noise from this mechanical equipment and other equipment must meet the Department of Health noise rules and regulations. Since the existing ambient noise levels exceed the DOH noise limits, the allowable noise limits should be increased to the measured noise levels.

5.3 Project Generated Traffic Noise

The Ala Wai Gateway project will provide housing for many residents. Although the project will attract more people and residents to the area, vehicular traffic in the area is not anticipated to significantly increase. Therefore, noise due to project generated vehicular traffic in the area should not significantly increase. We calculated that the increase in noise level due to project generated vehicular traffic will be less than 1 dB.

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 engine machines, 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 must be restricted to 9:00 a.m. to 5:30 p.m., Monday through Friday.

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 to ensure that the time constraints within the DOH permit are followed.

Most construction equipment falls under the terms and conditions of the Hawaii DOH issued noise permit. This permit allows noisy construction activities to take place during the daytime hours (see the specific hours reference above). However, any activities that require overnight operation or operation outside of the permit hours, such as a water pump or electric generator for lights, must meet the State's maximum permissible sound limits according to the applicable zoning district class. Temporary enclosures or barrier walls may be required to adequately mitigate noise from this equipment. If it is not feasible or practical to meet the State's noise limits, the Contractor may apply for a noise variance with the Hawaii DOH.

6.2 Mitigation of Condominium Tower Noise

The design of the new residential tower should give special consideration to controlling the noise emanating from stationary mechanical equipment so as to comply with the State Department of Health *Community Noise Control* rules. Noisy equipment should be located away from neighbors and the residential units. Enclosed mechanical rooms may be required for some equipment.

6.3 Mitigation of Project Generated Traffic Noise

Noise from vehicular traffic on Hobron Lane and other surrounding roads is not expected to significantly increase due to the project. Therefore, noise mitigation of vehicular traffic should not be required for the project.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

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6.3 Mitigation of Project Generated Traffic Noise

Noise from vehicular traffic on Hobron Lane and other surrounding roads is not expected to significantly increase due to the project. Therefore, noise mitigation of vehicular traffic should not be required for the project.

7.0 REFERENCES:

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

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

3. *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.

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

5. *Federal Highway Administration's Traffic Noise Model,* FHWA-RD-77-108; U.S. Department of Transportation, December 1978

APPENDIX A

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

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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.

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 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.

Equivalent Sound Level

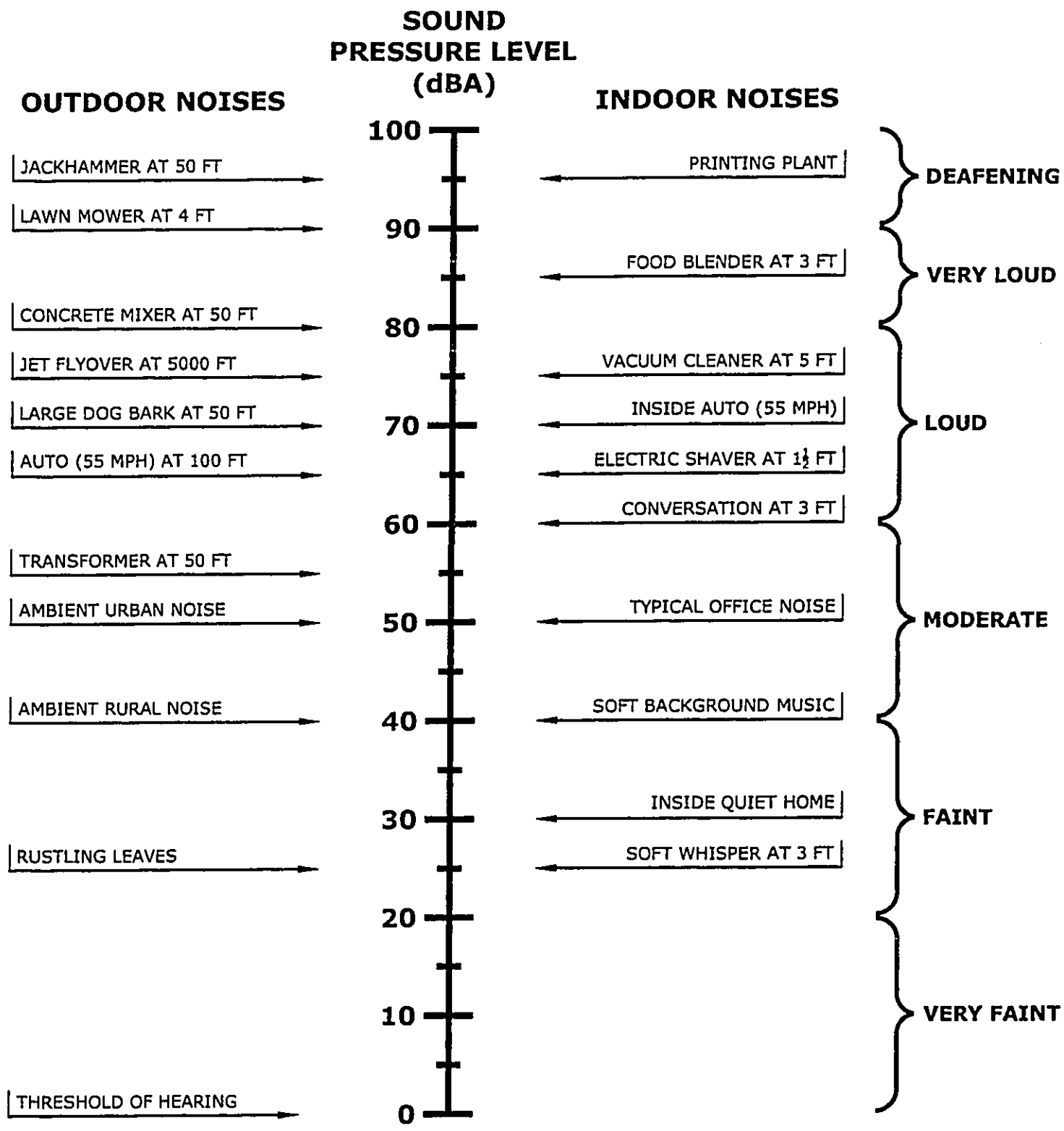
The Equivalent Sound Level (L_{eq}) is a type of average which represents the steady level that, integrated over a time period, would produce the same energy as the actual signal. The actual *instantaneous* noise levels typically fluctuate above and below the measured L_{eq} during the measurement period. 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.

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.



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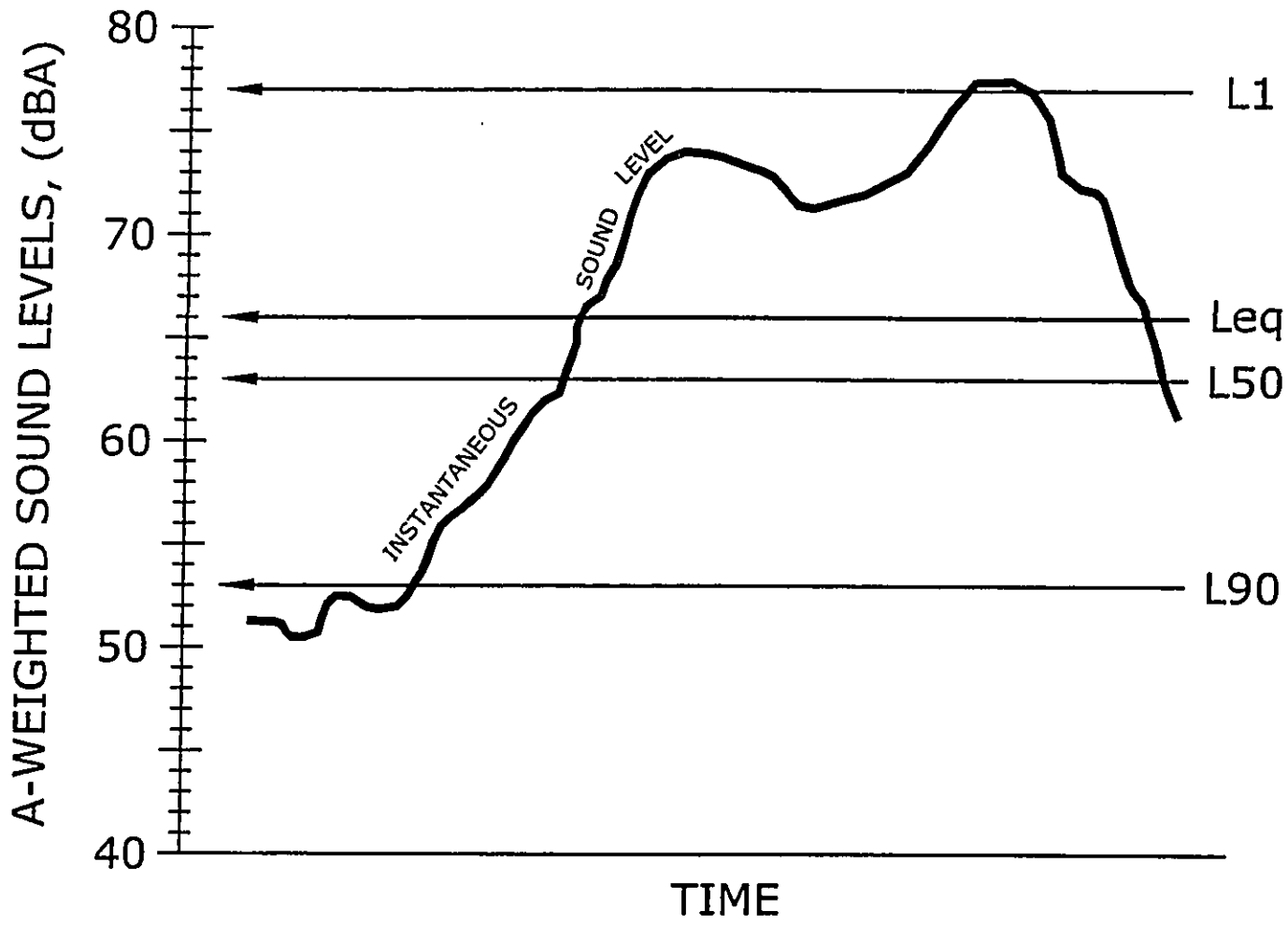
Common Outdoor/Indoor Sound Levels

Ala Wai Gateway

not to scale

Date	Project No.	Drawn By
July 2004	04-57	TRB

Figure No
A-1



Example Graph of Equivalent Sound Level and Statistical Sound Levels

Ala Wai Gateway

not to scale

Figure No
A-2

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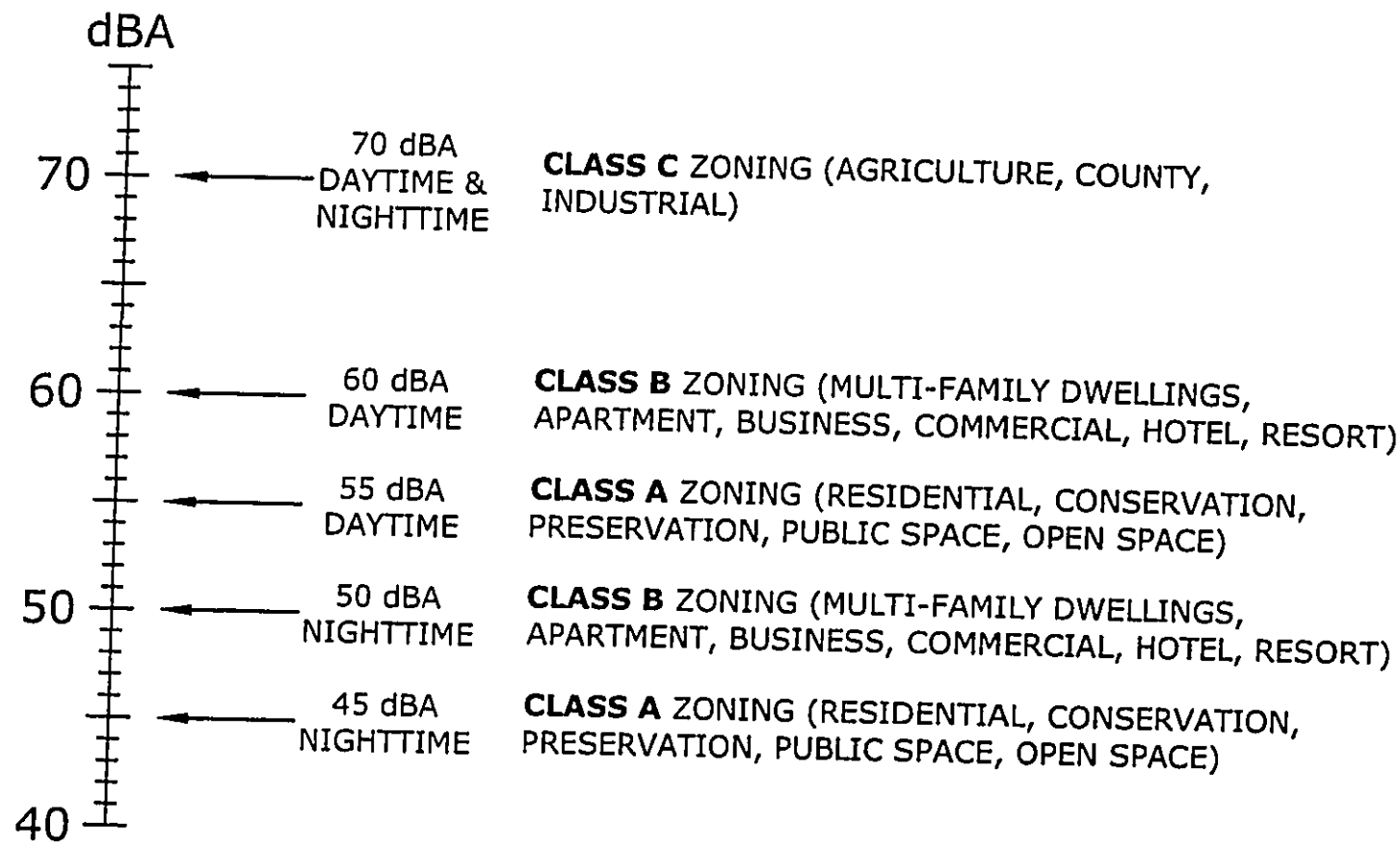
Date	Project No.	Drawn By
July 2004	04-57	TRB



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State of Hawaii & Honolulu Liquor Commission Maximum Permissible Sound Levels for Various Zoning Districts

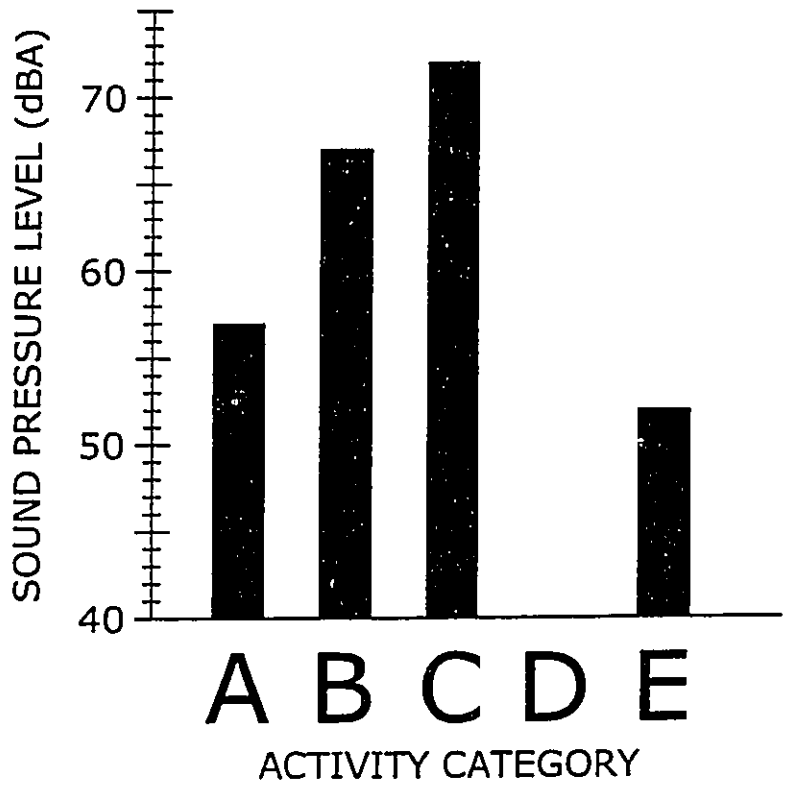
Ala Wai Gateway

not to scale

Date	Project No.	Drawn By
July 2004	04-57	TRB

Figure No 1

ACTIVITY CATEGORY	ACTIVITY CATEGORY DESCRIPTION	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, ACHOOLS, 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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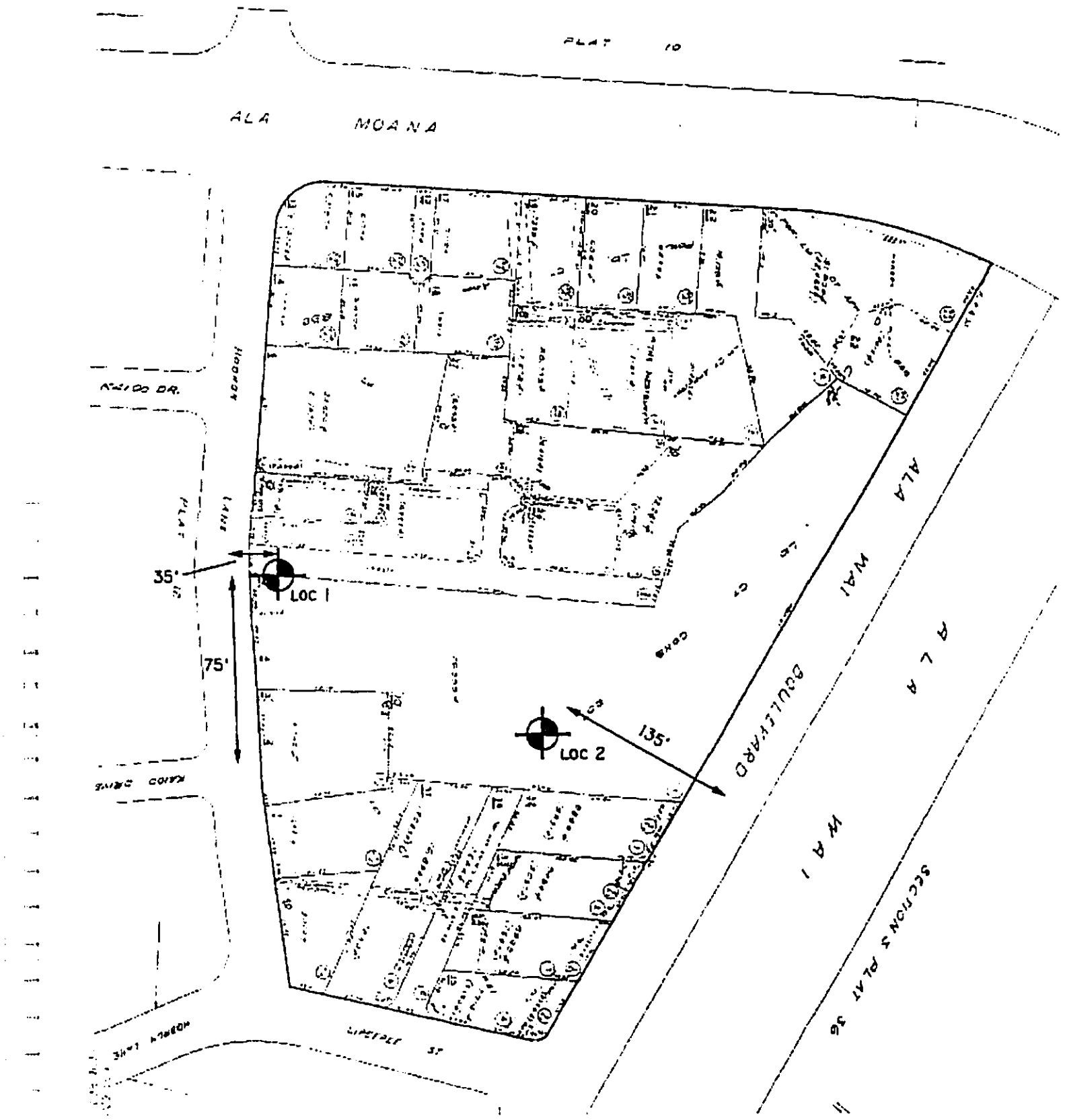
Federal Highways Administration Recommended Equivalent Hourly Sound Levels Based on Land Use [Reference 3]

Ala Wai Gateway

not to scale

Date	Project No.	Drawn By
July 2004	04-57	TRB

Figure No 2



Noise Measurement Locations

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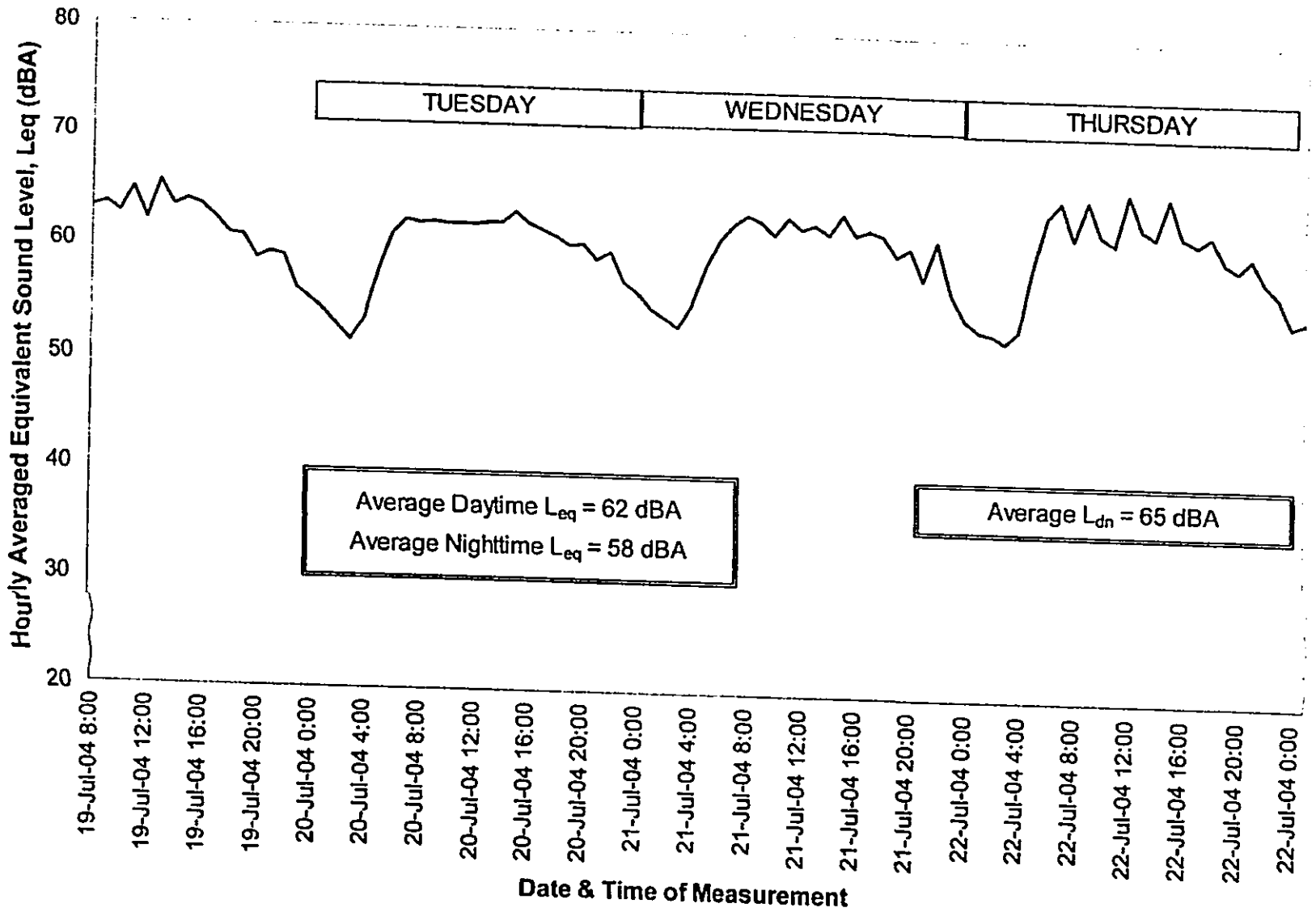
Ala Wai Gateway

not to scale

Date	Project No.	Drawn By
July 2004	04-57	TRB

Figure No
3



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Graph of Noise Measurements at Location 1

Ala Wai Gateway

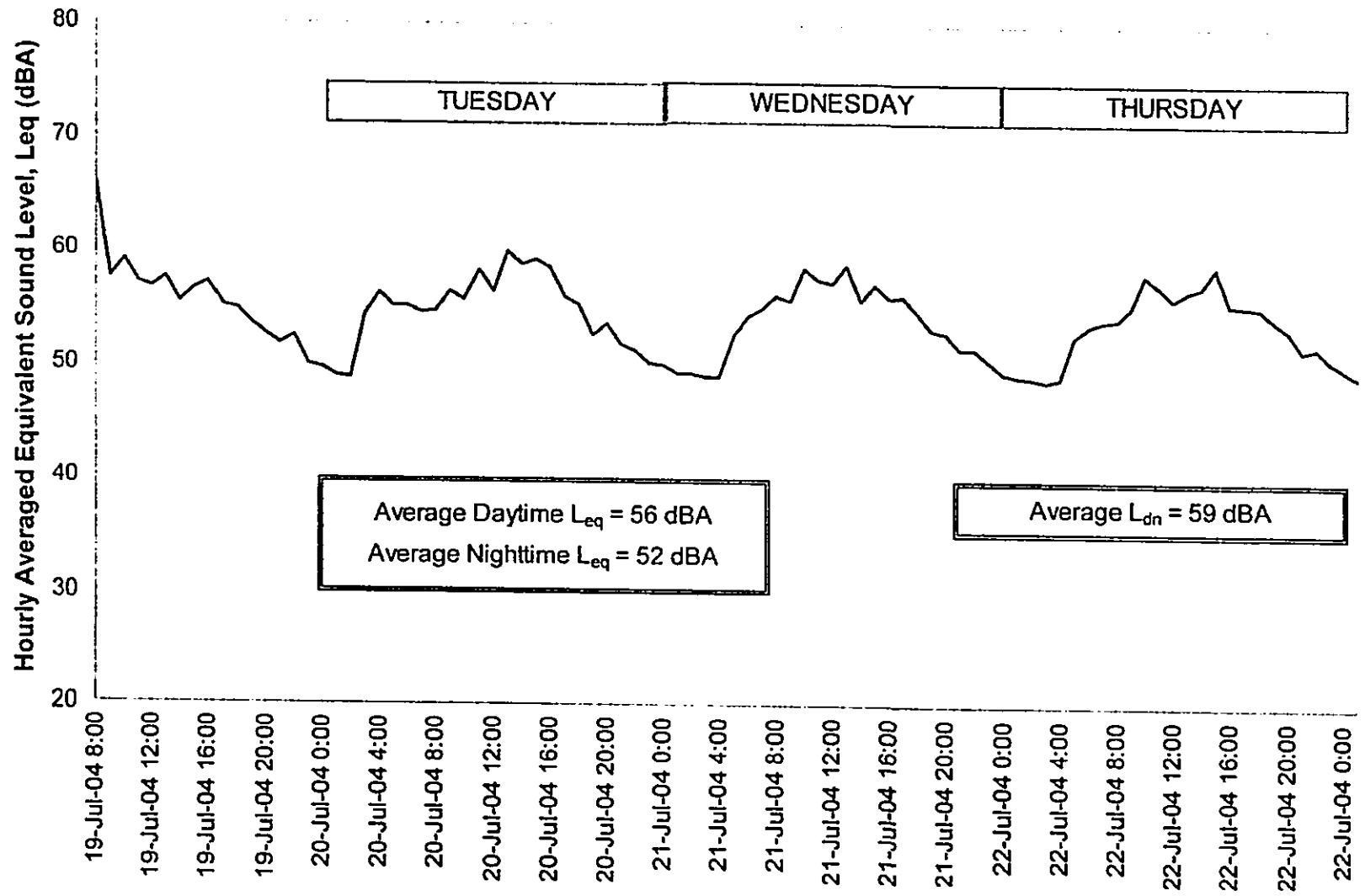
not to scale

Date
July 2004

Project No.
04-57

Drawn By
TRB

Figure No
4



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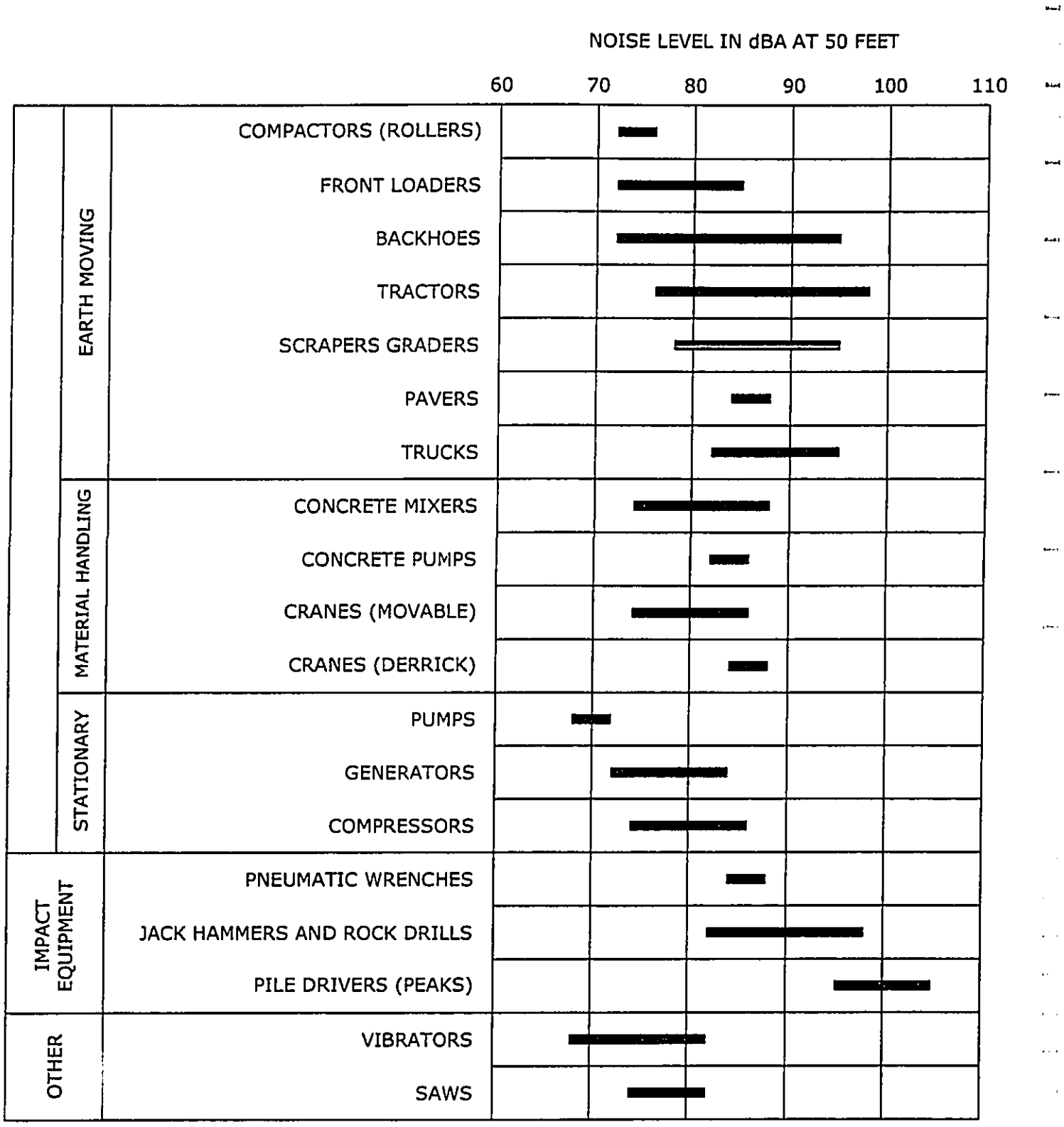
Graph of Noise Measurements at Location 2

Ala Wai Gateway

not to scale

Date	Project No.	Drawn By	Figure No
July 2004	04-57	TRB	5



NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES

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Typical Sound Levels from Construction Equipment

Ala Wai Gateway

not to scale

Date	Project No.	Drawn By
July 2004	04-57	TRB

Figure No 6

APPENDIX VIII

AIR QUALITY IMPACT REPORT

AIR QUALITY IMPACT REPORT (AQIR)

ALA WAI GATEWAY
HONOLULU, HAWAII

PREPARED FOR:

Irongate Ala Wai Investors, LLC
Construction Management & Development - Hawaii, LLC
and
Kusao & Kurashashi, Inc.

PREPARED BY:

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1481 South King Street, Suite 548
Honolulu, Hawaii 96814

27 July 2004

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1. INTRODUCTION

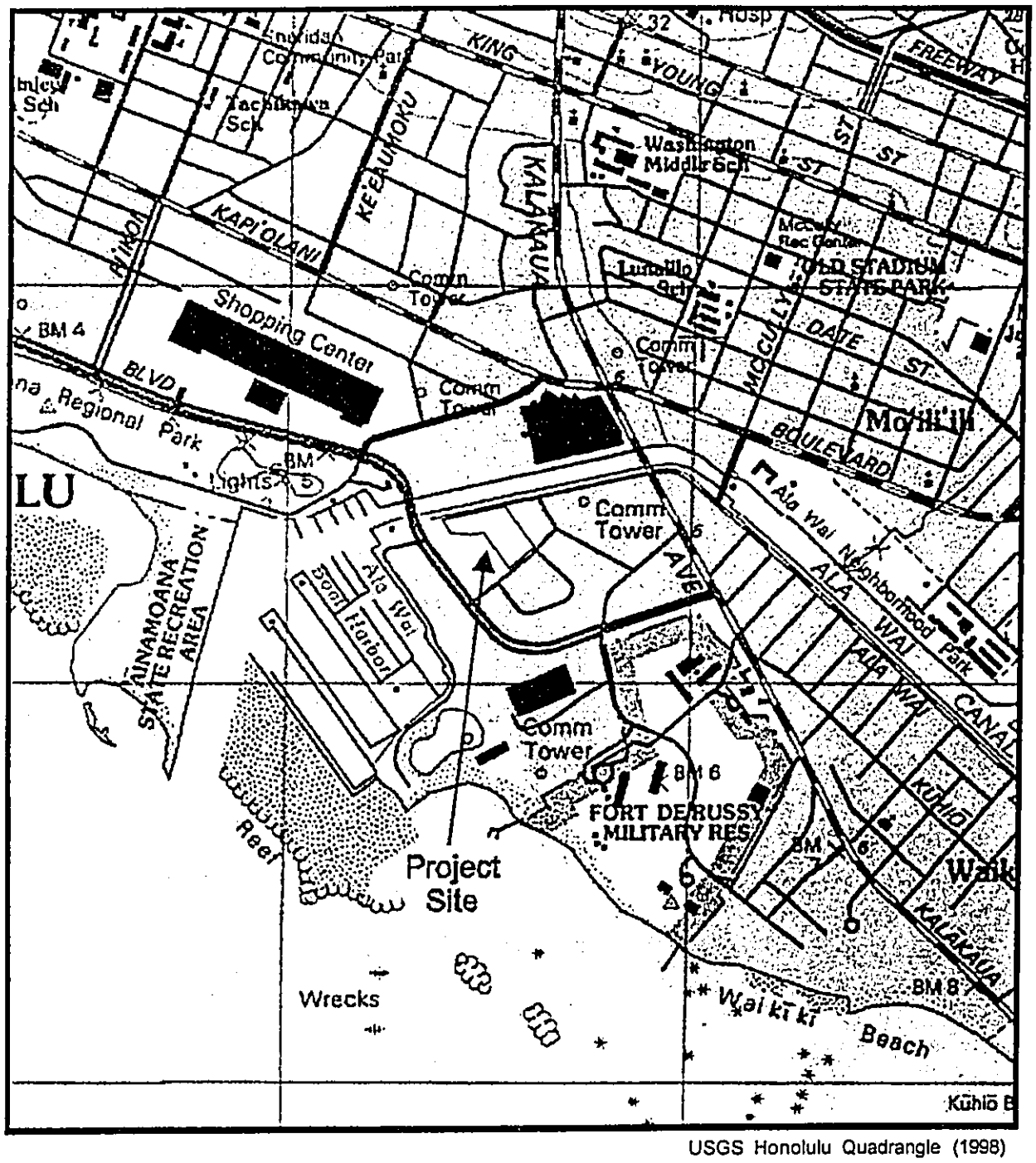
Irongate Ala Wai Investors, LLC is proposing to develop presently vacant land located between Ala Wai Boulevard and Hobron Lane in Waikiki on the island of Oahu (Figure 1). The property consists of two adjacent parcels, TMK 2-6-011:002 and 004. Parcel 2 is 13,786 ft^2 in size, is completely covered with asphalt, and fronts on Hobron Lane. Parcel 4 is 116,395 ft^2, has frontage on both Ala Wai Boulevard and Hobron Lane, and has approximately equal areas of asphalt and sparse landscaping (Figure 2).

The development will consist of a single high rise residential condominium building with approximately 228 units. Parking facilities will consist of a 4-story parking structure and surface lot with a total of 355 spaces.

The purpose of this report is to assess the short and long-term impacts of the proposed development on air quality. The overall project can be considered an "indirect source" of air pollution as defined in the federal Clean Air Act[1] since its primary association with air quality is its inherent attraction for mobile sources, i.e., motor vehicles. Much of the focus of this analysis, therefore, is on the project's ability to generate traffic and the resultant impact on air quality. Air quality impact was evaluated for existing (2004) and future (2007) conditions with and without the proposed redevelopment.

FIGURE 1

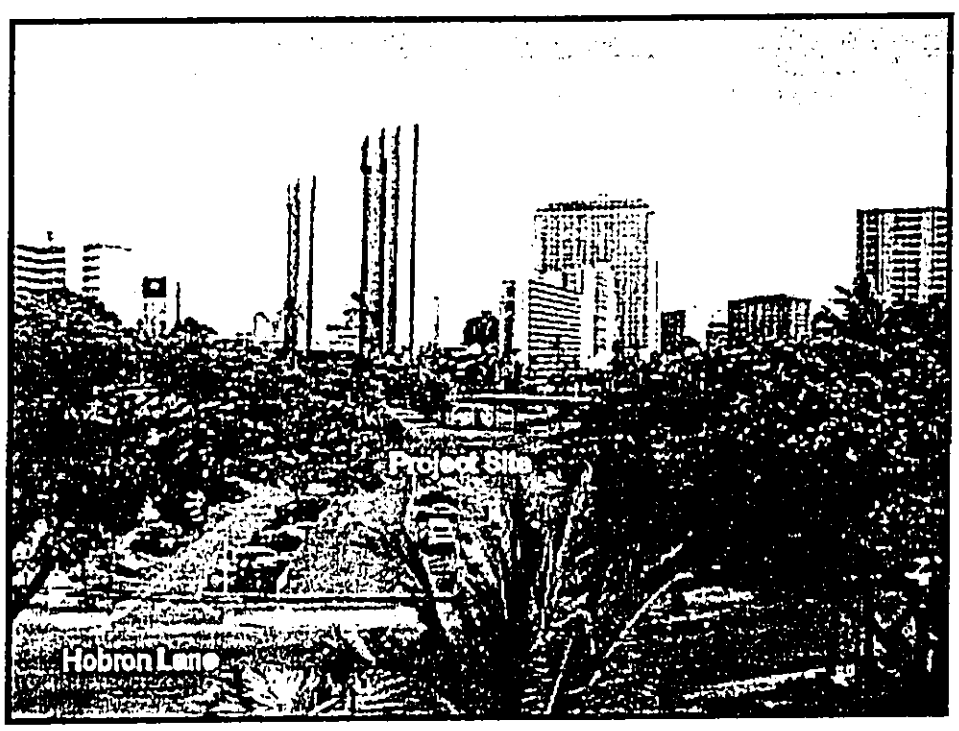
PROJECT LOCATION



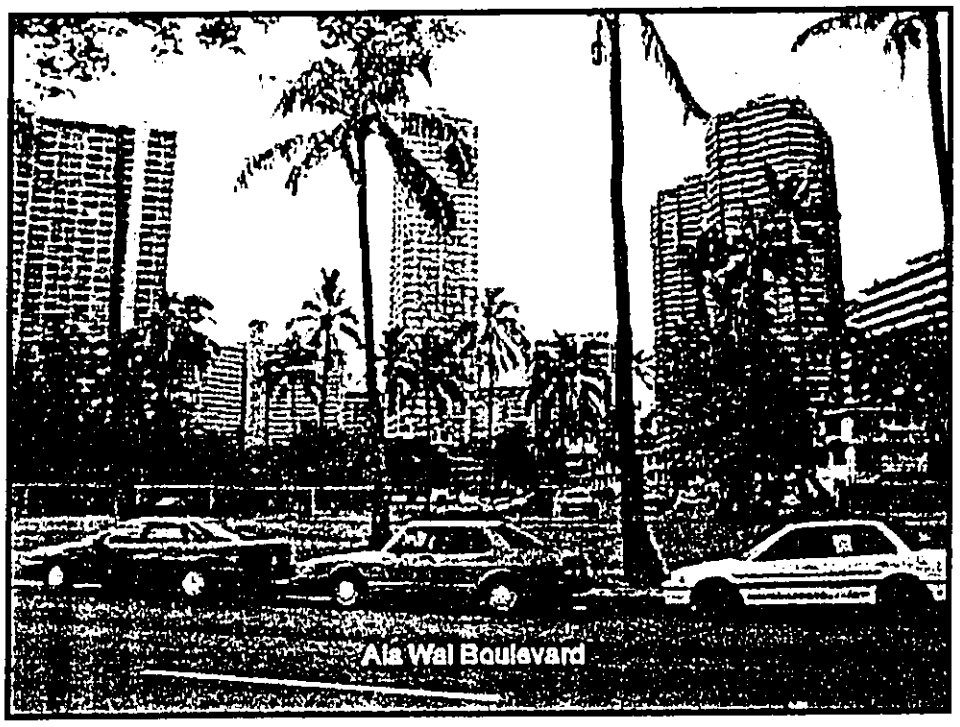
USGS Honolulu Quadrangle (1998)

FIGURE 2

EXISTING CONDITIONS



FacingNorthwest
Across Project Site



FacingSoutheast
Across Project Site

A project such as this also has offsite impacts due to increased demand for electrical energy which is typically generated by fossil fuel combustion and the incineration of solid waste generated by project residents. Both these processes result in pollutant emissions to the air which have been addressed in this report.

Finally, during construction of the various buildings and facilities air pollutant emissions will be generated onsite and offsite due to vehicular movement, grading, concrete and asphalt batching, and general dust-generating construction activities. These impacts have also been addressed.

2. AIR QUALITY STANDARDS

A summary of State of Hawaii and national ambient air quality standards (NAAQS) is presented in Table 1.[2,3,4] Note that Hawaii's standards are not divided into primary and secondary standards as are the federal standards.

Primary standards are intended to protect public health with an adequate margin of safety while secondary standards are intended to protect public welfare through the prevention of damage to soils, water, vegetation, man-made materials, animals, wildlife, visibility, climate, and economic values [5]. Note that in the case of the principal automotive pollutants [CO, NO_2, and O_3], the primary and secondary standards are identical.

Some of Hawaii's standards (CO, NO_2, and O_3) are clearly more stringent than their federal counterparts and like their federal counterparts in the case of short-term standards, they may be exceeded once per year.

Finally, the State of Hawaii also has fugitive dust regulations for particulate matter (PM) emanating from construction activities [6]. There simply can be no visible emissions from fugitive dust sources.

3. EXISTING AIR QUALITY

3.1 General. The state Department of Health (DOH) maintains a network of air monitoring stations around the state to gather data on the following regulated pollutants:

- particulate matter ≤ 10 microns (PM_{10} and $PM_{2.5}$)
- sulfur dioxide (SO_2)
- nitrogen dioxide (NO_2)
- carbon monoxide (CO)
- ozone (O_3)

In the case of PM_{10}, measurements are made on a 24-hour basis to correspond with the averaging period specified in state and federal standards. Depending on the sampling equipment and site, samples are collected either continuously or once every six days in accordance with U. S. Environmental

TABLE 1

SUMMARY OF STATE OF HAWAII AND FEDERAL AMBIENT AIR QUALITY STANDARDS

POLLUTANT	AVERAGING PERIOD	NAAQS PRIMARY	NAAQS SECONDARY	STATE STANDARDS
PM_{10}	Annual 24-hr	50 150	50 150	50 150
$PM_{2.5}$	Annual 24-hr	15 65	15 65	— —
SO_2	Annual 24-hr 3-hr	80 365 —	— — 1,300	80 365 1,300
NO_2	Annual	100	100	70
CO	8-hr 1-hr	10 40	— —	5 10
O_3	1-hr 8-hr	235 156	235 156	100 —
H_2S	1-hr	—	—	35
Pb	Calendar Quarter	1.5	1.5	1.5

KEY: PM_{10} - particulate matter ≤ 10 microns
$PM_{2.5}$ - particulate matter ≤ 2.5 microns
SO_2 - sulfur dioxide
NO_2 - nitrogen dioxide
CO - carbon monoxide
O_3 - ozone
H_2S - hydrogen sulfide
Pb - lead

All concentrations in micrograms per cubic meter ($\mu g/m^3$) except CO which is in milligrams per cubic meter.

Protection Agency (EPA) guidelines. Carbon monoxide, sulfur dioxide, and ozone, however, are measured on a continuous basis due to their short-term (1- and 3-, and 8-hour) standards. Nitrogen dioxide is also measured with continuous instruments and averaged over a full year to correspond to its annual standards. Lead sampling was discontinued in October 1997 with EPA approval. This was largely due to the elimination of lead in gasoline and the resulting reduction of ambient lead levels in Hawaii to essentially zero.

3.2 Department of Health Monitoring. There is one DOH monitoring station in Waikiki which measures carbon monoxide (CO) along Kalakaua Avenue not far from the project site. A summary of the most recent published air quality data [7] from that station and other sites in downtown Honolulu, Sand Island (the only ozone monitoring site) and Kapolei (one of two NO_2 monitoring sites), is presented in Table 2. These data are indicative of the generally good air quality in Honolulu County and may be considered reasonably representative of existing air quality in the project area.

3.3 Onsite Carbon Monoxide Sampling. In conjunction with this project, air sampling was conducted at the project site during July 2004. A continuous carbon monoxide (CO) instrument was set up and operated during the a.m. and p.m. peak traffic hours. A simultaneous manual count of traffic was performed. The variability of each of the parameters measured during the peak hours is clearly seen in Figures 3 and 4 with 1-hour CO levels consistently below state and federal standards.

TABLE 2

AIR QUALITY DATA
DEPARTMENT OF HEALTH MONITORING SITES
2002

Pollutant	Concentration ($\mu g/m^3$)
Particulate matter ≤ 10 microns (PM_{10}) 24-hr (second highest)	90
Annual	15
Sulfur dioxide (SO_2) 3-hr (max)	30
24-hr (max)	9
Annual	3
Carbon monoxide (CO) 1-hr (max)	3.4
8-hr (max)	1.7
Annual	0.7
Ozone (O_3) 1-hr (max)	106
8-hr (max)	89
Annual	38
Nitrogen Dioxide (NO_2) Annual	10

Notes:
1. SO_2 and PM_{10} data are from DOH Building site.
2. CO data are from the Waikiki monitoring site.
3. O_3 data are from the Sand Island site.
4. NO_2 data are from the Kapolei site.
5. CO data are milligrams per cubic meter (mg/m^3)

Source: Hawaii Department of Health (Reference 7)

On Friday, 16 July 2004, sampling equipment was set up on the project site adjacent to Hobron Lane. Onsite weather conditions during the afternoon peak hour were characterized by partly cloudy skies and light north to northeasterly tradewinds averaging 2.8 mph. Carbon monoxide concentrations measured were very low, averaging only 0.4 mg/m^3 with a peak value of 0.7 mg/m^3. Two-way traffic on Hobron Lane totaled 959 vehicles between 4:05 and 5:05 p.m. Hawaiian Standard Time (HST).

On Monday morning, 19 July 2004, at the same location, skies were clear and winds ranged from calm to 4 mph. Total 2-way traffic on Hobron Lane between 7:15 and 8:15 p.m. was 694 vehicles, and the 1-hour average CO concentration was 0.3 mg/m^3. Peak CO during the period was 1.1 mg/m^3.

4. CLIMATE AND METEOROLOGY

4.1 Climate. Climatic norms, means and extremes for Honolulu [8] are presented in Table 3. Analysis of the monthly temperature and rainfall data in accordance with Thornwaite's scheme for climatic classification, yields a precipitation/evaporation (P/E) index of 26.6 which classifies the area as "semi-arid". [9]

4.2 Surface Winds. Meteorological data records were reviewed from the Honolulu International Airport and Hickam Air Force Base. The annual prevalence of northeast trade winds is clearly shown in Table 4. A closer examination of the data, however, indicates that low velocities (less than 10 mph) occur frequently and that the normal northeasterly trade winds tend to break down in the Fall giving

FIGURE 3

P.M. PEAK HOUR CONDITIONS
PROJECT SITE AT HOBRON LANE
16 JULY 2004

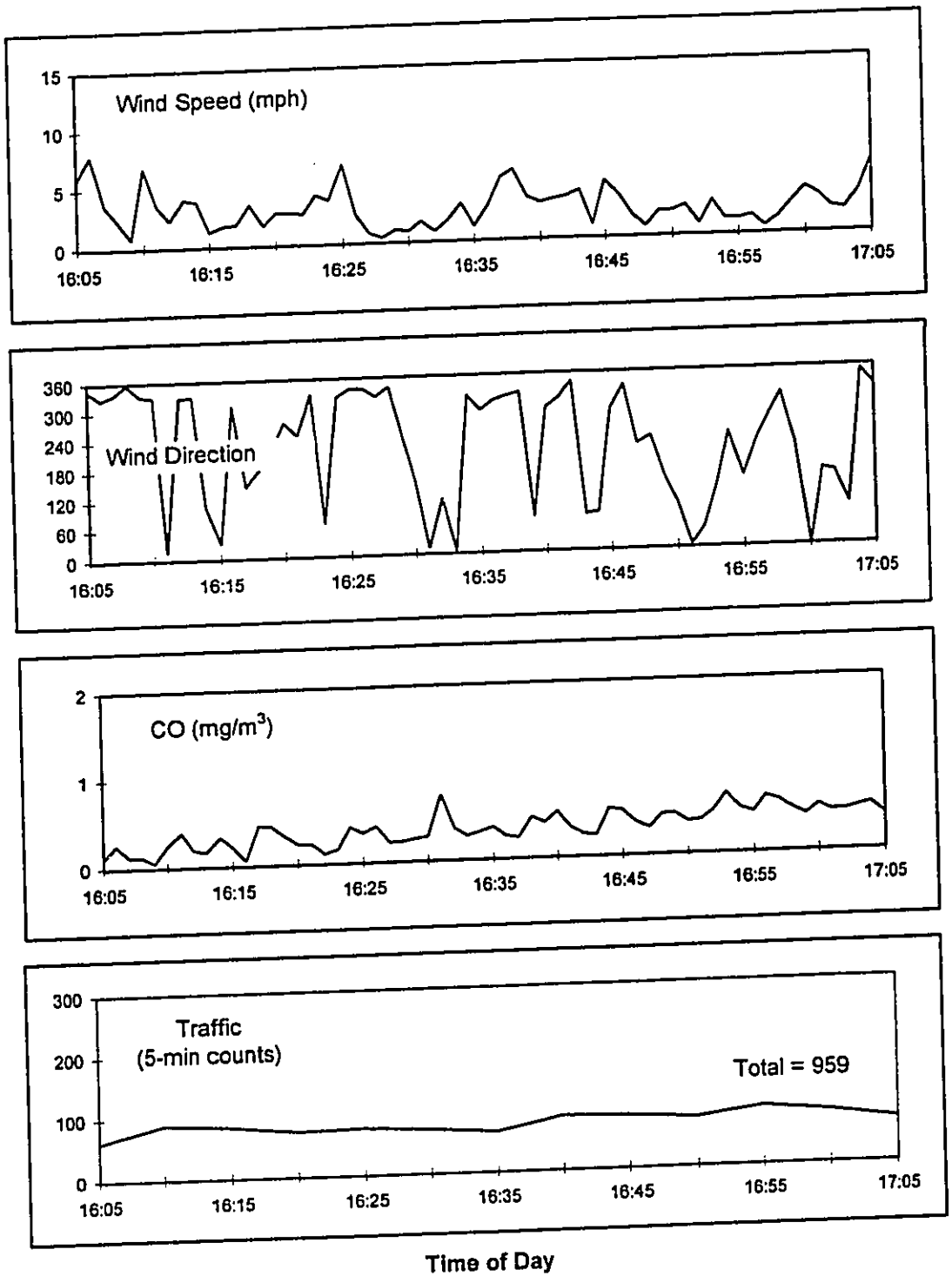


FIGURE 4

A.M. PEAK HOUR CONDITIONS
PROJECT SITE AT HOBRON LANE
19 JULY 2004

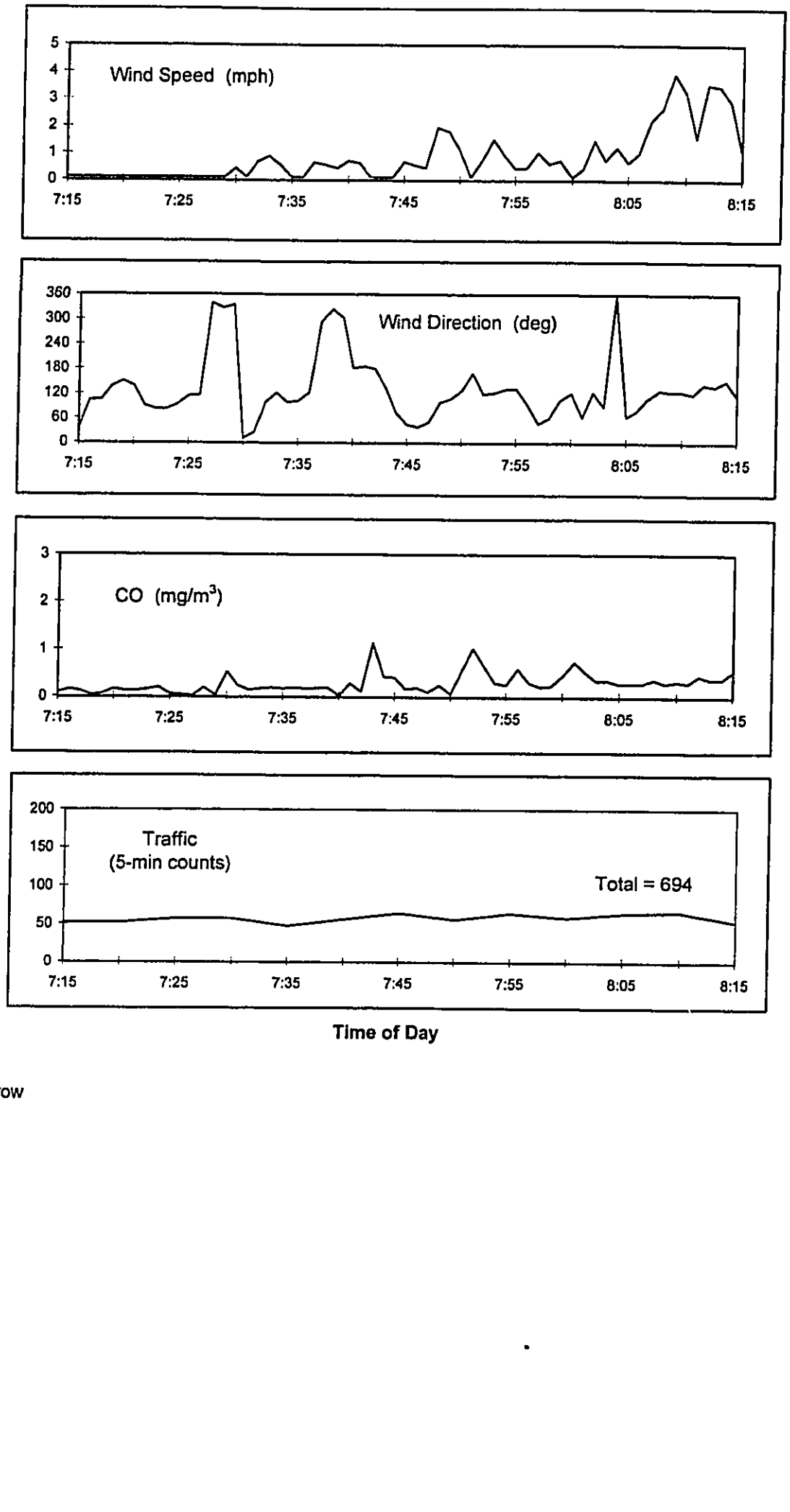


TABLE 3

CLIMATIC NORMS, MEANS AND EXTREMES HONOLULU INTERNATIONAL AIRPORT

Parameter	Descriptor	Value
Temperature (deg F)	Daily maximum	84.4
	Daily minimum	70.0
	Annual mean	77.2
Precipitation (inches)	Maximum monthly	20.91
	Minimum monthly	trace
	Annual mean	22.02
Humidity (%)	Normal	68
Wind Speed (mph)	Mean	11.4
Sunshine	Percent of possible	71
Sky cover (mean # days)	Clear	90.0
	Partly cloudy	179.8
	Cloudy	92.0

Source: National Climatic Data Center (Reference 8)

TABLE 4

ANNUAL JOINT FREQUENCY DISTRIBUTION
OF WIND SPEED AND DIRECTION
HONOLULU INTERNATIONAL AIRPORT

Dir (deg)	Wind Speed (m/sec)						
	< 3.1	< 4.5	< 5.8	< 7.2	< 8.5	>/= 8.5	All
10	0.0065	0.0038	0.0023	0.0016	0.0009	0.0001	0.0151
20	0.0082	0.0041	0.0025	0.0023	0.0011	0.0001	0.0183
30	0.0100	0.0061	0.0051	0.0038	0.0028	0.0007	0.0286
40	0.0188	0.0157	0.0258	0.0222	0.0174	0.0040	**0.1039**
50	0.0268	0.0290	0.0449	0.0385	0.0307	0.0054	**0.1752**
60	0.0344	0.0289	0.0436	0.0273	0.0238	0.0041	**0.1621**
70	0.0250	0.0181	0.0197	0.0122	0.0096	0.0009	**0.0855**
80	0.0113	0.0081	0.0065	0.0039	0.0009	0.0003	0.0310
90	0.0073	0.0049	0.0040	0.0009	0.0008	0.0000	0.0179
100	0.0031	0.0016	0.0014	0.0006	0.0002	0.0000	0.0068
110	0.0027	0.0019	0.0010	0.0007	0.0005	0.0001	0.0069
120	0.0027	0.0013	0.0019	0.0009	0.0003	0.0003	0.0075
130	0.0022	0.0032	0.0018	0.0015	0.0007	0.0002	0.0096
140	0.0034	0.0033	0.0039	0.0018	0.0011	0.0006	0.0141
150	0.0022	0.0030	0.0019	0.0003	0.0002	0.0005	0.0081
160	0.0024	0.0033	0.0023	0.0010	0.0005	0.0000	0.0094
170	0.0031	0.0046	0.0023	0.0007	0.0003	0.0000	0.0109
180	0.0055	0.0042	0.0018	0.0008	0.0005	0.0000	0.0128
190	0.0065	0.0038	0.0013	0.0002	0.0000	0.0000	0.0117
200	0.0057	0.0032	0.0011	0.0001	0.0000	0.0000	0.0101
210	0.0076	0.0038	0.0016	0.0001	0.0000	0.0000	0.0131
220	0.0083	0.0077	0.0016	0.0001	0.0001	0.0000	0.0179
230	0.0076	0.0049	0.0014	0.0001	0.0001	0.0000	0.0141
240	0.0042	0.0016	0.0013	0.0000	0.0000	0.0000	0.0071
250	0.0040	0.0010	0.0003	0.0000	0.0000	0.0000	0.0054
260	0.0064	0.0023	0.0005	0.0000	0.0000	0.0000	0.0091
270	0.0065	0.0010	0.0005	0.0002	0.0000	0.0000	0.0082
280	0.0099	0.0005	0.0002	0.0000	0.0000	0.0000	0.0106
290	0.0123	0.0003	0.0002	0.0001	0.0000	0.0000	0.0130
300	0.0167	0.0018	0.0011	0.0000	0.0000	0.0000	0.0197
310	0.0235	0.0022	0.0015	0.0001	0.0000	0.0000	0.0272
320	0.0200	0.0022	0.0013	0.0006	0.0001	0.0000	0.0241
330	0.0121	0.0023	0.0011	0.0005	0.0000	0.0000	0.0159
340	0.0094	0.0010	0.0003	0.0001	0.0000	0.0000	0.0109
350	0.0082	0.0025	0.0016	0.0002	0.0000	0.0000	0.0125
360	0.0093	0.0027	0.0022	0.0006	0.0005	0.0001	0.0154
All	**0.3537**	0.1898	0.1917	0.1240	0.0932	0.0174	0.9698
						Calms:	0.0302

SOURCE: National Weather Service, 1992

J. W. Morrow

way to more light, variable wind conditions through the Winter and on into early Spring. It is during these times that Honolulu generally experiences elevated pollutant levels. This seasonal difference in wind conditions can be easily contrasted by comparing August and January wind roses (Figures 5 and 6). Of particular interest from an air pollution standpoint were the stability wind roses prepared for Hickam Air Force Base [10] These data indicated that stable conditions, i.e., Pasquill-Gifford stability categories E and F [11], occur about 28% of the time on an annual basis and 36% of the time during the peak winter month (January). It is under such conditions that the greatest potential for air pollutant buildup from groundlevel sources, e.g., motor vehicles, exists.

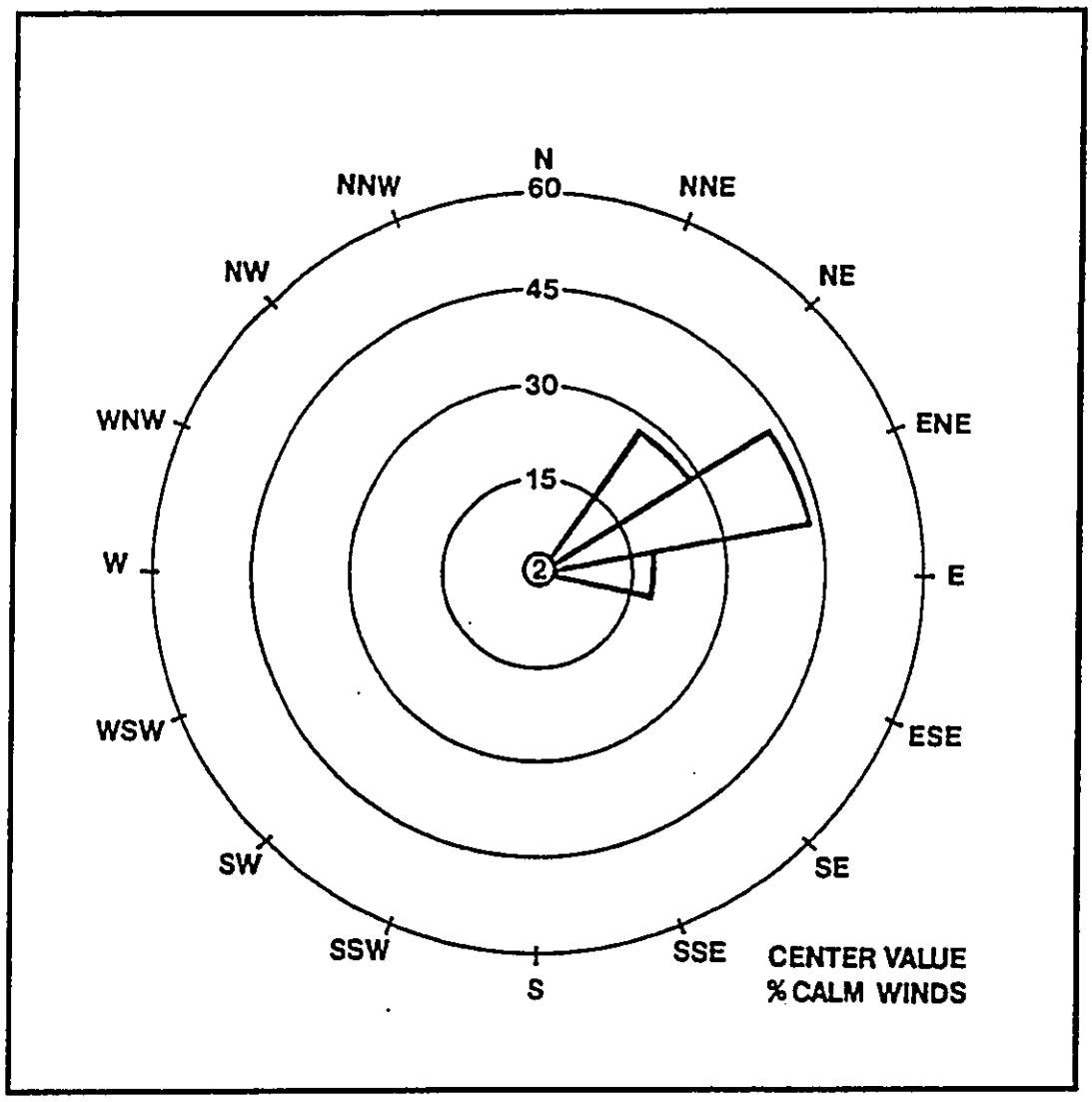
5. SHORT-TERM IMPACTS

5.1 Onsite Impacts. The principal source of short-term air quality impact will be construction activity. Construction vehicle activity can at times increase automotive pollutant concentrations along adjoining existing streets as well as on the project site itself. Construction activity itself as well as additional construction vehicle traffic may at times cause a temporary reduction in average travel speeds with a concomitant increase in vehicle emissions due to the "stop and go" traffic conditions.

The site preparation including demolition and earth moving will create particulate matter (PM) emissions as will construction of the various new structures. Construction vehicle movement on unpaved on-site areas will also generate PM emissions. EPA studies on fugitive dust emissions from construction sites indicate that about 1.2 tons/acre per month of activity may be expected under

FIGURE 5

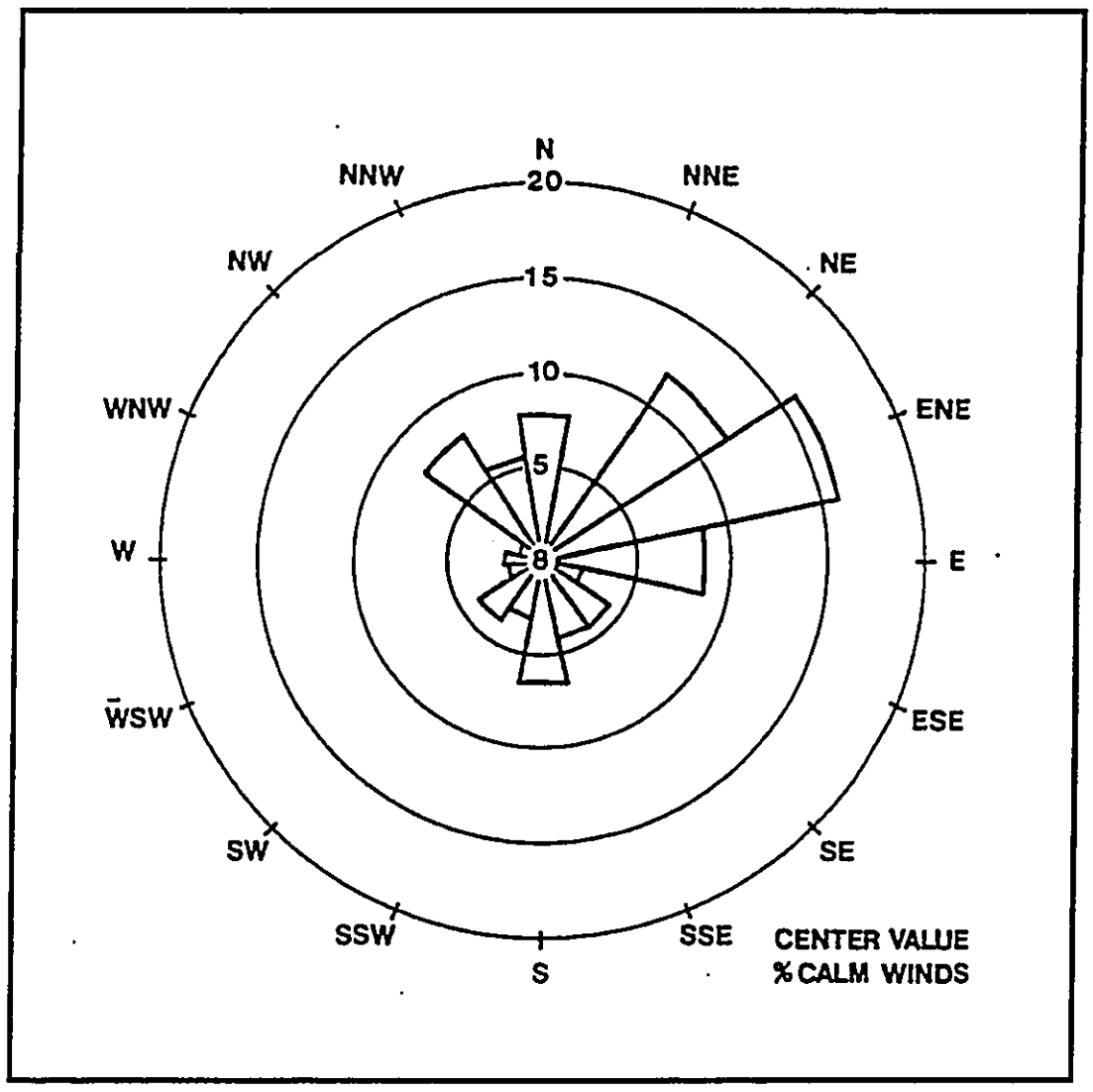
AUGUST WIND ROSE
HONOLULU INTENATIONAL AIRPORT



SOURCE: National Weather Service
Historical Records, 1940-57

FIGURE 6

JANUARY WIND ROSE
HONOLULU INTERNATIONAL AIRPORT



SOURCE: National Weather Service
Historical Records, 1940-57

conditions of medium activity, moderate soil silt content (30%), and a precipitation/ evaporation (P/E) index of 50 [9, 12].

5.2 Offsite Impacts. In addition to the onsite impacts attributable to construction activity, there will also be offsite impacts due to the operation of concrete and asphalt batching plants needed for construction of buildings, sidewalks and roadways. Such plants routinely emit particulate matter and other gaseous pollutants; however, it is too early to identify the specific facilities that will be providing these materials and thus the discussion of air quality impacts is necessarily generic. The batch plants which will be producing this concrete and asphalt must be permitted by the Department of Health Clean Air Branch pursuant to state regulations [6]. In order to obtain these permits they must demonstrate their ability to continuously comply with both emission [6] and ambient air quality [4] standards. Under the federal Title V operating permit requirements [13], now incorporated in Hawaii's rules [6], air pollution sources must regularly attest to their compliance with all applicable requirements. A typical concrete batch plant in Hawaii is equipped with fabric filters, i.e., "baghouses" for particulate matter (PM) control. Similarly, a typical asphalt plant is equipped with either a wet venturi scrubber or fabric filters. The efficiency of such controls is normally 95 - 99%.

6. MOBILE SOURCE IMPACTS

6.1 Mobile Source Activity. The traffic impact analysis [14] prepared for the proposed project served as the basis for this mobile source impact analysis. Existing and projected future peak-hour traffic volumes for the streets serving the project site were obtained from that report. Since air quality impact

is typically greatest in the vicinity of intersections due to the associated vehicle queuing, this analysis focused on the principal intersections serving the project area, Ala Moana Boulevard at Hobron Lane and Kalakaua Avenue at Ala Wai Boulevard.

6.2 Emission Factors. Automotive emission factors for carbon monoxide (CO) were generated for calendar years 2004 and 2007 using EPA's Mobile Source Emissions Model [15]. To localize the emission factors as much as possible, an age distribution for registered vehicles in the City & County of Honolulu [16] was used in lieu of national statistics. That same age distribution was the basis for the distribution of vehicle miles traveled as well.

6.3 Modeling Methodology. Mobile source air quality modeling has historically focused on estimating concentrations of non-reactive pollutants, primarily carbon monoxide (CO). This has been the case because CO is relatively stable in the atmosphere having a half-life on the order of about one (1) month,[17] and it comprises the largest fraction of automotive emissions. [15]

Using the traffic data provided, modeling was performed for the aforementioned intersections for 2004 and 2007. The EPA guideline model CAL3QHC [18, 19] as revised to allow for use of hourly meteorological data files [20] was employed to estimate near-intersection carbon monoxide concentrations. CO concentrations were estimated in arrays of up to 76 receptor sites spaced at a distance of 10 meters and placed along the sidewalks around each intersection. A background concentration of 0.70 mg/m^3 from the Department of Health's 2002 monitoring data was also used as the background concentration in the modeling. Hourly meteorological data for p.m. peak traffic hour

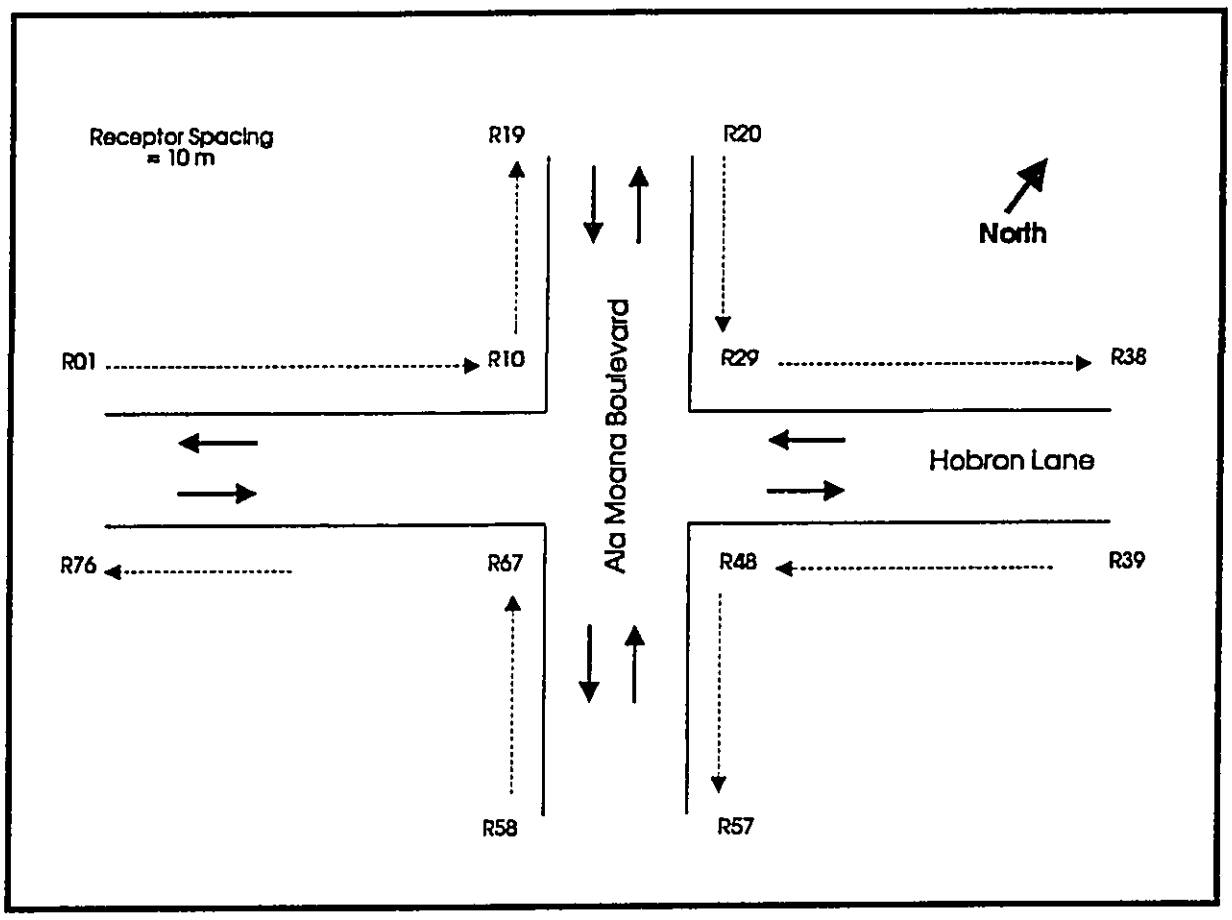
used in the model were extracted from National Weather service data collected at the Honolulu International Airport [21] and preprocessed with EPA's PCRAMMET program. [22]

6.4 Results: 1-Hour Concentrations. The results of this modeling are presented in Figures 7 and 8. Maximum estimated 1-hour CO concentrations in milligrams per cubic meter (mg/m^3) for each of the three evaluated scenarios are presented along with the particular receptor location at which they were predicted. The results suggest that, under worst case conditions of meteorology and traffic, both the federal and state 1-hour CO standards would continue to be met at receptor locations along the sidewalks and beyond. These computer generated CO estimates were comparable to the levels measured by the Department of Health (Table 2) at its Waikiki monitoring site. Differences in CO concentration between existing, future without the proposed project and future with the project scenarios were very small, in some cases indicating a decline despite projected increases in traffic. The latter is attributable to the federal motor vehicle emissions control program which causes increasing traffic volume to be offset by increasingly more stringent emission standards for new motor vehicles. Thus, over time older, higher emitting vehicles are eventually replaced by newer, lower emitting vehicles, with the net result often being lower total emissions despite increased traffic volume.

6.5 Results: 8-Hour Concentrations. The 8-hour values, also presented in Figures 7 and 8, are conservative estimates because they are based on p.m. peak hour traffic and meteorology and do not factor in lower off-peak traffic volumes. Nevertheless, the results are similar to the 1-hour findings in that the predicted changes are very small, and compliance with state and federal standards is indicated.

FIGURE 7

ESTIMATES OF MAXIMUM 1- AND 8-HOUR CARBON MONOXIDE CONCENTRATIONS
Ala Moana Boulevard at Hobron Lane
Peak Traffic Hours
2004 - 2007

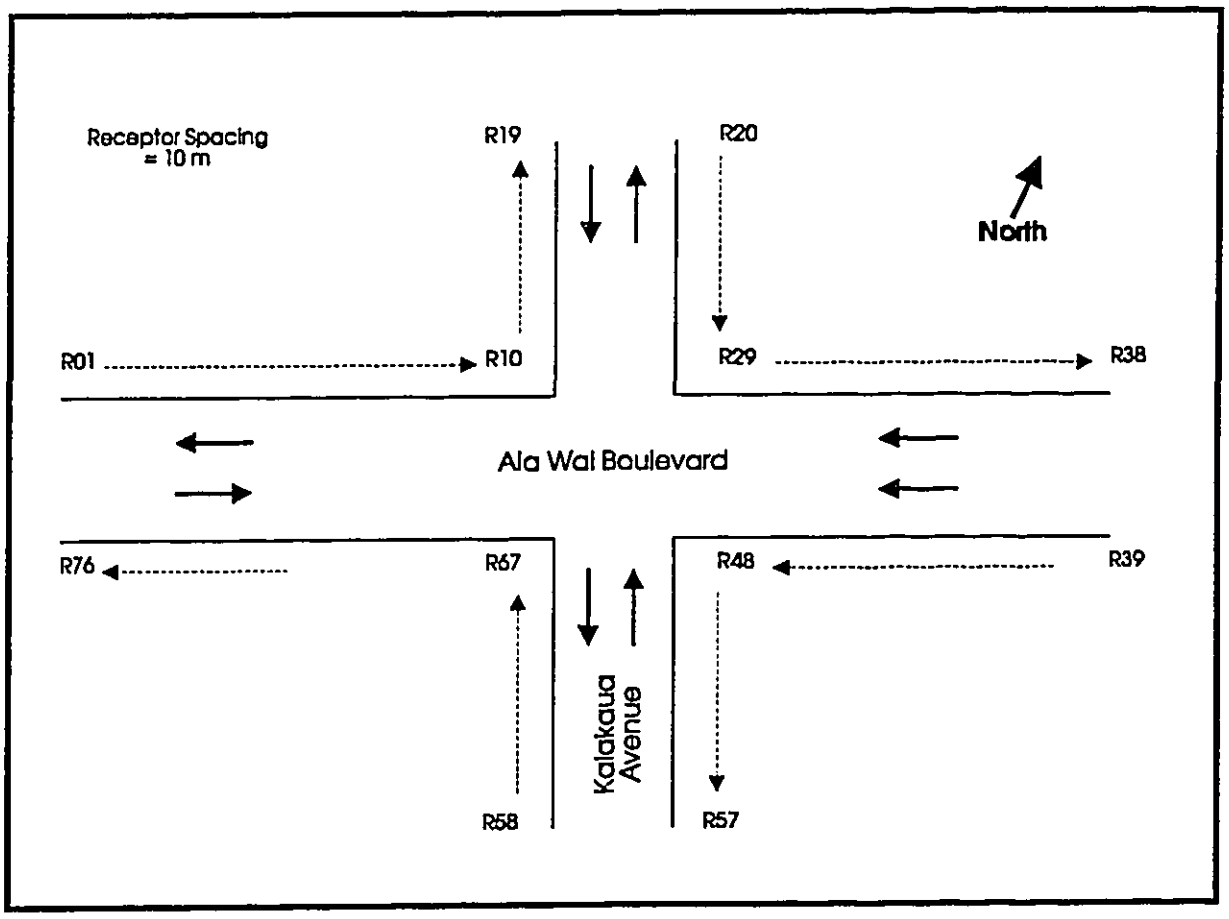


CO Concentration (mg/m³)

Averaging Time	2004 A.M.	2004 P.M.	2007 w/o proj A.M.	2007 w/o proj P.M.	2007 w/proj A.M.	2007 w/proj P.M.
1-hr	2.6 @ R10	2.4 @ R10	2.4 @ R48	2.2 @ R12	2.5 @ R48	2.2 @ R12
8-hr	1.7		1.6		1.6	

FIGURE 8

ESTIMATES OF MAXIMUM 1- AND 8-HOUR CARBON MONOXIDE CONCENTRATIONS
Kalakaua Avenue at Ala Wai Boulevard
Peak Traffic Hours
2004 - 2007



CO Concentration (mg/m³)

Averaging Time	2004 A.M.	2004 P.M.	2007 w/o proj A.M.	2007 w/o proj P.M.	2007 w/proj A.M.	2007 w/proj P.M.
1-hr	3.0 @ R18	2.7 @ R41	2.6 @ R40	2.4 @ R41	2.6 @ R40	2.4 @ R41
8-hr	2.2		2.0		2.0	

7. OFFSITE STATIONARY SOURCE IMPACTS

7.1 Electrical Generation. The 1.83 million kilowatt hours (kwhrs) of annual electrical demand by the project, estimated based on typical Oahu household usage[8], will be provided by local power plants. Currently, most of Oahu's electrical energy is generated by Hawaiian Electric Company's oil-fired plants at Kahe Point and Waiau. These units fire low sulfur (0.5%) fuel oil. The estimated emissions resulting from fuel burned to provide the power needed by the project are presented in Table 5

7.2 Solid Waste Disposal. The refuse generated by the residents of the proposed apartments will require disposal. Most refuse on Oahu is now being pre-processed and burned at the City's resource recovery facility (HPOWER) at Campbell Industrial Park, leaving less mass to be landfilled. This facility was originally designed to handle most of Oahu's domestic refuse (1,800 T/day) and is now in the process of being expanded to accommodate the refuse from an increasing population. Estimates of annual emissions attributable to the combustion of refuse from the proposed development are included in Table 5.

8. CONCLUSIONS AND MITIGATION

8.1 Short-Term Impacts. Since, as noted in Section 4, the project area is considered semi-arid by Thornwaite's climatic classification system with a P/E index lower than that associated with the EPA fugitive dust emission factor, there appears to be a somewhat greater potential for fugitive dust.

TABLE 5

ESTIMATES OF ANNUAL EMISSIONS
FROM OFFSITE SOURCES

Pollutant	Emissions (T/yr)	
	Electrical Generation	Solid Waste Disposal
Nitrogen oxides (NOx)	2.7	1.7
Sulfur oxides (SOx)	4.5	0.6
Particulate matter (PM)	0.4	0.4
Carbon monoxide (CO)	0.3	0.7
Volatile organic compounds (VOC)	0.04	n/a

It will therefore be very important to employ adequate dust control measures during the construction period, particularly during the drier summer months. Dust control could be accomplished through frequent watering of unpaved roadways and areas of exposed soil. The EPA estimates that twice daily watering can reduce fugitive dust emissions by as much as 50% [12]. The soonest possible paving of roadways and landscaping of bare soil areas will also help. Dust screens may also be necessary to reduce impacts on adjacent buildings and other areas of human activity in this high visibility tourist zone.

efficiency of control devices typically found on such production facilities. Furthermore, any emissions will be strictly regulated by the Department of Health permit which each batch plant must have in order to operate and demonstrate compliance with ambient air quality standards.

8.2 Mobile Source Impacts. As reported in Section 6, compliance with federal and state carbon monoxide standards is demonstrated under worst case conditions of meteorology and peak hour traffic; thus, no special mitigative measures are required.

8.3 Offsite Stationary Source Impacts. The proposed project will increase electrical demand which in turn will cause more fuel to be burned and more pollutants to be emitted into the air. This increase in electrical generation-related emissions is estimated to be less than 0.1%. These impacts can be mitigated by energy efficient design of the proposed dwelling units. The state Department of Business, Economic Development and Tourism has energy conservation design guidelines to assist in this effort. As for HECO's facilities which provide the power, each must continuously demonstrate compliance with all applicable ambient air quality standards and control regulations in order to retain its operating permit.

The increase in emissions associated with the disposal of solid waste generated by the project are also estimated to be less than 0.1%. They can be reduced by encouraging use of recyclable products.

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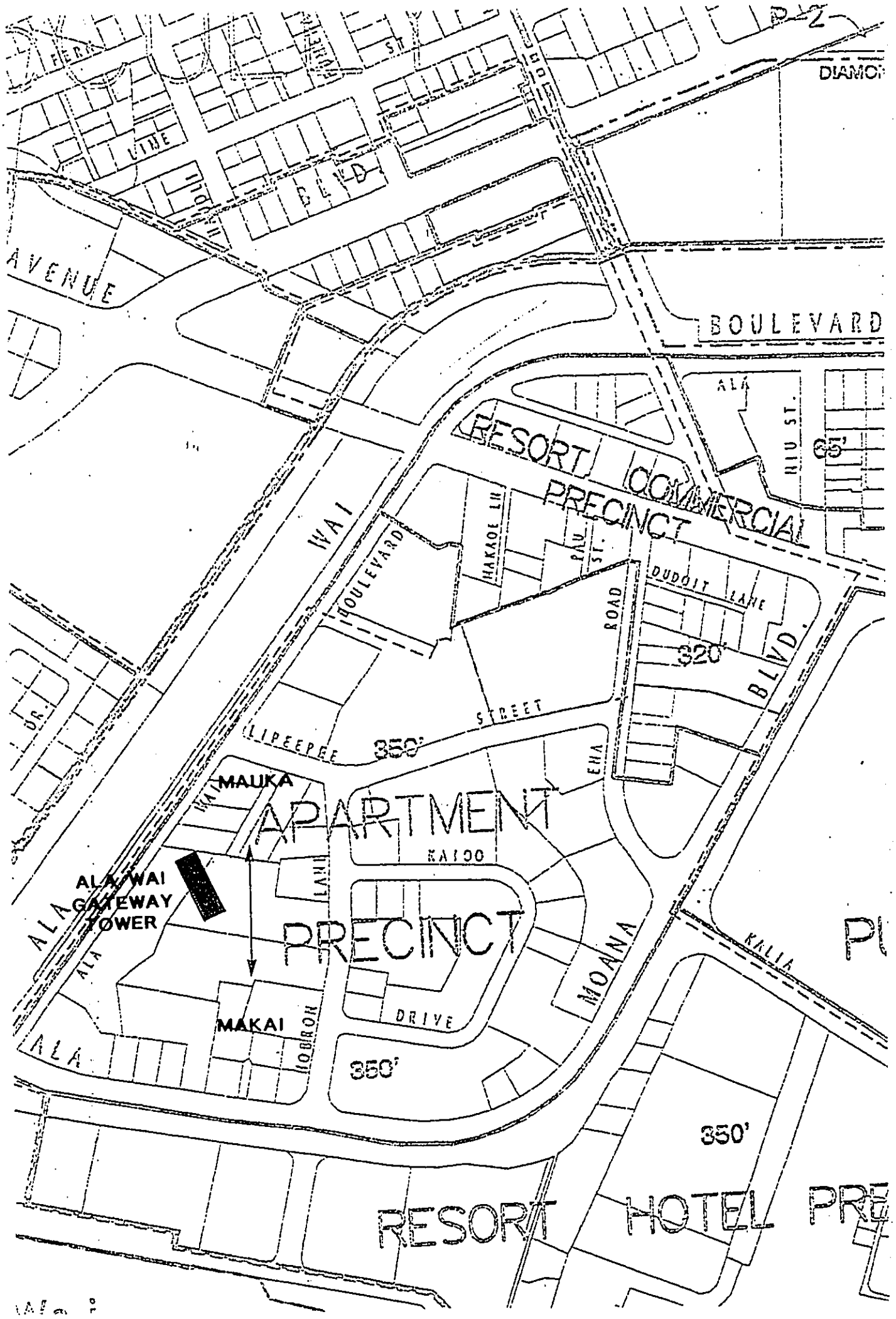
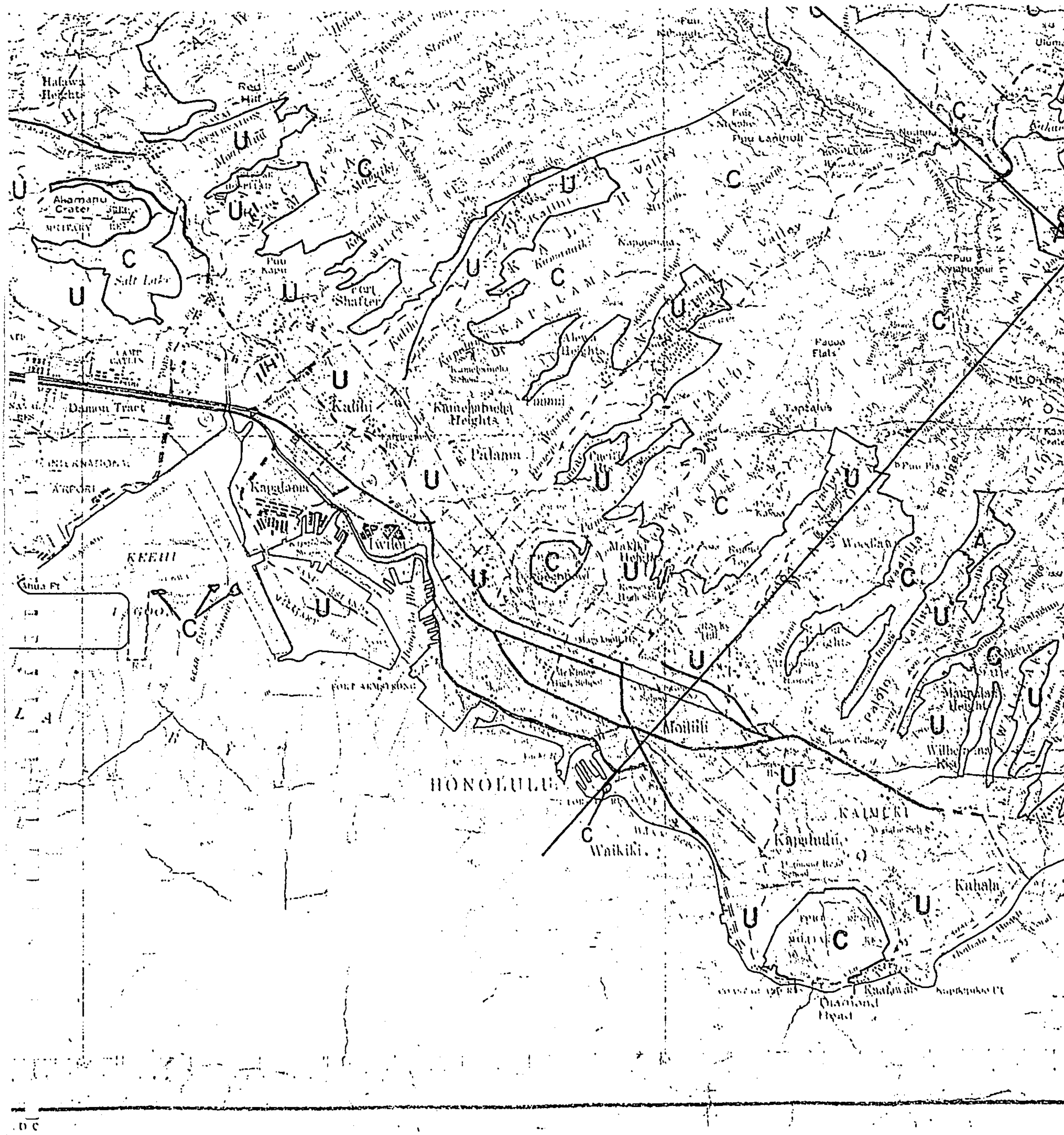
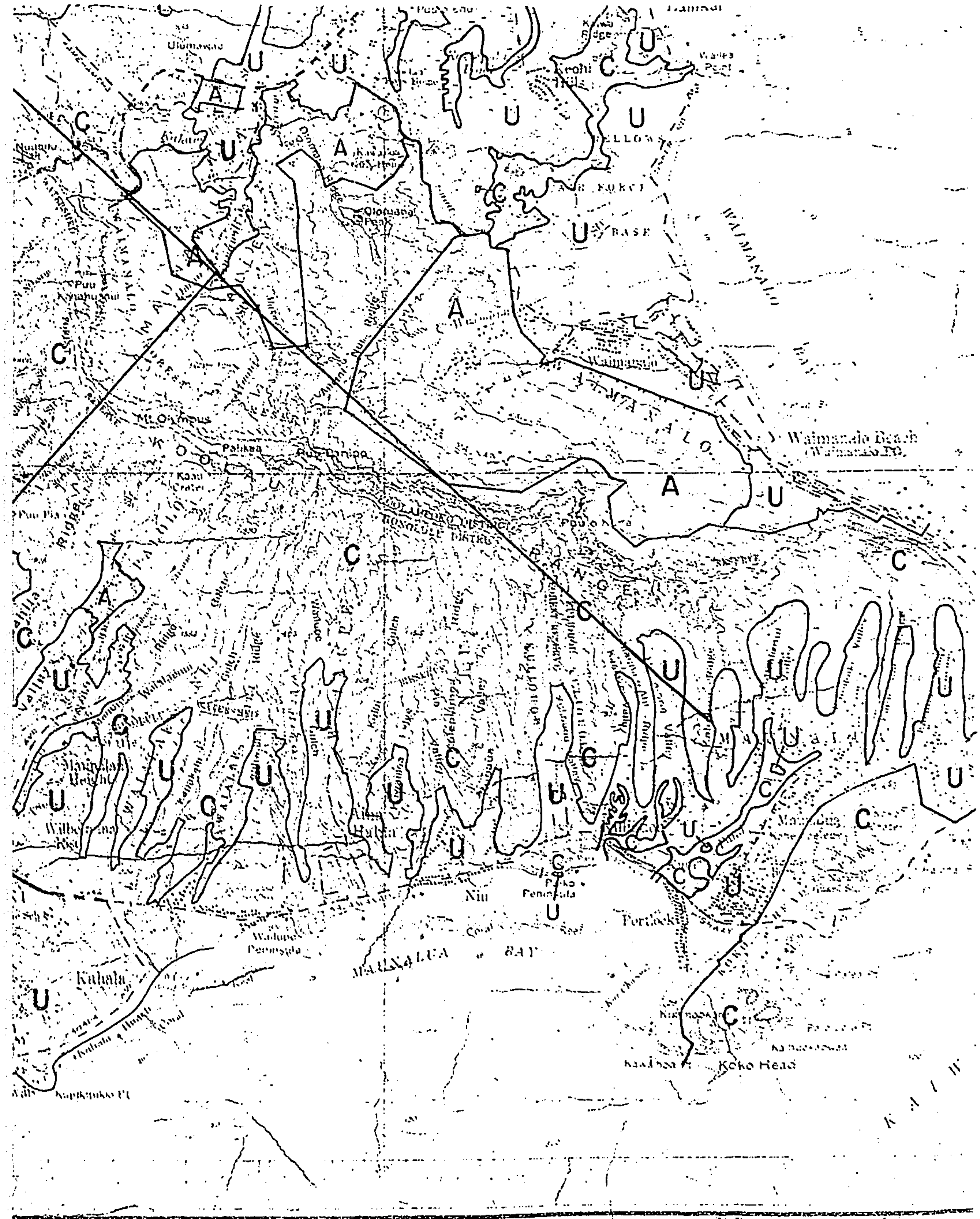
APPENDIX IX

AXONOMETRIC PLANS


AVENUE
BOULEVARD
RESORT COMMERCIAL PRECINCT
ALA WAI BOULEVARD
HAKAOE LN
PAU ST.
DUDOIT LANE
ROAD
320'
BLVD.
STREET
LIPEEPEE
350'
MAUKA
APARTMENT
PRECINCT
ALA WAI GATEWAY TOWER
MAKAI
DRIVE
MOANA
KALIA
350'
350'
RESORT HOTEL



Halawa Heights
Red Hill
Salt Lake
Puu Kapu
Fort Shafter
Camp Catlin
Damon Tract
Kalihi
Kamehameha Heights
Palama
Kapalama
Puu Lanihuli
Pauoa Flats
Tantalus
Makiki Heights
Woodlawn
KEEHI
HONOLULU
Moiliili
KAIMUKI
Kapahulu
Waikiki
Kahala
Maunalani Heights
Diamond Head
Kaalawai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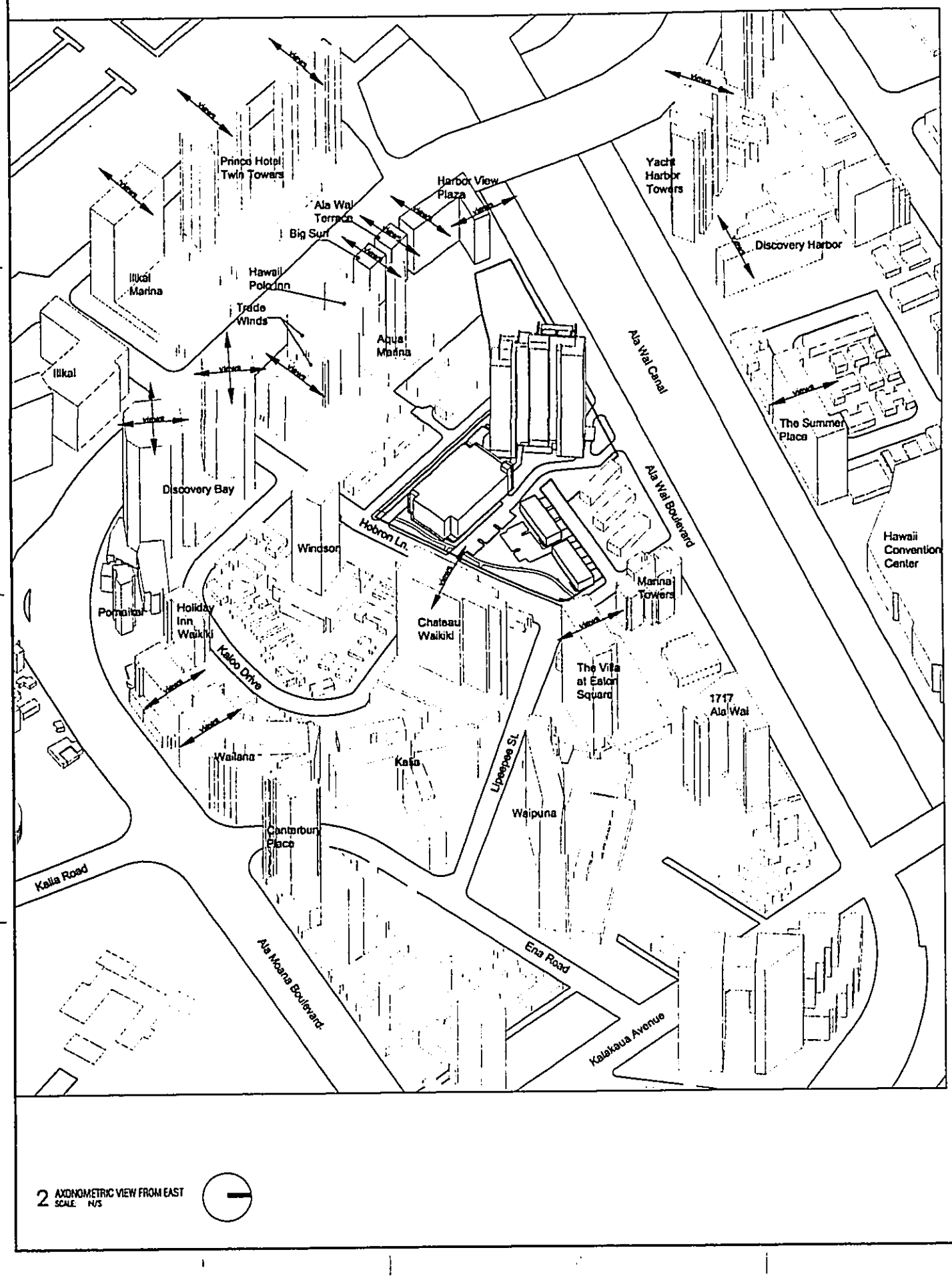
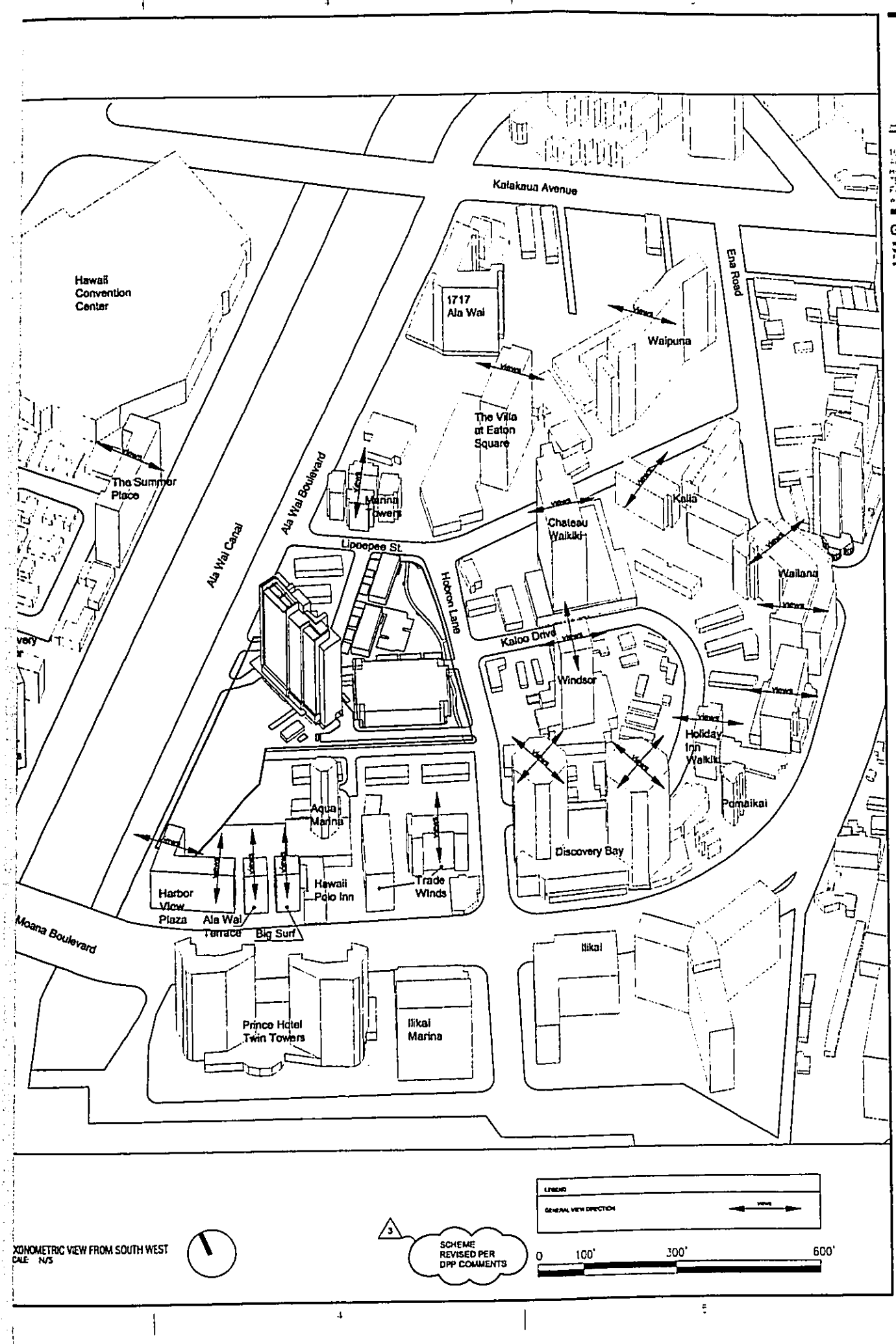
Olomana Peak
Waimanalo
Waimanalo Beach
(Waimanalo P.O.)
Niu
Portlock
Kahala
Koko Head


Prince Hotel Twin Towers
Harbor View Plaza
Ala Wai Terrace
Big Sur
Ilikai Marina
Hawaii Polo Inn
Trade Winds
Aqua Marina
Ilikai
Yacht Harbor Towers
Discovery Harbor
Ala Wai Canal
The Summer Place
Hawaii Convention Center
Ala Wai Boulevard
Discovery Bay
Hobron Ln.
Windsor
Marina Towers
Pomaikai
Holiday Inn Waikiki
Kalia Road
Chateau Waikiki
The Villa at Eaton Square
1717 Ala Wai
Lipoepoe St.
Waipuna
Waikiki
Kaia
Canterbury Place
Ena Road
Ala Moana Boulevard
Kalakaua Avenue
Harbor View Plaza
2 AXONOMETRIC VIEW FROM EAST
SCALE: N/S
1 AXONOMETRIC VIEW FROM SOUTH WEST
SCALE: N/S



XONOMETRIC VIEW FROM SOUTH WEST
CALE N/S

3 SCHEME REVISED PER DPP COMMENTS

ARCHITECTURE
1001 BISHOP STREET, SUITE
HONOLULU, HAWAII
TELEPHONE
FAX
www.architecture-hawaii.com

G2 ARCHITECTURE, P.C.

ALA WAI GATEWAY
ALA WAI BLVD. HONOLULU, HI

This work was prepared by me or under my supervision and construction of this project will be under my supervision. (Observation of construction as defined in Chapter 16-115, Subchapter Definitions of the Hawaii Administrative Rules, "Professional Engineers, Architects, Surveyors, and Landscape Architects.")

signature expiration date of the license

NOTE: Contractor to check and verify dimensions at job before proceeding with work.

3	11/15/04
2	10/20/04
1	10/22/04

PROJECT NO 5061 / 0401
CAD DWG FILE
DRAWN BY
DATE 10/22/04
DRAWING NO

WSDX.00
AXONOMETRIC VIEWS

1 of 28 Sheets

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APPENDIX X

PHOTOGRAPHS

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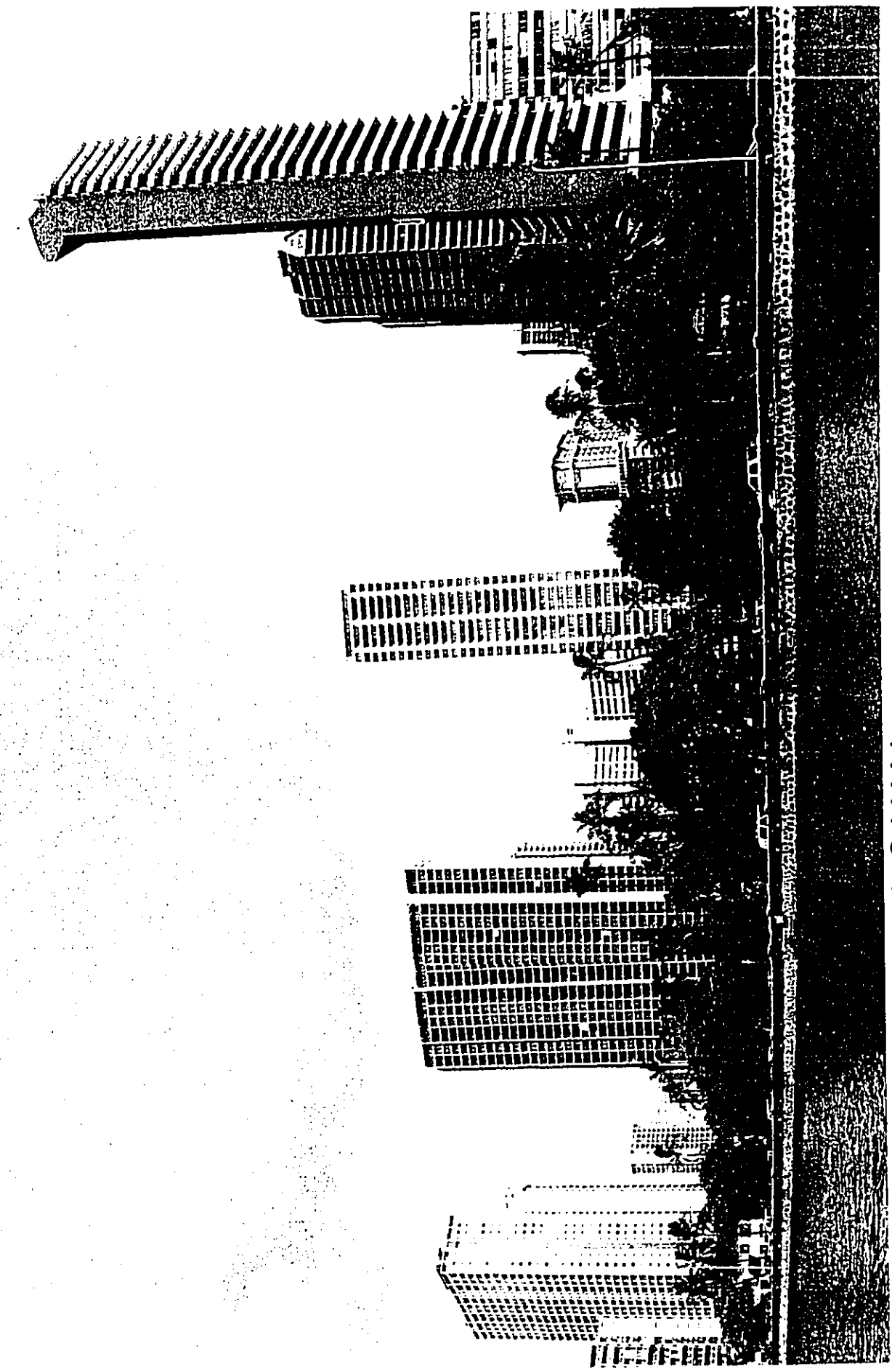

VIEW FROM ALA WAI CANAI

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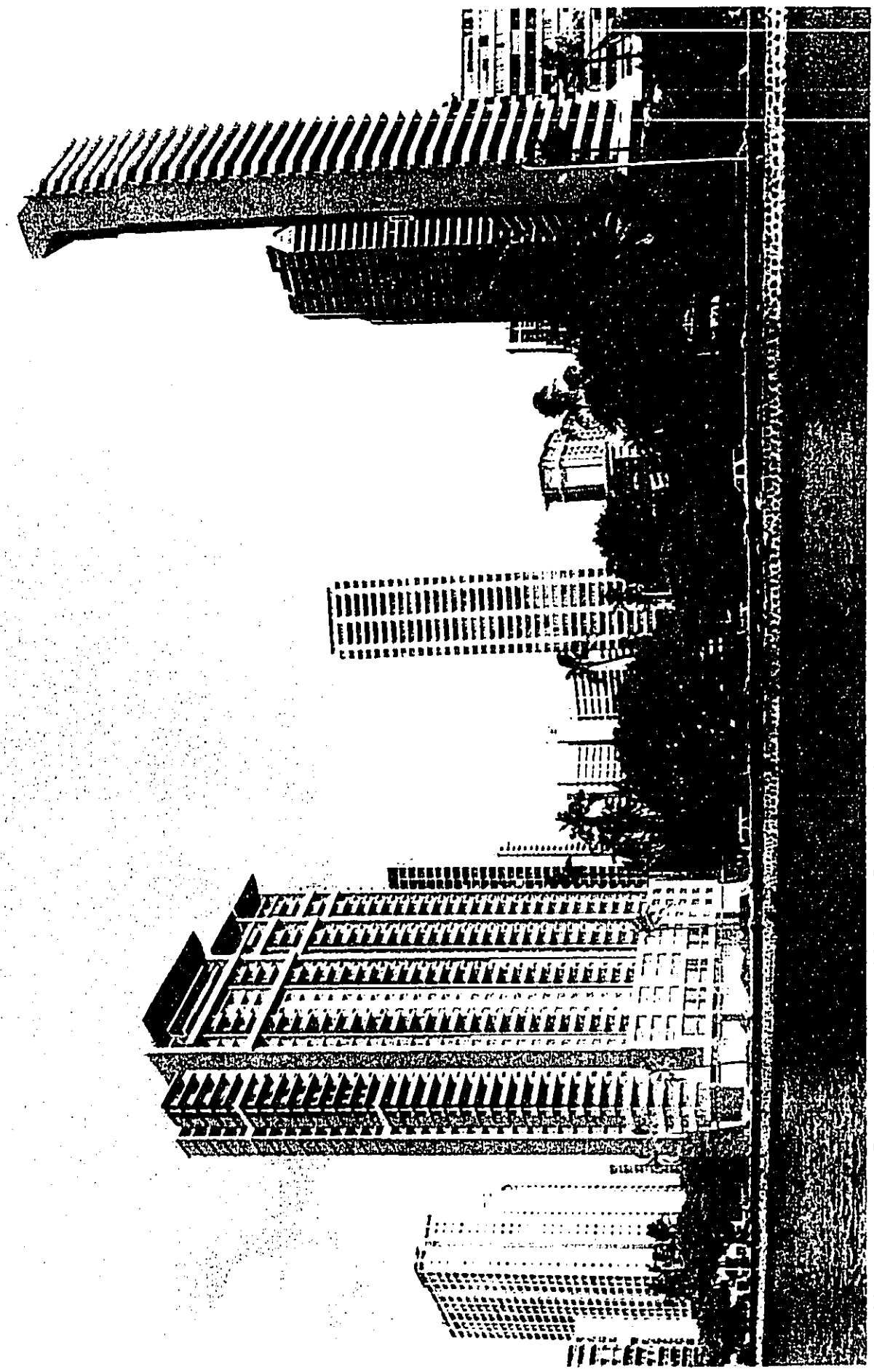

VIEW FROM ALA WAI CANAL - WITH AI A WAI GATEWAY

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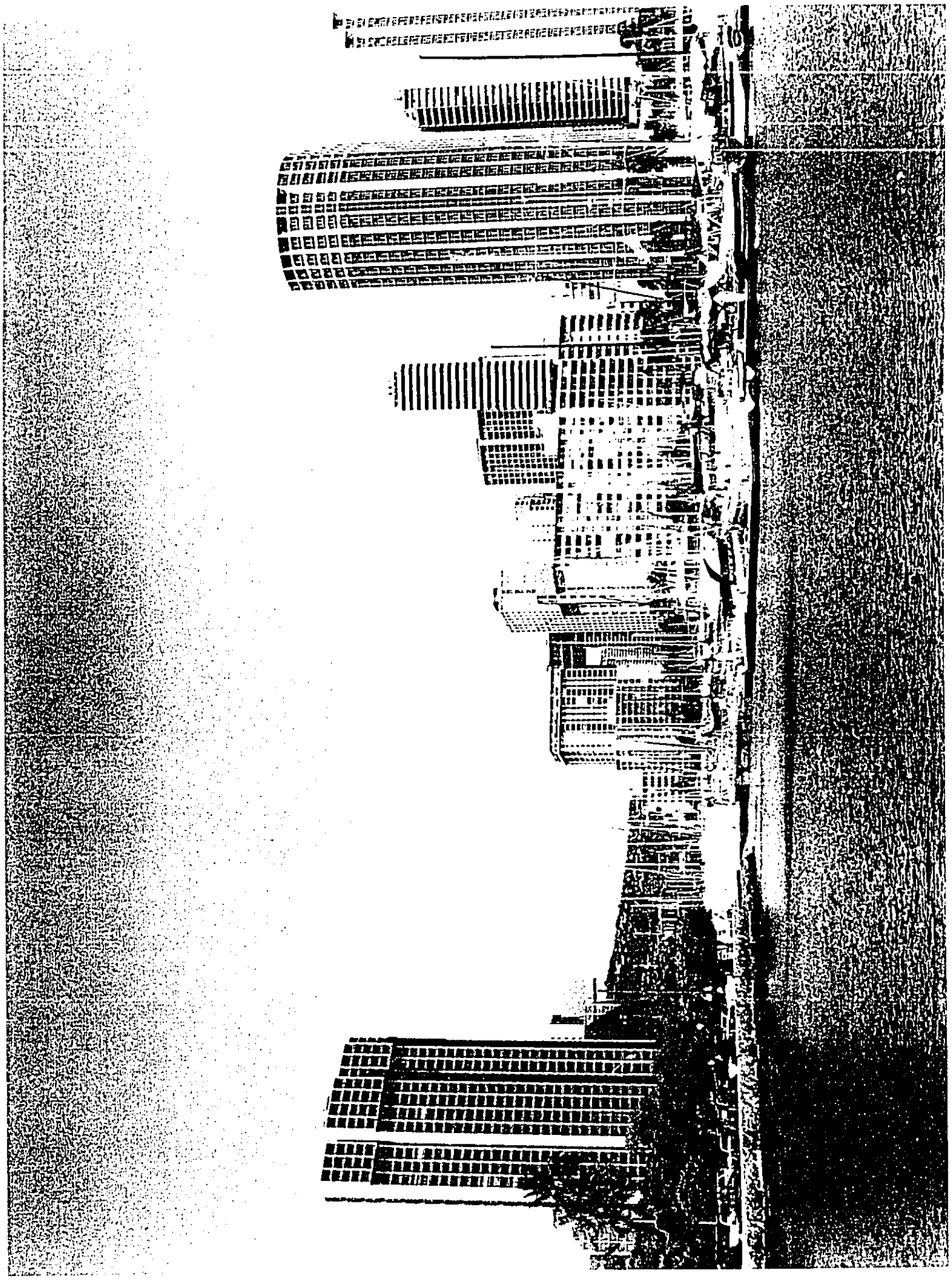

VIEW FROM MAGIC ISLAND

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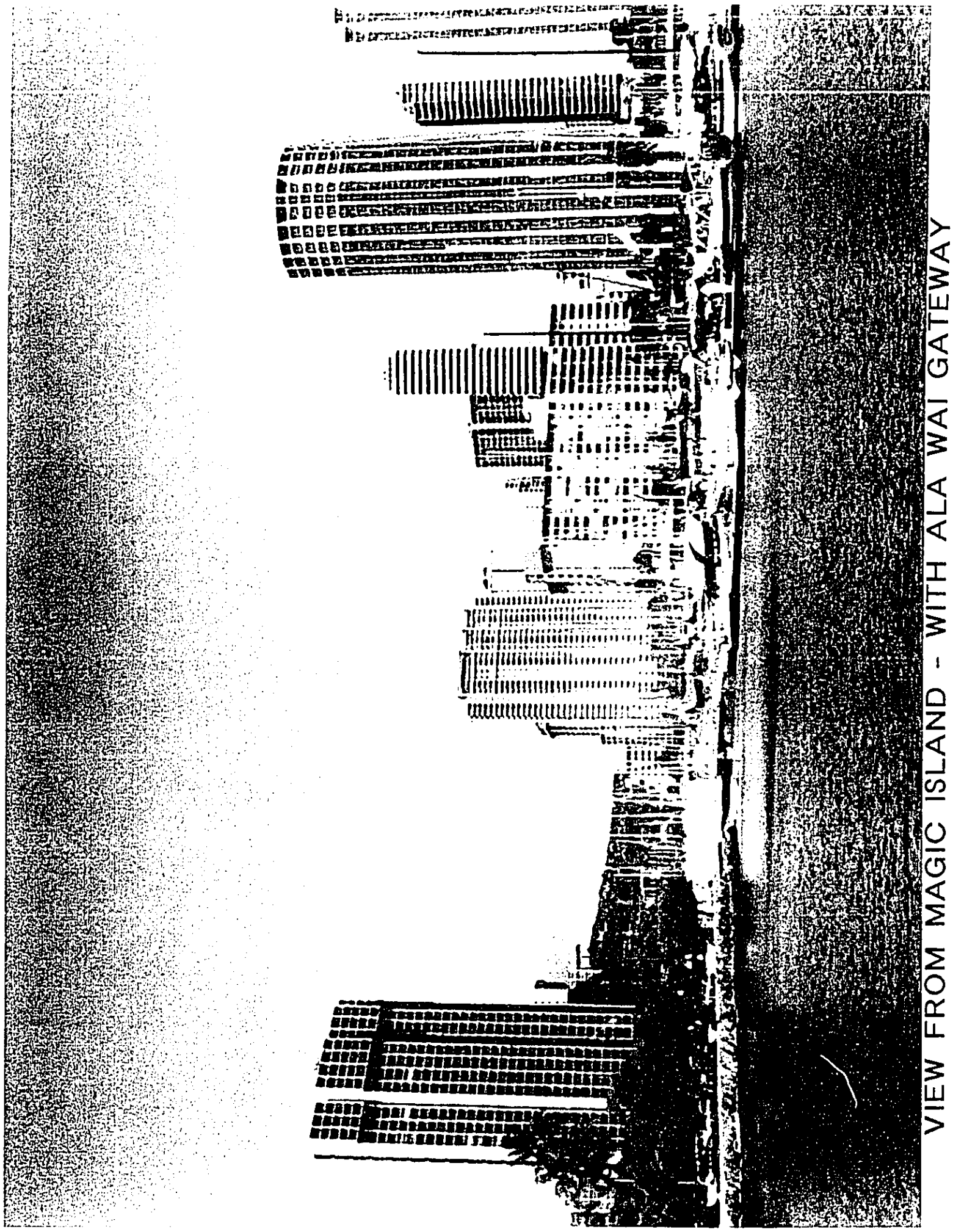

VIEW FROM MAGIC ISLAND - WITH ALA WAI GATEWAY

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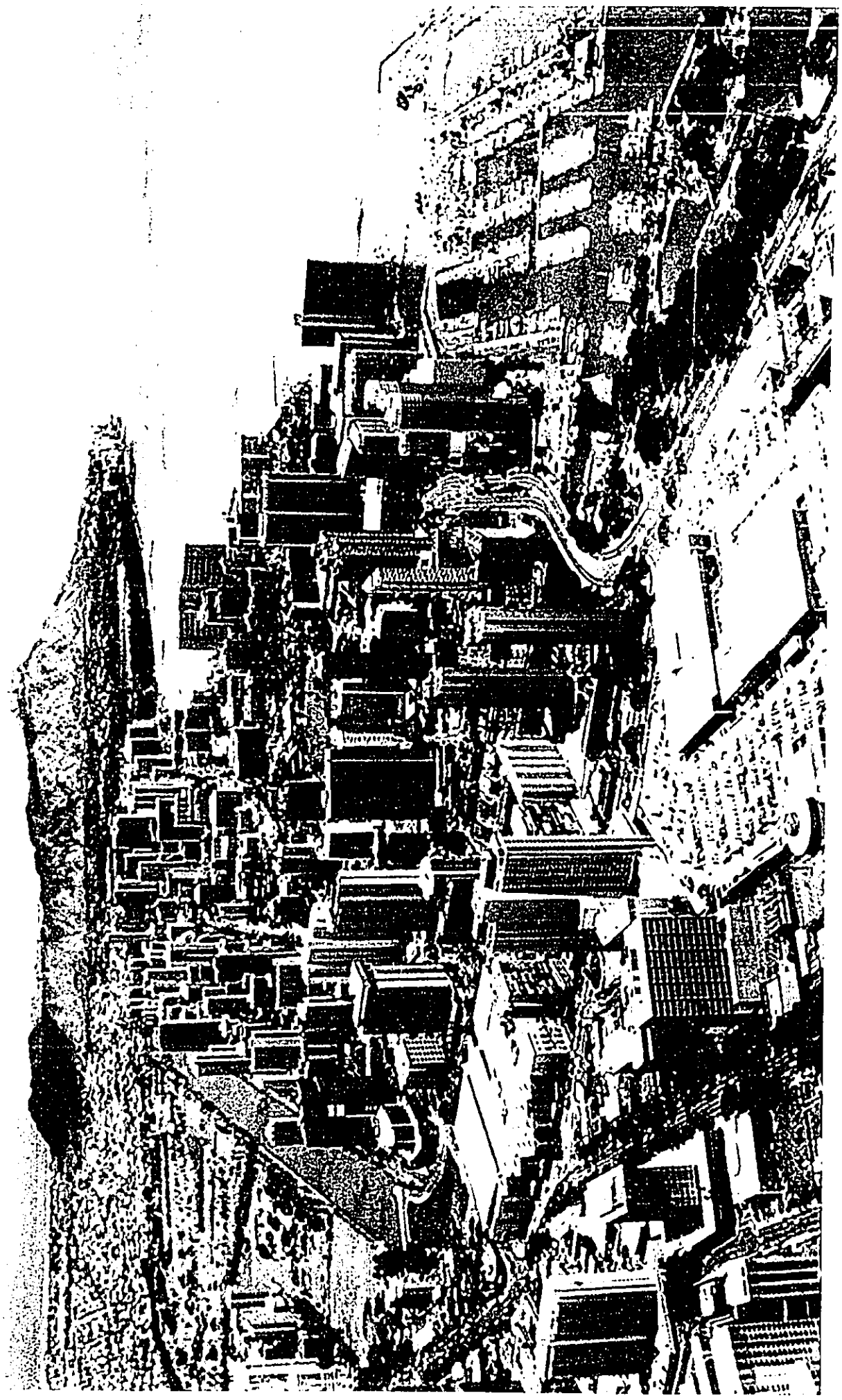

AERIAL VIEW TOWARD DIAMOND HEAD

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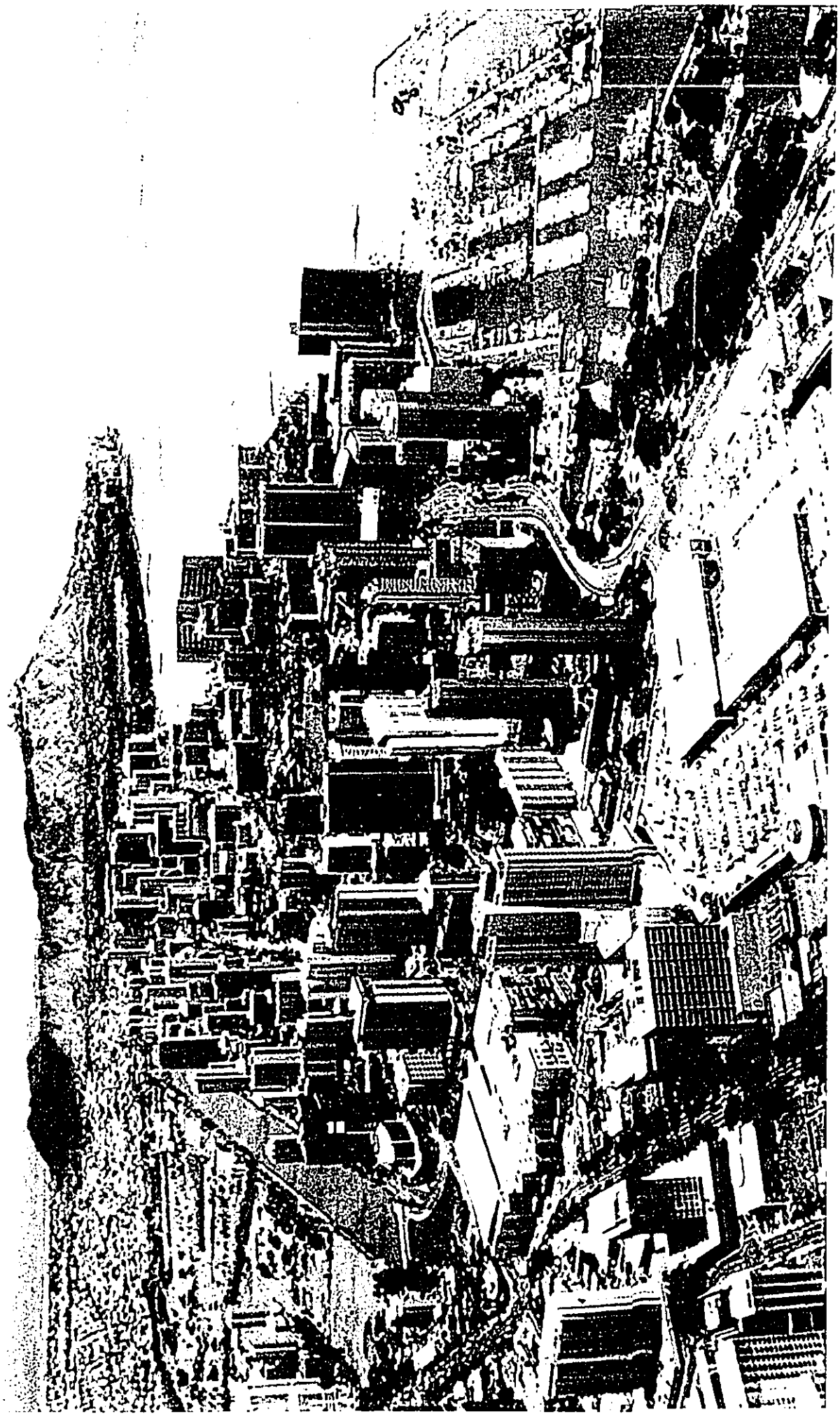

AERIAL VIEW TOWARD DIAMOND HEAD - WITH ALA WAI GATEWAY

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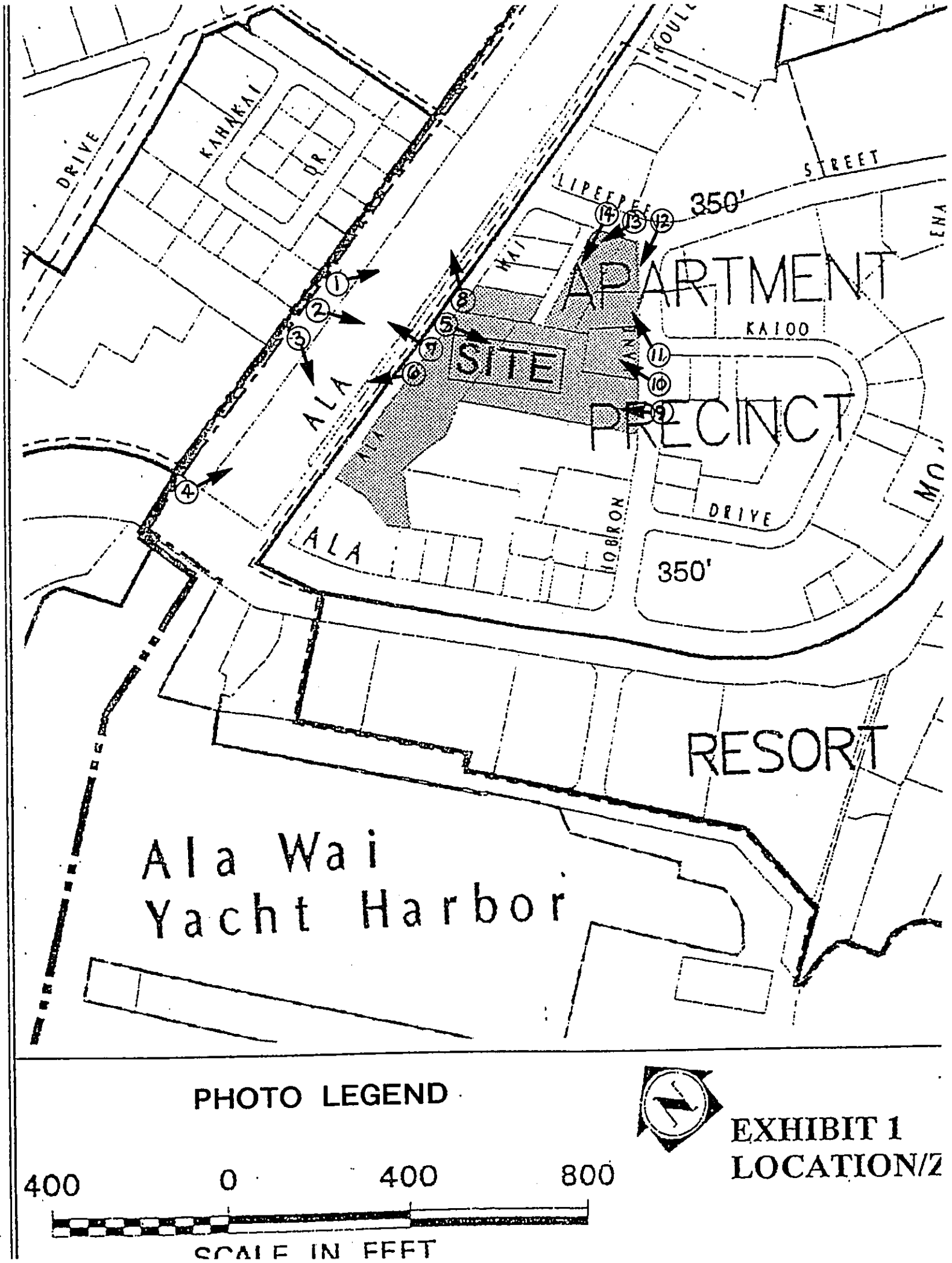

EXHIBIT 1
LOCATION/Z

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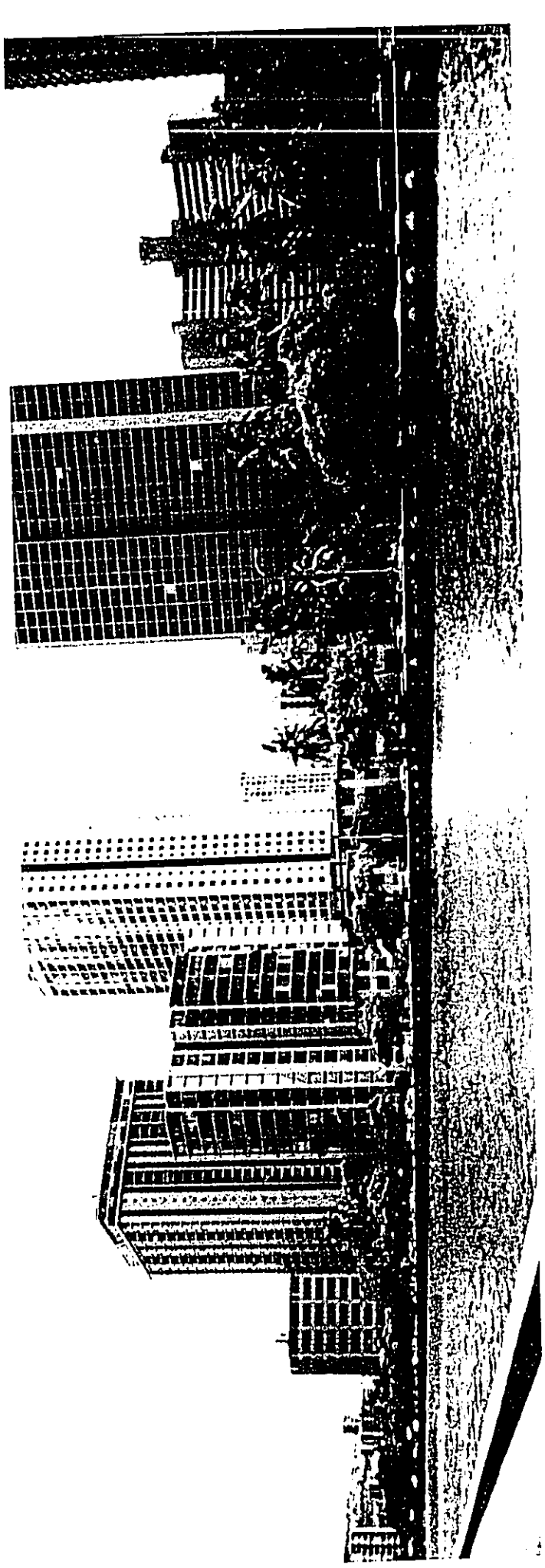

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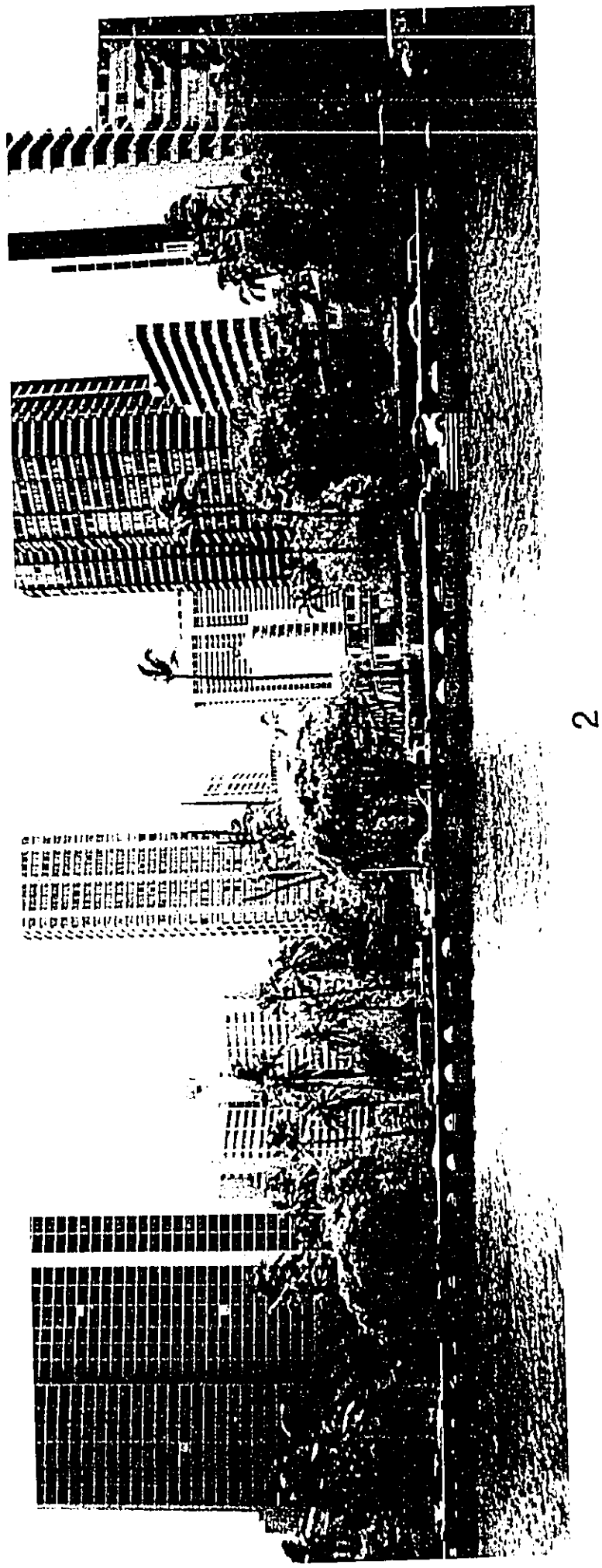

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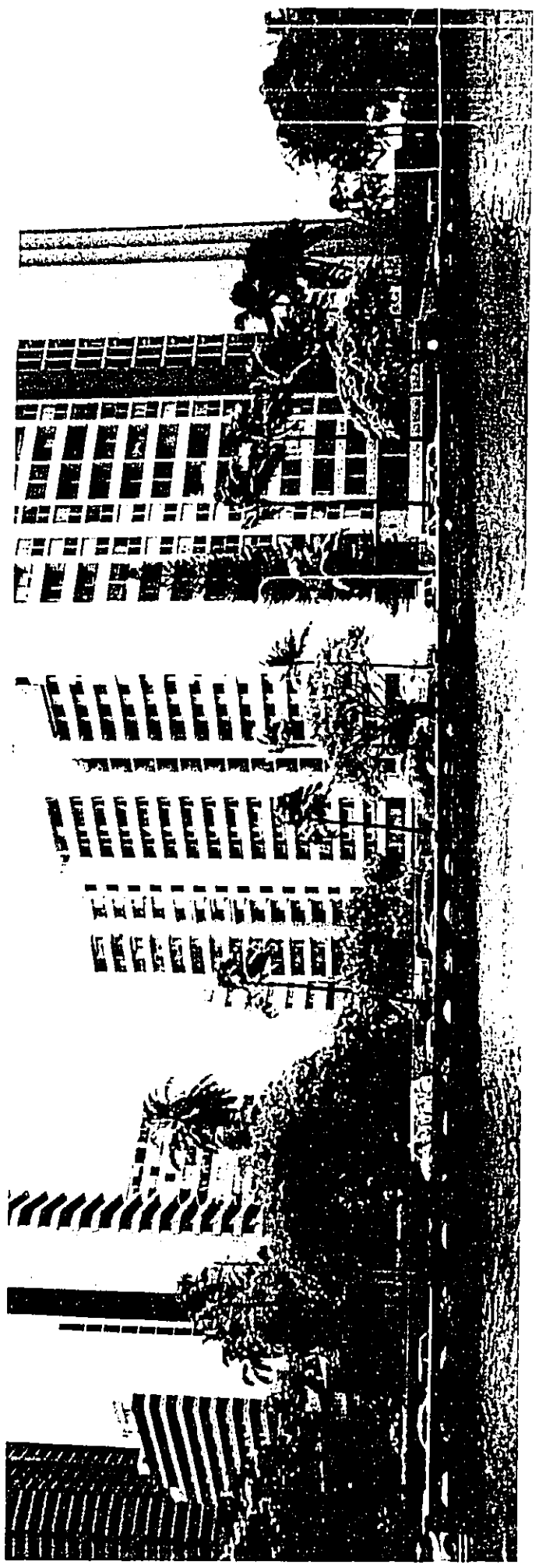

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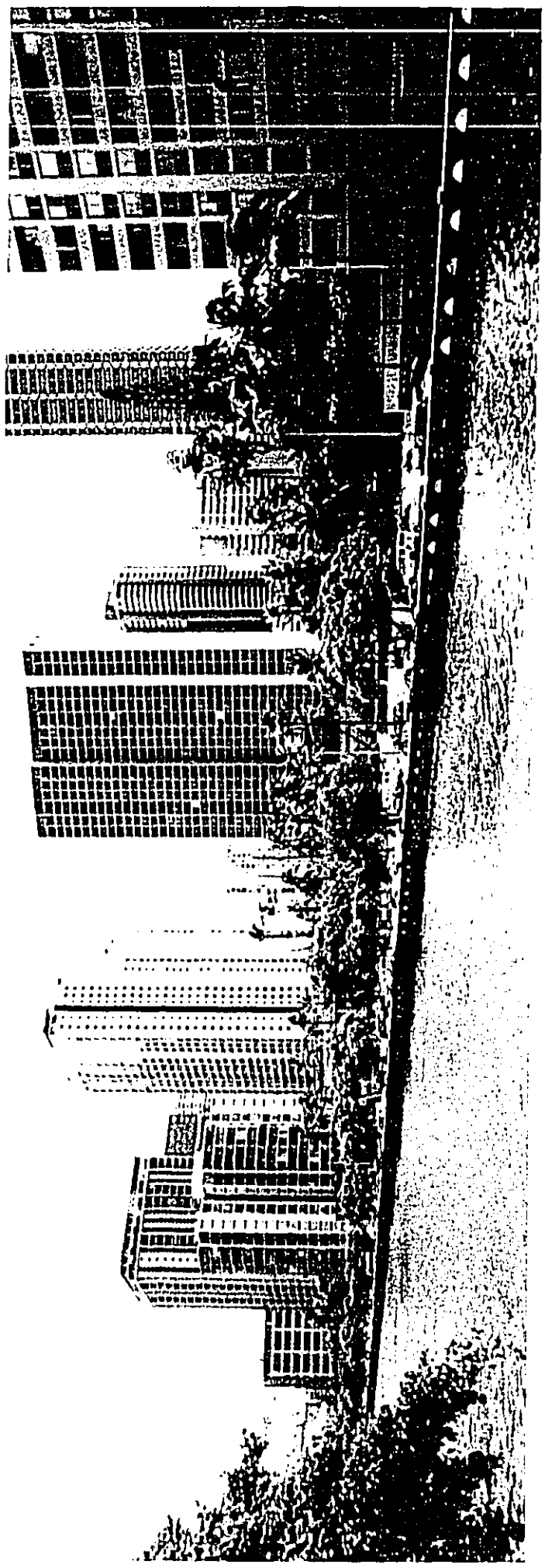

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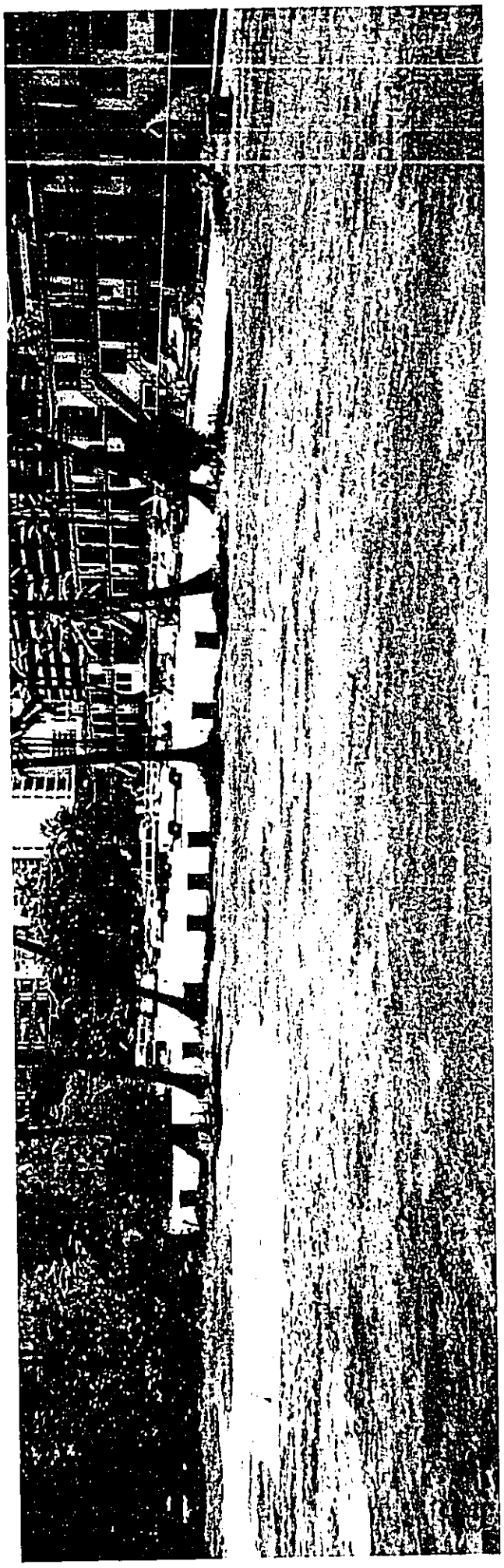

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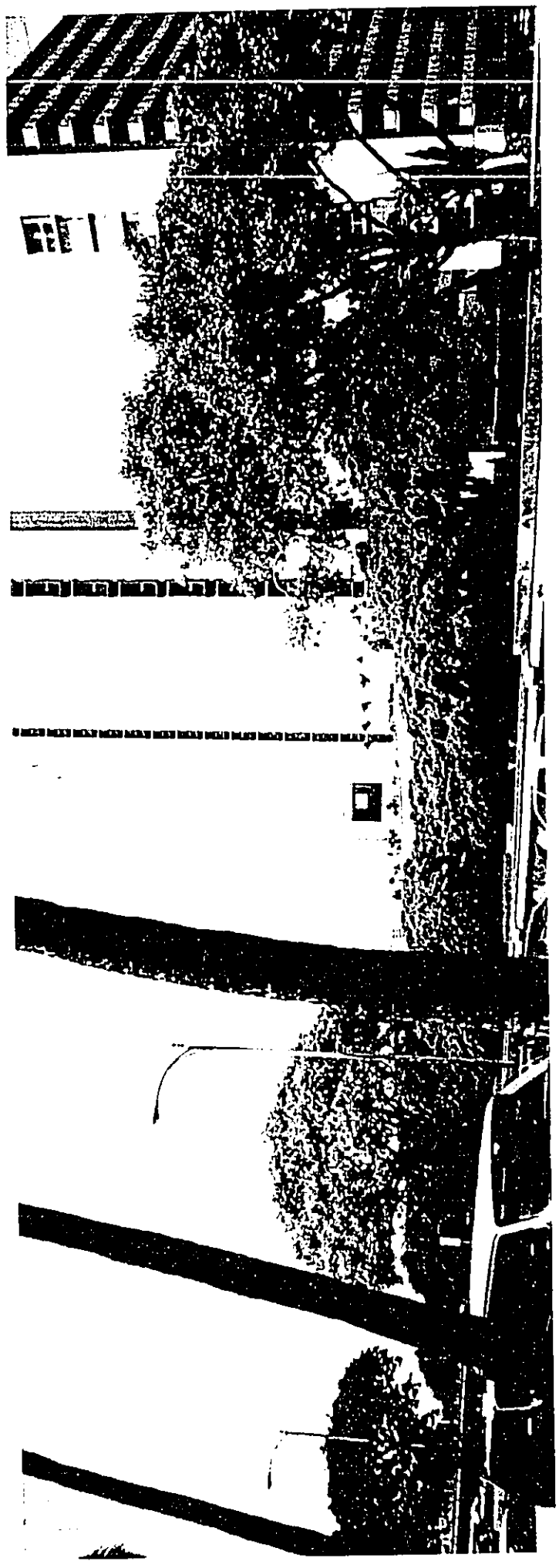

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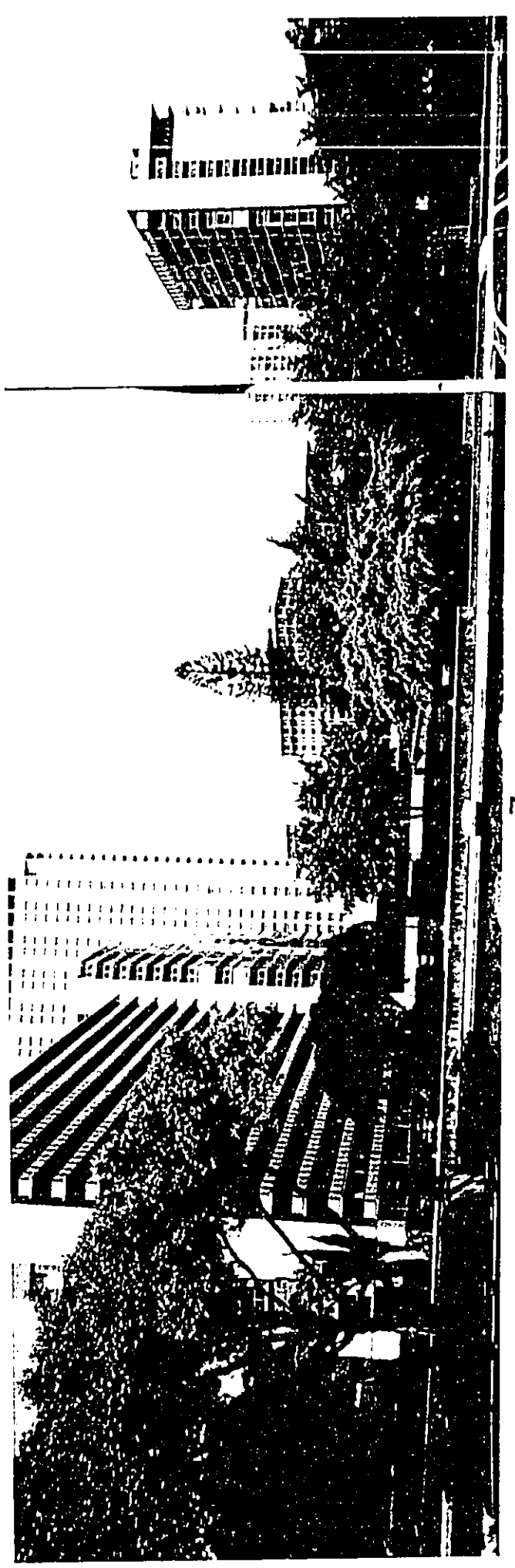

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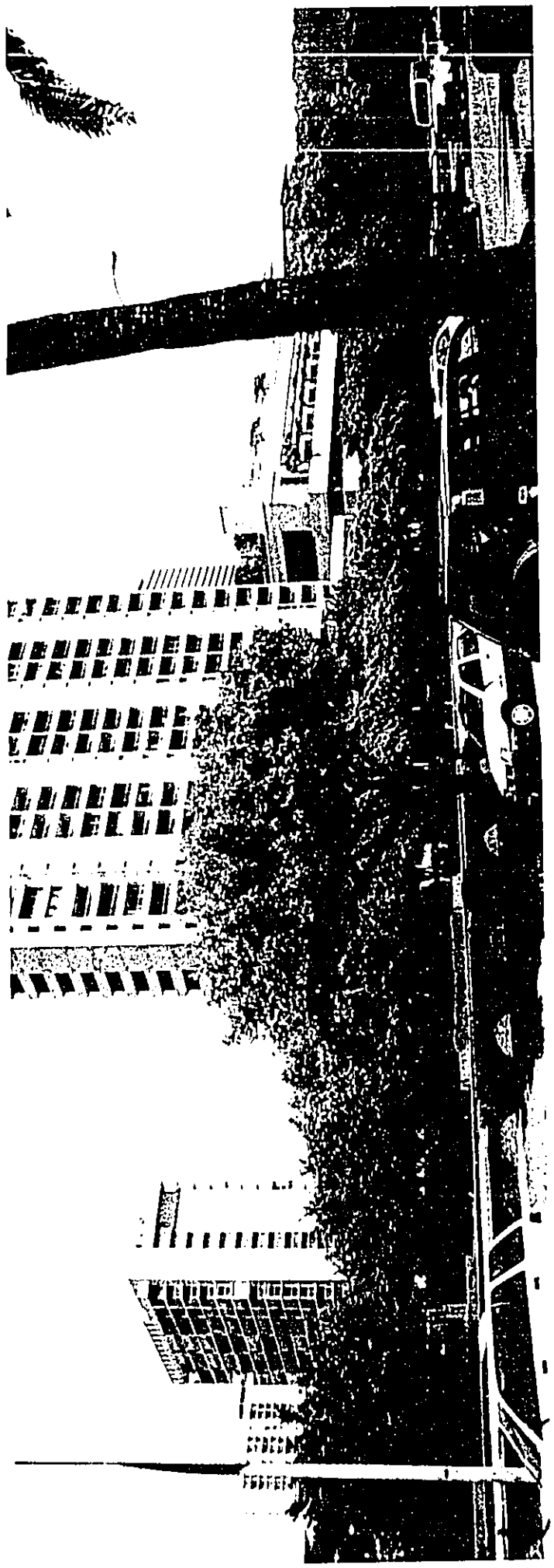

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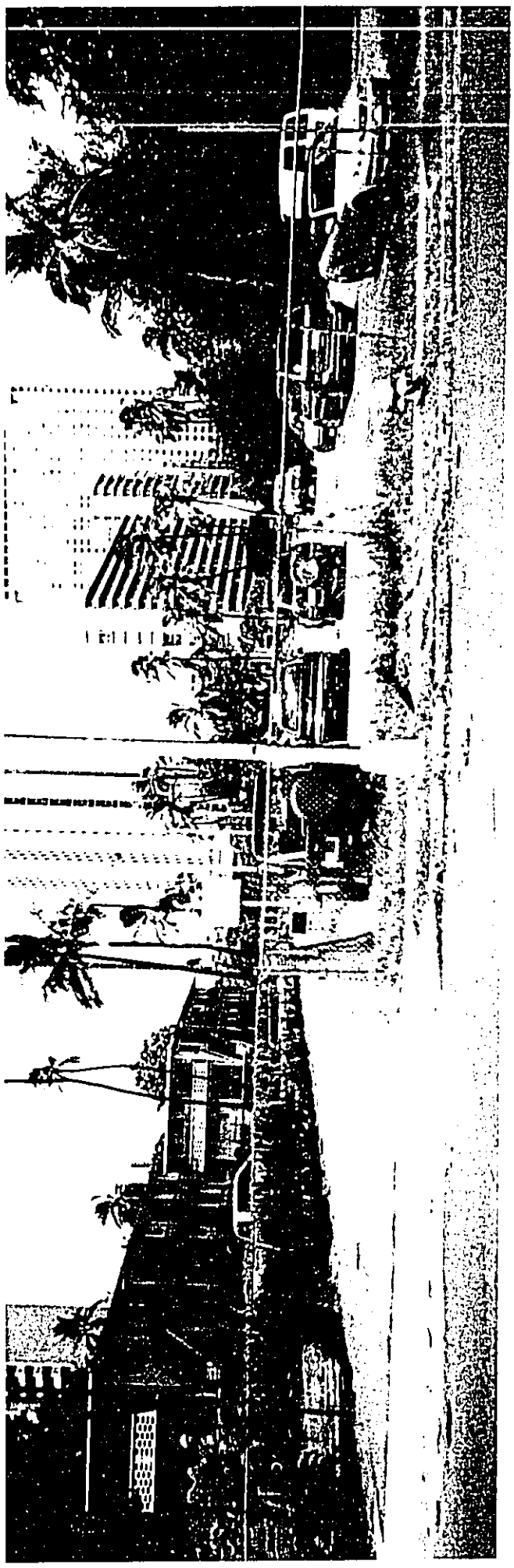

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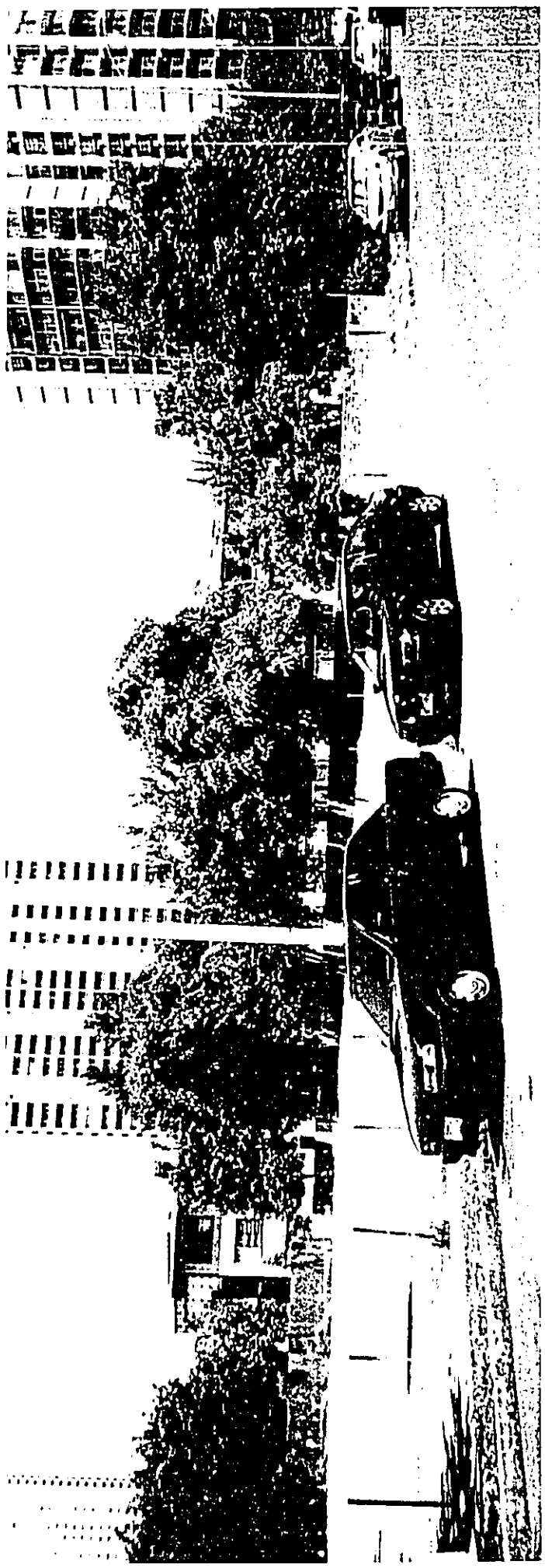

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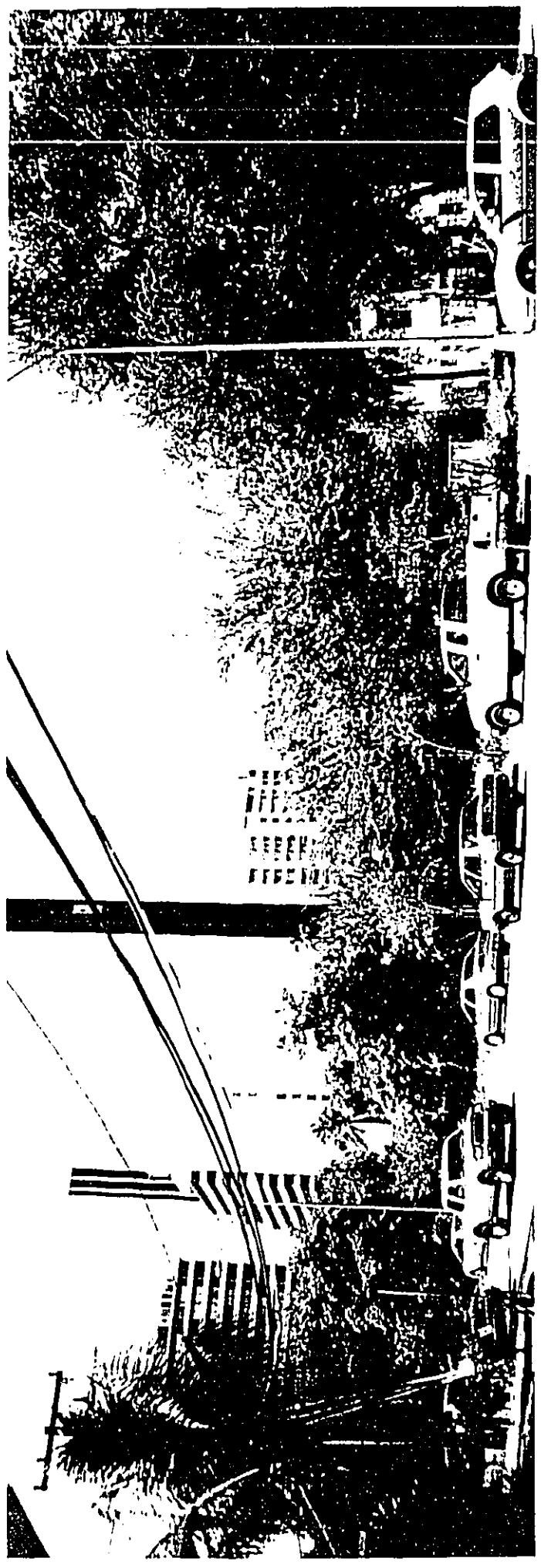

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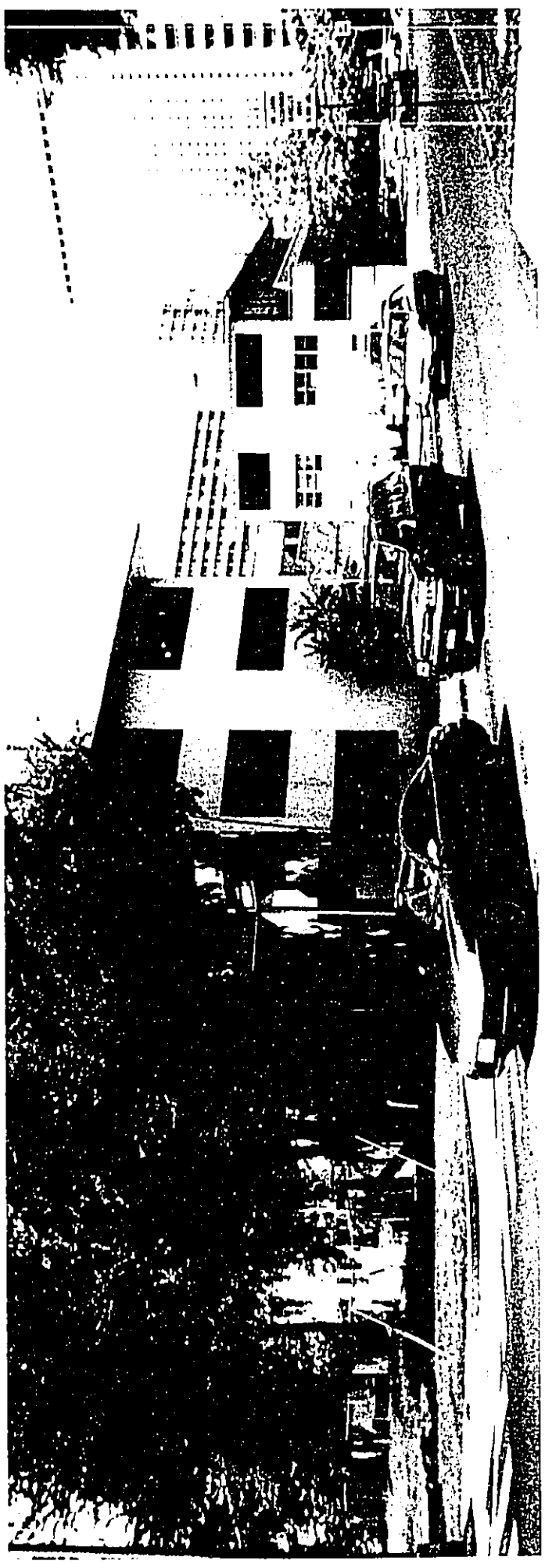

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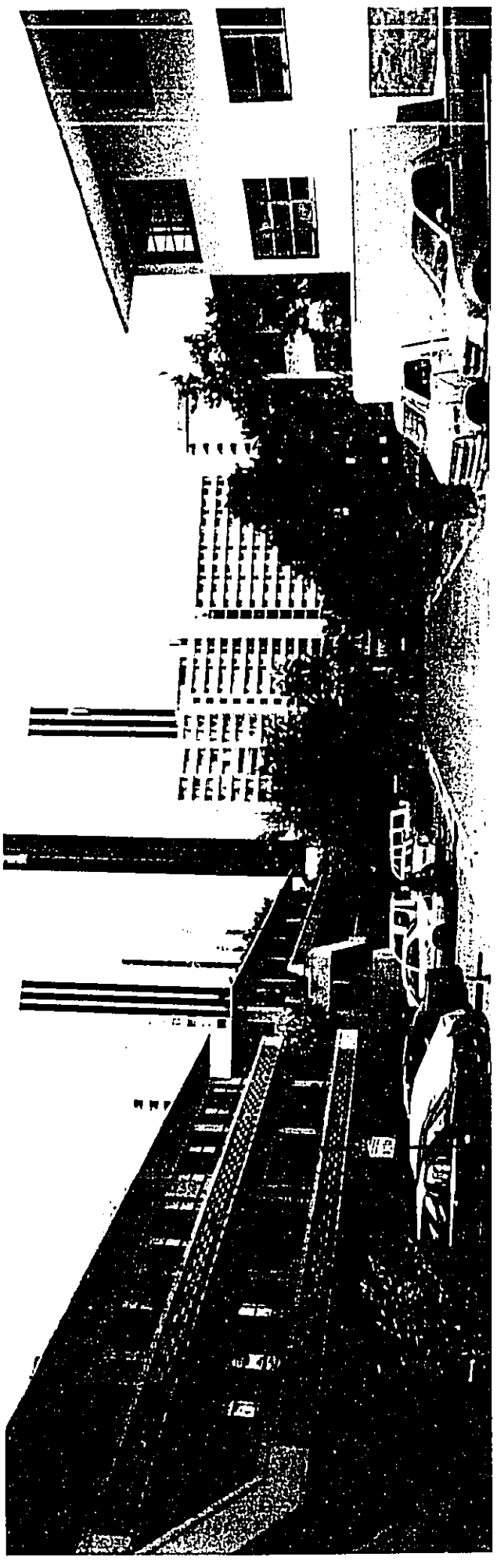

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APPENDIX XI

LAND USE ORDINANCE DEVELOPMENT STANDARDS

Architects Hawaii, Ltd.
G2 Architecture P.C.

LAND USE ORDINANCE ZONING REQUIREMENTS
ALA WAI GATEWAY

WSD SUBMITTAL
September 15, 2004
Rev: 10/22/04; 10/29/04; 11/15/04

									Required	11/15/2004 Project As Designed
1.0 Zoning:									**Waikiki Special District (WSD) - Apartment Precinct**	
2.0 Zoning Lot Area TMK 2-6-11:										
Parcel 4			116,395	SF						
Parcel 2			13,786	SF						
Parcel 1			10,441	SF						
Parcel 40			8,000	SF						
Parcel 32			9,831	SF						
Parcel 37			16,899	SF						
Total Zoning Lot			**175,352**	**SF**						
2.1 Parcel 37 - Existing Floor Area to Remain:										
Existing Building 1			2,850	SF		x	3 FLRS	=	8,550	SF
Existing Building 2			2,854	SF		x	3 FLRS	=	8,562	SF
Total Existing Floor Area for Parcel 37 to Remain									17,112	SF
3.0 Floor Area Ratio (F.A.R.)									**1.5**	
4.0 Permissible Floor Area (See Attached Diagram A):										
Zoning Lot			175,352	SF		x	1.5 FAR	=	263,028	SF
1/2 Street - Ala Wai Blvd.	521.92 FT	x	71	FT	x 0.5	x	1.5 FAR	=	27,792	SF
1/2 Street - Hobron Lane	432.61 FT	x	54	FT	x 0.5	x	1.5 FAR	=	17,521	SF
1/2 Street - Lipeepee Street	90.17 FT	x	56	FT	x 0.5	x	1.5 FAR	=	3,787	SF
1/2 Street - Lipeepee Street at Private Roadway Intersection						x	1.5 FAR	=	277	SF
1/2 Street - Intersection of Hobron Lane & Lipeepee Street						x	1.5 FAR	=	511	SF
Sutotal Floor Area									312,916	SF
Minus Total Existing Floor Area For Parcel 37					-	17,112	SF			
Total Permissible Floor Area						**295,804**	**SF**			**295,584 SF**
5.0 Maximum Height Allowed (350 Ft. + 5 Ft. Zoning Adjustment):									**355 FT**	
Tower										**355 FT**
Parking Structure										**55 FT**
Maximum Mechanical Appurtenances / Roof Forms above Maximum Hgt.									**18 FT**	**18 FT**
6.0 Yard Requirements up to 40 Ft. Building Height:										
Front Yards (Ala Wai Boulevard, Hobron Lane, & Private Roadway - Parcel 36)									**15 FT**	
Side Yards									**10 FT**	
6.1 *Total Yard and Transitional Height Setbacks:										
Ala Wai Boulevard Front Yard Averaging Setback Line At Tower: 0'-0" from Property Line - Setback at Height of 344'-6" :						0 Ft. Yard + 30.4 Ft. Height Setback =			**30 FT**	**39 FT**
Ala Wai Boulevard Front Yard Averaging Setback Line At Tower: 17'-6" from Property Line - Setback at Height of 355'-0" :						17.5 Ft. Yard + 31.5 Ft Hgt. Setback =			**49 FT**	**54.4 FT**
Private Roadway - Parcel 36 Setback at Tower - Setback at Height of 355'-0":						15 Ft. Yard + 31.5 Ft. Height Setback =			**47 FT**	**63.8 FT**

*** See also sheet WSD1.00A for additional information.**

Architects Hawaii, Ltd.
G2 Architecture P.C.

LAND USE ORDINANCE ZONING REQUIREMENTS
ALA WAI GATEWAY

WSD SUBMITTAL
September 15, 2004
Rev: 10/22/04; 10/29/04; 11/15/04

		Required	11/15/2004 Project As Designed
6.1 *Total Yard and Transitional Height Setbacks (continued):			
Hobron Lane Front Yard Height Setback:	15 Ft. Yard + 1.5 Ft. Height Setback =	16.5 FT	22.5 FT
SideYard Setback at Parking Structure:	10 Ft. Yard + 1.5 Ft. Height Setback =	11.5 FT	39.5 FT
Side Yard Setback at Tower:			
Setback at Tower Height 308'-8":	10 Ft. Yard + 26.9 Ft. Hgt. Setback =	36.9 FT	41.1 FT
Setback at Tower Height 335'-6":	10 Ft. Yard + 29.6 Ft. Hgt. Setback =	39.6 FT	51 FT
Side Yard Setback at Pool House:		10 FT	10 FT
Existing Bldgs. at Parcel 37 - Front Yard Setback at Parcel 36:		15 FT	25.5 FT
Existing Bldgs. at Parcel 37 - Front Yard Setback at Lipeepee Street:		15 FT	0 FT
*** See also sheet WSD1.00A for additional information.**			
7.0 *Minimum* Open Space Required (50% of Total Zoning Lot = 175,352 x 50%)		87,676 SF	
Open Space Provided for Parcels 1, 2, 4, 40, and 32			98,020 SF
Open Space Provided for Parcel 37			7,941 SF
Total Open Space Provided			105,961 SF
Percentage Open Space of Total Zoning Lot			60%
Excess Open Space			18,285 SF
8.0 Park Dedication (Lesser of Below):			
10% of Permissible Floor Area (295,804 SF x 10%)		29,580 SF	
110 SF x (212 Tower Units + 36 Existing Units)		27,280 SF	see note
Note: This can be provided by using a portion of the	**105,961 SF of Open Space from 7.0.**		
9.0 Parking Required: 1 Stall per Unit		212	439
212 Tower Units		36	31
36 Existing Units on Parcel 37		248	470
Total Parking Stalls			
9.1 Accessible Parking Stall Requirements:			
2% of 439 parking spaces =		2	2
Van-accessible parking spaces (one for every six or fraction thereof)		7	8
Accessible parking spaces		1	1
2% of 31 parking spaces for Parcel 37 (van-accessible)			
10.0 Loading Required: 2 Spaces		1	1
8'-6" x 19'-0" x 10'-0" Clear Height		1	1
12'-0" x 35'-0" x 14'-0" Clear Height			

LAND USE ORDINANCE ZONING REQUIREMENTS
ALA WAI GATEWAY

WSD SUBMITTAL
September 15, 2004
Rev: 10/22/04; 10/29/04; 11/15/04

		11/15/2004 Project As Designed
11.0 Additional General Project Information (New Construction Only):		
Number of 2-BR 2-BA Units		210
Number of 3-BR 2.5-BA Units (Penthouse Level 37)		1
Number of 3-BR 3-BA Units (Penthouse Level 38)		1
Total Units		212
Tower:		
Lobby Level (18'-6" Floor-to-Floor Height, +3'-6" above grade)	Number of Stories	1
Typical Unit Levels (8'-11 1/2" Floor-to-Floor Height)	Number of Stories	36
Penthouse Level (10'-6" Floor-to-Floor Height)	Number of Stories	1
Total Stories		38
Parking Structure:		
Total Stories		6
Parking Stalls		426
Surface Parking:		13
Surface Parking for Parcel 37:		31

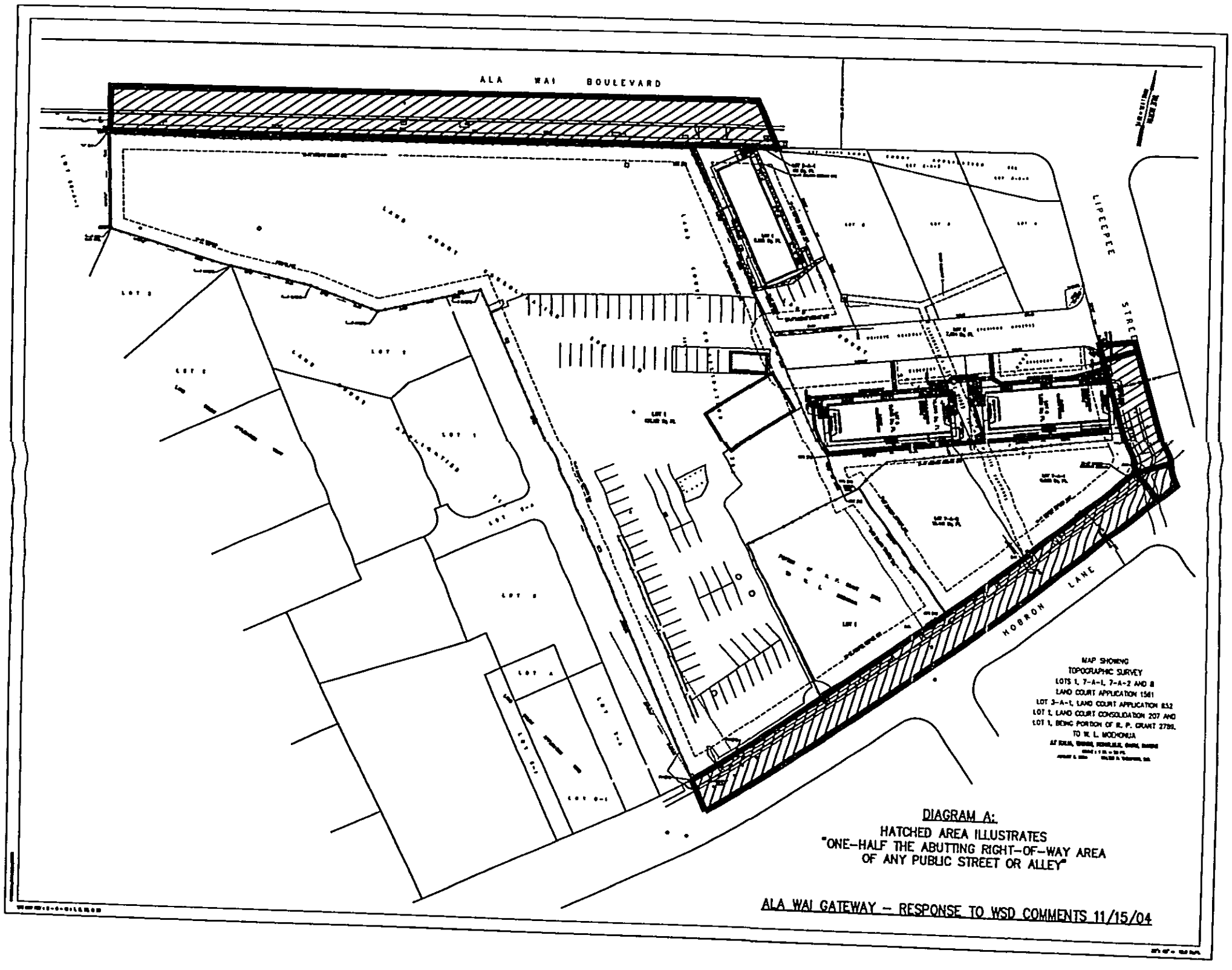

DIAGRAM A:
HATCHED AREA ILLUSTRATES
"ONE-HALF THE ABUTTING RIGHT-OF-WAY AREA
OF ANY PUBLIC STREET OR ALLEY"

ALA WAI GATEWAY – RESPONSE TO WSD COMMENTS 11/15/04

APPENDIX XII

AGENCY AND PUBLIC COMMENTS ON THE DRAFT EA

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4414 • FAX: (808) 527-6743
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JEREMY HARRIS
MAYOR

ERIC G. CRISPIN, AIA
DIRECTOR

BARBARA KIM STANTON
DEPUTY DIRECTOR

2004/ED-24(sn)

November 8, 2004

Mr. Keith Kurahashi
Kusao & Kurahashi, Inc.
2752 Woodlawn Drive, #5-202
Honolulu, Hawaii 96822

Dear Mr. Kurahashi:

Draft Environmental Assessment No. 2004/ED-24
Chapter 343, Hawaii Revised Statutes

Project	:	Ala Wai Gateway Condominium Development
Location	:	372 & 376 Hobron Lane (Parcel 1) 362 Hobron Lane (Parcel 2) 352 Hobron Lane (Parcel 4) 386 Hobron Lane (Parcel 40) 1609 Ala Wai Boulevard (Parcel 32) 1819 Lipeepee Street (Parcel 37)
Tax Map Keys	:	2-6-11: 1, 2, 4, 32, 37 and 40
Received	:	August 18, 2004

Transmitted are comments that the department has received from governmental agencies regarding the above Draft Environmental Assessment (EA).

In accordance with the provisions of Chapter 343, Hawaii Revised Statutes, you must respond, in writing, to these and any other comments that were received during the 30-day comment period, which began with the publication of a notice of availability of the Draft Environmental Assessment (EA) in The Environmental Notice on October 8, 2004. The Final EA must include these comments and responses, as well as the revised text, where needed.

Also, the following are comments on the Draft EA from the Department of Planning and Permitting's (DPP) Land Use Permits, Site Development and Planning Divisions:

Land Use Permits Division (LUPD)

1. Address the comments and recommendations of the Design Advisory Committee (DAC), as identified in the attached October 28, 2004 letter.

2. The EA lists various recorded fee owners for the project. Please identify the fee owner of each parcel.

3. Clarify that the parcels listed above are jointly developed under Conditional Use Permit No. 2004/CUP-44.

4. Discuss whether any of the trees to be removed or relocated are 6 inches or greater in diameter. The discussion should also identify the size, specie and health of the existing trees and how they may meet the Waikiki Special District (WSD) criteria for removal.

5. Clarify the ownership of Parcel 36, which appears to provide vehicular access for Parcel 37. Also, clarify whether Parcel 37 has access rights over Parcel 36.

6. The current proposal does not appear to comply with the Land Use Ordinance (LUO) requirements for height setback along Ala Wai Boulevard. We also note that certain elements were not included in the floor area calculations, including the stairs. These areas may be considered floor area, which will increase the overall floor area of the project. The future Special District permit application will need to include specifics on project compliance.

7. Based on preliminary discussions with the State Historic Preservation Division (SHPD) of the Department of Land and Natural Resources, an archaeological inventory survey and documentation of SHPD's review and comments/recommendations should be included in the Final EA.

In addition, the historic and archaeological resources should encompass the entire project site, including Parcels 1, 32, 37 and 40. The archaeological assessment only covers Parcels 2 and 4.

Site Development Division

A. Civil Engineering Branch

1. If grading and trenching permits will be required, then please list them under Section VII - Government Permits and Approvals Required.

2. Implement permanent post construction best management practices (BMP's) to prevent discharge of pollution into the City's storm drainage system. Trash enclosures and designated car wash areas must be covered and isolated from storm water runoff with its floor drains to the sanitary sewer.

B. Traffic Review Branch

1. A separate right turn lane along the project frontage should be constructed on the diamond head bound approach at the intersection of Lipeepee Street and Hobron Lane and should be in place prior to the issuance of a Certificate of Occupancy.

2. Internal driveways should be interconnected such that vehicles can ingress and egress from either Ala Wai Boulevard or Hobron Lane.

3. All entry gates should be recessed into the project to avoid vehicular queuing on any public street.

4. Landscaping and structures in the vicinity of all driveways should be designed and installed to provide adequate vehicular sight to pedestrians and other vehicles. Driveway grades should not exceed five percent for a minimum distance of twenty feet from the project's property line.

5. Construction plans for all work within and affecting the City's right-of-way should be submitted for review. Traffic control plans during construction should also be submitted, as required for review and approval.

Planning Division

A. Community Actions Plan Branch

1. The proposed project should support the PUC DP (June 2004) policy on preserving panoramic views of natural landmarks and the urban skyline (page 3-10 of Plan) and guidelines on the urban skyline and mauka-makai views (page 3-12 of Plan). Although the DEA contains discussion on views and visual impact, please specifically address how the proposed project impacts scenic views from public vantage points as identified in the PUC DP:

   - Mauka views of the Koolau mountains from public places along the Ala Wai Canal (see Figure 3.1 in PUC DP). As noted in the PUC DP, there are public places along the Ala Wai Canal where panoramic mauka views of the Koolau Mountain Range are gradually diminishing as high-rise buildings are developed to the height limits allowed.

   - Significant panoramic views of Diamond Head from public vantage points further west, as shown on Map A.1 of the PUC DP.

2. Please address how the Ala Wai Gateway project supports the PUC DP policy on providing parks and active recreation areas (page 3-11 of Plan) and the guidelines on parks and recreational open spaces (page 3-13 of Plan).

3. The proposed project is designated as Resort on the PUC DP Land Use Map. This designation is intended to be a mixed-use designation. Please address if the Ala Wai Gateway project supports the PUC DP policy on promoting mixed land uses (page 3-24 of Plan).

4. Ala Wai Boulevard fronting the proposed project site is designated as part of the Pedestrian Network on the PUC DP Land Use Map. Furthermore, the PUC DP contains a policy on making streets "pedestrian-friendly" (page 3-25 of Plan) and on enhancing and improving pedestrian mobility (page 3-61 of Plan). Although the DEA contains discussion on street frontage landscaping, please indicate how conflicts between vehicles entering the project on Ala Wai Boulevard and pedestrians on this street will be mitigated.

5. The proposed project calls for the demolition of the apartment building on Parcel 32. Are the 18 units in this building considered affordable rental units? Although the proposed project will result in a minimal net loss of 18 units, none of the proposed units will be rentals or considered affordable. The PUC DP contains a policy regarding preserving the current inventory of affordable rental housing units (page 3-36 of Plan). Please indicate how the proposed project addresses this policy.

B. Policy Planning Branch

1. The section on Visual Impact (p. 41) should discuss the impact on pedestrian views from the west side of the Ala Wai Canal and from the Hobron Lane area.

2. The discussions of project layout and open space on pages 44 and 52 should specify and discuss the proposed amount of open space of the alternatives.

3. The landscape plan, identified by WSD 1.01, Site Plan, in Appendix I, should be shown separately so as not to obscure other information being presented on the plan. It is unclear what is planned along Ala Wai Boulevard.

4. The new name of the Westbury condo is the Aqua Marina (p. 10; identified correctly on Appendix IX's Axonometric Plan).

5. A sentence is repeated on page 22.

6. The distance to nearby police stations should be re-measured. The Waikiki Substation is more like 1.2 miles away by road, and the headquarters something like 1.6 miles away.

7. Under Government Permits and Approvals (p. 48), the development will require <u>either</u> a FONSI or an accepted EIS, not simply a FONSI.

8. On page 54, one sentence should be changed to read: "The parking [lot] <u>structure</u> is planned with openings…".

9. The DEA refers to parcel numbers within the text. For easier reference, please include an exhibit of parcels with parcel numbers.

Should you have any questions, please contact Sharon Nishiura of our staff at 523-4256.

Sincerely yours,

ERIC G. CRISPIN, AIA
Director of Planning
and Permitting

EGC:cs
Attachments
G:\Sharon\ala wai gateway\DEA comments.doc

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
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JEREMY HARRIS
MAYOR

ERIC G. CRISPIN, AIA
DIRECTOR

BARBARA KIM STANTON
DEPUTY DIRECTOR

(sn)

October 28, 2004

Mr. Keith Kurahashi
Kusao & Kurahashi, Inc.
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawaii 96822

Dear Mr. Kurahashi:

Pre-Application Design Advisory Committee Review
Ala Wai Gateway Condominium Development
Tax Map Keys 2-6-11: 1, 2, 4, 32, 37 and 40

Thank you for your October 14, 2004 presentation to the City's Design Advisory Committee (DAC) of the conceptual proposal for the Ala Wai Gateway Condominium Development. We appreciate your willingness to provide an opportunity to review the project at this preliminary stage of the land use process.

Following your presentation, the DAC discussed the project at length and determined that it is not consistent with the Waikiki Special District (WSD) objectives and guidelines. Therefore, the DAC cannot support the project and, instead, strongly recommends the following changes to the project:

1. **Reduce the bulk and mass of the residential tower.** The bulk and mass of the residential tower was a significant concern of the DAC and reduction of the tower was recommended through the removal of one or two end bays of the structure and to tier the tower down at the ends.

   While the DAC did not suggest reducing the proposed number of units, it did recommend relocating them to other parts of the site. One suggestion is to relocate some of the units to the back side of the tower and created a double loaded corridor system which would provide opportunities for mauka views. Other suggestions were also provided; they are further explained below.

2. **Create a more urban and pedestrian friendly experience along the Hobron Lane portion of the site and reduce the visual impact of the parking structure.** The DAC was concerned that the proposal turned its back on Hobron Lane and that the location of at grade and structured parking along that entire frontage would have a long term adverse impact to the pedestrian experience and future development along Hobron Lane. To address this, the DAC recommended that some of the units proposed in the tower be relocated to along the Hobron Lane frontage. These units should be located along the street fronting the parking areas to screen the parking facilities and generate people activity along the street. Streetscape improvements, including an enlarged sidewalk area, bench seating, and landscaping should also be provided as part of the Hobron Lane improvements. The DAC strongly felt that residential units and streetscape improvements along Hobron Lane would positively contribute to the redevelopment of the area.

   In addition, the DAC suggested that the applicant consider integrating the parking structure with the residential component or, at a minimum, provide a physical connection between the parking and residential components.

   Other measures were also suggested to reduce the visual impacts of the parking structure, if residential units were not developed fronting Hobron Lane. These include: screening the garage with grills and landscaping along each floor; changing the location of the ramps from the exterior to the interior of the structure; eliminating the parking on the roof of the structure or, at the very least, provide trellises; increasing the set back between the parking structure and Hobron Lane; and using the roof as a recreation area or for other activities which would reduce visual impacts.

3. **Incorporate physical improvements to the structures located on Parcel 37.** The DAC felt that the developer should not be allowed to use the excess density potential of this parcel if no improvements are proposed to the structures on it. The DAC felt that the land area should be incorporated into the overall design of the project to allow for a

better design solution. The DAC further recommended that some of the units proposed in the tower be relocated to another low to mid-rise tower located in this area that would replace the two existing aged apartment buildings. Therefore, the existing buildings should be reconstructed to allow for Parcel 37 to be incorporated into the rest of the development or, at the very least, upgrade or renovate the existing site and structures.

4. **Provide design treatments on all facades to create visual interest and reduce building bulk.** The DAC raised concerns that the ends as well as the Hobron Lane side of the tower lack adequate design treatment and articulation. More must be done to provide visual interest and break up the building mass. This could be achieved by incorporating lanais, eyebrows, friezes, or further staggering of the building to reduce the scale of exposed walls.

5. **The open space area along Ala Wai Boulevard should benefit the public.** The park area adjacent to the proposed pool should be dedicated to the City as a public park or be accessible to the public. The park amenities that would benefit the public use of it should include pathways, park benches, and a gathering space to accommodate activities that may contribute to a sense of community, such as an open market.

6. **Reduce the amount of exterior glazing.** The large amount of glass is not consistent with the WSD guidelines and regulations. Colors and finishes must be absorptive rather than reflective. However, the DAC was concerned that if glazing were replaced with solid surfaces - it would increase the bulk of the tower. Therefore, they made it clear that meaningful changes to the tower design could only be accomplished if the tower itself were reduced in size. In addition, the amount of glazing proposed, combined with the building's orientation, does not appear to be energy-efficient.

In summary, the DAC recommended the proposed tower be reduced in scale and mass, and that the impact of the parking structure onto Hobron Lane be eliminated. The DAC further recommended that changes to the project include developing units on the Hobron Lane side of the tower to create mountain view units, developing dwelling units along Hobron Lane to screen parking areas, and redeveloping the existing structures on Parcel 37.

We hope these comments are useful to you in the development of your project design and request that they be incorporated into the environmental assessment and any future submission of a special district permit. Should you have any questions, please contact Patrick Seguirant or Sharon Nishiura of our staff at 527-5369 and 523-4256, respectively.

Sincerely yours,

ERIC G. CRISPIN, AIA
Director of Planning
and Permitting

EGC:pl

cc: DAC Members
Architects Hawaii
CM&D

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

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

November 22, 2004

Eric G. Crispin, AIA, Director
Department of Planning and Permitting
City and County of Honolulu
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Attention: Ms. Sharon Nishiura
Urban Design Branch

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Mr. Crispin:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA). The following responds to your comments:

Land Use Permits Division (LUPD)

1. The attached letter, dated November 3, 2003, from CM & D to the Department of Planning and Permitting (DPP) provided responses to the recommendations of the Design Advisory Committee (letter dated October 28, 2004). The applicant is also providing the following responses to supplement the November 3, 2003 letter:

   The applicant considered the relocation of some of the units into a low-rise structure on Hobron Lane as recommended by the Design Advisory Committee, but found that this took away from the open space that the applicant was trying to provide on the property (60% open space under the present design). It also provided units that would be difficult to market at even a break even position.

At the pedestrian level, the bulk on a property relates more to lot coverage, than height, once the height of a structure exceeds three to four stories, which is the height that falls within the view plane of a pedestrian walking along Hobron Lane or Ala Wai Boulevard. Along Hobron Lane, the applicant has introduced a public park area (13,800 square feet) to serve as a gathering place for the community, dedicated to public use, and providing opportunities for a wider sidewalk and more landscaping. The applicant has also provided greater setback at the proposed parking garage which is situated 22'-6" from the property line on one end and 36'-6" on the other end (providing 3,850 square feet of public open space, beyond our fence line)

The applicant has provided for public open space along Ala Wai Boulevard by setting the property fence back about 11 feet from their property line for most of this frontage (providing 4,110 square feet of public open space), which added to the existing 12-foot City pedestrian area provides a 23-foot setback from the curb which provides an opportunity for passive recreational use along Ala Wai Boulevard. Benches are planned within the City right-of-way as an amenity to encourage use of this passive recreational area. The feeling of open space will be further enhanced by the large landscaped area beyond the fence line.

Altogether, the applicant will be providing 21,760 square feet of new public open space at the public park/gathering place on Hobron Lane, the landscaped area fronting the parking garage and the public open space provided along Ala Wai Boulevard.

2. The Final EA will add the respective tax map key parcels to the list of fee owners.

3. The Final EA will provide clarification that the parcels involved in the Ala Wai Gateway development have been approved for joint development under Conditional Use Permit No. 2004/CUP-44. This joint development will be executed through recordation at the Bureau of Conveyance, after approval of the Waikiki Special District Permit.

4. The Final EA will include the following, which describes trees to be removed or relocated that are 6 inches or greater in diameter and how they meet the Waikiki Special District criteria for removal:

   a. Eight Coconut Palm trees (six inch caliper or larger) are being relocated further into the property from Ala Wai Boulevard to allow for introduction of seven Monkey Pod trees (six to eight inch caliper) to allow appropriate development of the Ala Wai Boulevard frontage and to provide shade relief for pedestrians on Ala Wai Boulevard.

   b. Eight dead Coconut Palm trees (six inch caliper or larger) are being removed and will be replaced at other locations on the property by eight or more Coconut Palm trees (six inch caliper or larger).

   c. One Norfolk Island Pine tree (six inch caliper or larger) will be removed and replaced by one of the seven Monkey Pod trees (six to eight inch caliper) along Ala Wai Boulevard to allow appropriate development of the Ala Wai Boulevard frontage and to provide shade relief for pedestrians on Ala Wai Boulevard.

   d. One Erythrina Sp. tree and one Ulu tree (both six inch caliper or larger) will be removed and replaced with four Wiliwili trees (three inch caliper) to allow appropriate development of the landscaped private park area in accordance with the landscape plan for the residents of Ala Wai Gateway.

   e. Removal of two Orchid trees (six inch caliper or larger) that are located in an area where a driveway is planned (allow appropriate development). These two trees will be replaced by one Monkey Pod tree (six inch caliper or larger) along Ala Wai Boulevard and one Monkey Pod tree (six inch caliper or larger) located across the driveway from the condominium tower.

   f. Relocation of eleven Coconut Palm trees (six inch caliper or larger) that are located under the proposed condominium tower footprint and

the proposed swimming pool and deck footprint (relocation to allow appropriate development). These Coconut Palm trees will be interspersed throughout the planned private park.

g. Relocation of eight Coconut Palm trees (six inch caliper or larger) to provide allow appropriate development of the private park area with proper spacing between clusters of Coconut Palms within the private park area.

h. Removal of four White Tecomas (six inch caliper or larger) and replacement/relocation with eleven Singapore Plumeria trees (four to six inch caliper) to provide appropriate development of the private park area with a planned landscape design.

i. Removal of five Orchid trees (six inch caliper or larger) located within the footprint of the planned parking garage (allow appropriate development) and replacement/relocation with Travelers trees and Areca Palms (along the south and east faces of the parking garage).

j. Removal of two Mango trees and two Pink Tecoma trees (all six inch caliper or larger) located within the footprint of the planned surface parking lot (allow appropriate development). These trees will be replaced by four Rainbow Shower trees (three inch caliper) and one Monkey Pod tree (six to eight inch caliper).

k. Removal of three Orchid trees, one Pink Tecoma tree and three White Tecoma trees (all six inch caliper or larger) to allow appropriate development of the Hobron Street frontage in accordance with the landscape plan with six Rainbow Shower trees (three inch caliper) and one Monkey Pod tree (six to eight inch caliper).

The net result of the landscape plan is removal of eight dead Coconut Palms and 25 other species of trees and replacement with 30 new Coconut Palms (15' to 35' trunk height), 10 Wiliwili trees (three inch caliper), 25 Singapore Plumeria (four to six inch caliper), 11 Gold trees (three inch caliper),

Travelers trees and Areca palms (along the south and east faces of the parking garage), 10 Monkey Pod trees (six to eight inch caliper), 18 Rainbow Shower trees (three inch caliper), flowering shrubs, ground cover, and hedges. The sparse landscaping that presently exists will be replaced by extensive landscaping and trees covering about 60% of the property.

5. The Final EA will clarify that the ownership of Parcel 36 as follows:

The access for parcel 37 is over Parcel 36, which serves as a right-of-way lot providing access to the parcels that abut the property (other than Parcel 1, which does not have an interest in Parcel 36). Based on our attorneys review of two other parcels that are part of this application, Parcel 32 (comprised of one lot with a one-sixth ownership of Parcel 36) and Parcel 37 (comprised of two lots with two-sixth ownership in Parcel 36), it appears that each of the six lots that abut Parcel 36, except for Parcel 1, own a one-sixth interest in Parcel 36 which is a right-of-way that provides ingress and egress for the abutting parcels.

6. The proposed condominium tower has been modified to meet the height setback along Ala Wai Boulevard and floor area calculations have been adjusted in accordance with the most recent comments from your department.

7. Based on a discussion with staff at the State Historic Preservation Division (SHPD), they are comfortable with the progress made to date on the archaeological inventory survey and our archaeological consultant has been working with SHPD staff to ensure adequate trenching at the proper locations. The field work has been completed and the final report on the archaeological inventory survey is included in Appendix IV and will be submitted to SHPD for review and approval.

The archaeological assessment in the Final EA will be revised to include Parcels 1, 32, 37, and 40.

Site Development Division

A. Civil Engineering Branch

1. Grading and trenching permits will be required and will be added to the list of Government Permits and Approvals Required in the Final EA.

2. The Final EA will be revised to note that the applicant will implement permanent post construction best management practices to prevent discharge of pollution into the City's storm drainage system. Trash enclosures and any designated car wash areas will be covered and isolated from storm water runoff with its floor drains connecting to the sanitary sewer (wastewater line).

B. Traffic Review Branch

1. A separate right turn lane along the project frontage will be constructed on the diamond head bound approach at the intersection of Lipeepee Street and Hobron Lane, subject to approval by the Department of Transportation Services (DTS) and DPP. The applicant will complete this improvement, if permitted by DTS and DPP, prior to the issuance of the Certificate of Occupancy.

2. Internal driveways will be interconnected such that vehicles can ingress and egress from either Ala Wai Boulevard or Hobron Lane.

3. Entry gates will be set back to provide adequate storage to avoid vehicular queuing on any public street.

4. Landscaping and structures in the vicinity of all driveways will be designed and installed to provide adequate sight distance to pedestrians and other vehicles. Driveway grades will not exceed

five percent for a minimum distance of twenty feet from the project's property line.

5. Construction plans for all work within and affecting the City's right-of-way will be submitted to the City for review. Traffic control plans during construction will be submitted to the City for review and approval.

Planning Division

A. *Community Actions* Plan Branch

1. The proposed development will not affect public views of Diamond Head or the Koolau Mountain Range. The potential impact of the view of Diamond Head from Punchbowl lookout is provided in the photograph, "Aerial View Toward Diamond Head - With Ala Wai Gateway", located in Appendix X.

As noted in both Figure 3.1 and Map A.1 of the Primary Urban Center Development Plan (PUC DP), the views of the Koolau mountains will not be affected by the Ala Wai Gateway development, as the predominate views along the Ala Wai Promenade are diagramed between McCully Street and Kapahulu Avenue. In any case, our project's location makai of the Ala Wai Promenade will not affect the mauka views from the promenade.

2. Since our development is replacing approximately 230 units formerly on the site with 212 new units, there may be no requirement for park dedication on the property. However, the applicant intends to provide public open space in the form of a park/gathering place along Hobron Lane to allow for passive recreation and will provide a large private recreation area for the residents of Ala Wai Gateway, including a swimming pool for active recreation and landscaped park area for passive recreation.

These two recreation areas will provide over three to four times that required by park dedication for a development of this size.

As mentioned earlier under item 1 of the response to concerns from LUPD, the applicant will be providing about 21,760 square feet of public open space on the property.

3. Although designated Resort on the PUC DP Land Use Map, the site is zoned Apartment Precinct. The Hobron and adjacent areas provide a mixture of uses typical of resort destinations, with hotel, retail and dining uses at the Prince Hotel and Ilikai Hotel and retail, dining, office and residential uses at Discovery Bay and Eaton Square. Just up the block from the Ala Wai Gateway at Hobron Lane and Ala Moana Boulevard is a convenience store. This area is truly mixed use. The Ala Wai Gateway will provide for the residential component in this mixed use area.

4. In order to minimize conflicts between pedestrians and vehicles, we are planning two single direction driveways (one enter and one exit) at the porte cochere. Pedestrians have an easier time watching just one direction for vehicles entering or exiting the project. As recommended by the Traffic Review Branch, landscaping and structures in the vicinity of all driveways will be designed and installed to provide adequate sight distance to pedestrians and other vehicles to minimize pedestrian and vehicle conflicts.

5. Only four of the 18 units in this apartment were occupied in October of this year. As of November, only one unit is still occupied. These units have deteriorated over the years and are in need of redevelopment. As such it is doubtful that this apartment would have been repaired and continued to be rented at the existing affordable rates. While 17 of these 18 units have been removed from the affordable rental pool, the applicant understands that at the proposed Tusitala Vista development, about 100 units

are planned for senior affordable housing. These 100 new affordable rentals will more than offset these 18 units being lost. This development will retain 36 units that are in better condition than the 18 units being
demolished and are expected to continue to be rented at their present rate.

Policy Planning Branch

1. The building orientation has been sensitive to the need to protect public views from the Ala Wai Canal and Ala Wai Promenade while providing an angle toward a mauka-makai orientation as recommended by the Waikiki Special District. The applicant has maintained a generally mauka-makai orientation, that is slightly off-set to minimize visual impact to the Ala Wai Promenade. A full mauka-makai orientation would have resulted in the widest building face along Ala Wai Boulevard and the Promenade. To further soften impact on pedestrian views, most of the Ala Wai Boulevard frontage is in landscaped open space and the property's fence has been set back about 11 feet, which added to the existing 12-foot City pedestrian area provides a 23-foot setback from the curb which provides an opportunity for passive recreational use along Ala Wai Boulevard.

   Along Hobron Lane, the applicant has introduced a public park area (13,800 square feet) to serve as a gathering place for the community, dedicated to public use, and providing opportunities for a wider sidewalk and more landscaping. The applicant has also provided greater setback at the proposed parking garage which is situated 22'-6" from the property line on one end and 36'-6" on the other end (providing 3,850 square feet of public open space, beyond our fence line).

2. The Final EA will be revised to reflect the following:

   Under a low-rise development, maintaining our unit count, as discussed on page 44 of the Draft EA, we would be able to provide 39% open space,

while under our present design, we will be providing 60% open space, including 21,760 square feet of public open space.

On page 52, we will note that under the present design, we will be providing 60% open space.

3. WSD 1.01, Site Plan, will be screened to minimize the landscaping in the Final EA to provide better detail on the other features of the site plan.

4. The Final EA will be corrected to reflect that the Westbury Condo is now the Aqua Marina.

5. The repeated sentence on page 22 will be eliminated in the Final EA.

6. The distance to the Waikiki Substation is located about 1.2 miles by road, however, Kalakaua Avenue is one-way for a significant length and would require driving against the flow of traffic. The applicant believes that the fastest route would be traveling on Ala Wai Boulevard which provides which results in a 1.9 mile distance. The other route, utilizing Kuhio Avenue and following customary street travel directions results in a 1.6 mile distance. The Final EA will be revised to reflect these alternate routes and distances.

   I re-measured the distance to the Alapai Headquarters using three different routes and the shortest route came out to a distance of 2 miles. This distance is taken from the City's zoning map which is at a scale of 1inch equals 400 feet. The Final EA will be revised to reflect this distance.

7. The Final EA will be revised to include the Finding of No Significant Impact (FONSI) or an accepted Environmental Impact Statement (EIS).

8. The sentence on page 54 of the Draft EA will be corrected in the Final EA.

9. A copy of a Tax Map Key Plat Map that will indicate parcel numbers and parcels will be included in Appendix I, Plans, in the Final EA.

Your letter and this response will be included in the Final EA.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

CM&D

Construction Management
& Development - Hawaii LLC

November 3, 2004

Mr. Eric Crispin
Director of Planning and Permitting
Department of Planning and Permitting
City and County of Honolulu
550 South King Street
Honolulu, Hawaii 96813

PROJECT: **Ala Wai Gateway Condominium Development**
Waikiki, Hawaii

RE: ***Waikiki Special District* Application Resubmittal**
Response to Department of Planning and Permitting City and County of Honolulu letter dated October 12, 2004 & October 28, 2004.

Pre-Application Design Advisory Committee Review Ala Wai Gateway Condominium Development
Tax Map Keys 1-6-11: 1, 2, 4, 32, 37 and 40

Dear Mr. Crispin:

The Development Team has provided the "revised" Waikiki Special District (WSD) Application and associated documents as described in Kusao & Kurahashi letter dated November 3, 2004 and bound booklet dated November 2004. This is in response to your October 12, 2004 letter with Department of Planning and Permitting comments on the original WSD application and also addresses the issues outlined in your October 28, 2004 letter outlining the Design Advisory Committee comments.

In addition and as discussed in our meeting on November 2, 2004 the Development Team has included an additional Conceptual Building Elevation (West Elevation) and Conceptual Project Site Plan dated November 2, 2004. These documents illustrate further modifications to the project that were agreed upon in our meeting. As discussed these modifications will be developed and incorporated into supplemental documents that will be submitted in the near future as an appendix to the WSD Application. The Development Team anticipates that these supplemental documents will be provided to the Department of Planning and Permitting on or about November 15, 2004.

The Development Team has also included responses to your letter of October 28, 2004 which itemizes the Design Advisory Committee review comments from the presentation of the project held on October 14, 2004. The responses to each of those items reflect our discussions and agreements reached in our subsequent meeting.

CM&D

Construction Management
& Development - Hawaii LLC

The Development Team responses to the Pre-Application Design Advisory Committee review comments from the October 14, 2004 presentation of the conceptual proposal of the Ala Gateway Condominium Development are as follows:

1. **Reduce the bulk and mass of the residential Tower.**

    a. The Conceptual West Elevation dated November 2, 2004 represents the further reduced massing of the building. This was accomplished by reducing the building mass by one bay and wrapping the end units around the tower creating a semi-double loaded corridor condition at both end units on the east side of the building. This is reflected in the floor plans dated October 29, 2004 submitted with the WSD Application Resubmittal dated November 2004.

    b. The Center bays of the façade at the west elevation have been extended from 350' to 355'. The Development Team will request a Zoning Adjustment of 5'0" be granted at the Directors discretion in support of the positive impact that this has on the massing of the building and the energy savings due to more shadows. The floors have been reduced in height by 1 ½" to further allow for this massing modification. The Floor to ceiling height is planned to be 8'- 4 1/2 "in lieu of the originally planned 8'-6". This move further accentuates the central bay components in a positive manner and provides the opportunity to step the units and massing at the top of the building. These stepped areas are proposed to be utilized as outdoor space for the top units, with perhaps a portion of these lanai areas to have trellis components located above the deck. This is accomplished with out reduction in the number of units (212) for the project.

    c. Although this was not a requirement it was agreed that the Design team would study the opportunity to provide further stepping of the massing at the base of the building (lower six to eight floors) to evaluate if this may provide further articulation and reduction in the building massing appearance.

2. **Create a more urban and pedestrian friendly experience along the Hobron Lane Portion of the site and reduce the visual impact of the parking structure.**

    a. The dedication and creation of a park at the Lipeepee and Hobron Lane corner has been identified on the attached site plan sketch dated November 2, 2004. This incorporates previous comments including a wider, meandering sidewalk as well as landscaped areas which all contribute to the pedestrian friendly experience on Hobron lane. The

details of landscape easements, Park dedication and maintenance and operation will need to be further negotiated between the Developer and the City and County of Honolulu.

b. In addition the Hobron Lane face of the Parking garage has been moved an additional 5'- 0)" back from the setback. The dimension is now proposed to be 22'-6" from Hobron Lane to the face of the Garage structure. This creates an additional area where more landscaping and a widened meandering sidewalk may be provided further enhancing the pedestrian experience. The details of landscape easements, maintenance and operation will need to be further negotiated between the Developer and the City and County of Honolulu.

c. The use of landscaping is intended to further reduce the visual impact of the parking garage structure. The strategic location of trees at the sidewalk areas, proposed Hobron Lane park area and adjacent to the parking garage will further reduce the visual impact of the Parking Garage Structure.

d. In addition, Screening /Grilles will be provided at the ramp elevations of the Parking Garage Structure (Diamond Head/Ewa) to reduce the visual impact of the parking garage ramps.

e. A planter box will be incorporated at the perimeter of the top level of the Parking Garage Structure to further reduce the visual impact of the Parking Garage Structure.

f. A trellis structure will also be provided at the top level of the Parking Garage Structure in the center portion of the garage to provide visual interest as well as provide partial screening from the adjacent properties of the cars parked on the top level.

g. There has been a physical connection provided from the Parking Structure to the Condominium Tower through the incorporation of a covered walkway as indicated in the attached Conceptual Site Plan dated November 2, 2004

3. Incorporate physical improvements to the structures located on Parcel 37.

a. If the Owner of Parcel 37 agrees, the Developer will provide limited physical improvements to the existing two story structures located on Parcel 37. These improvements consist of repainting the existing structures to enhance their appearance.

b. The Developer has also agreed to improve the existing on grade parking in front of the existing buildings through the resurfacing and re-striping of the existing parking spaces as well as the introduction of additional landscaping at the parking area on Parcel 37. Approximately 50% of the existing parking is planned to be removed and landscaped. The provision of this additional landscaping may result in the need to provide additional parking spaces for the residents. To accommodate this, additional on grade parking is proposed to be located within Parcels 1 and 40 adjacent to the area to be dedicated as a Park on the Hobron Lane portion of the site. A connection from the parking area to the existing roadway will need to be provided. The attached Conceptual Site Plan sketch illustrates the proposed plan layout and connection to the existing roadway.

c. The Developer has agreed to consider these improvements for Parcel 37 as noted, however these improvements will need to be renegotiated with the present Parcel 37 property owner as part of the joint development agreement and are contingent on the willingness of that property to negotiate these improvements in good faith.

4. **Provide design treatments on all facades to create visual interest and reduce building bulk.**

Refer to the description of reducing the building mass in Item No. 1 above. The reduction of the mass as shown in the attached Conceptual West elevation dated November 2, 2004 and the relocation of two end units as shown in the Typical Floor Plan Sheet No. A-1.06 dated October 29, 2004 translates into a reduced massing appearance for all elevations of the condominium tower. The proposed stepping at the top of the building will also create visual interest and a reduction in the building mass at all elevations. Some decorative patterning is intended to be incorporated on the vertical concrete wall surfaces to provide additional visual interest to the facades. These elevations will be updated to reflect the present proposal and will be illustrated in the follow up submittal on or about November 15, 2004.

5. **The open space along Ala Wai Boulevard should benefit the public.**

The Developer of the property has agreed to consider providing a park at Hobron Lane, which in concept is to be dedicated to the City and County of Honolulu and operated by the Condominium Association. Refer to Item No. 2 for further description of the proposed Park area at Hobron Lane. Park dedication and maintenance and operation will need to be further negotiated between the Developer and the City and County of Honolulu.

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Construction Management
& Development - Hawaii LLC

6. **Reduce the amount of exterior glazing.**

   a. The building mass has been reduced as described in Item No. 1. This reduction in the building massing translates into a reduction in the amount of glazing on the building. In addition the Development Team intends to utilize Low E glass for the project to further supplement the energy efficiency of the building.

   b. The Color Palette and Materials are represented in the Schematic Design Outline Specifications dated September 30, 2004 and have been submitted with the revised WSD application along with a material board. The Design Team notes that the materials and colors selected are consistent with the Waikiki Special District requirements.

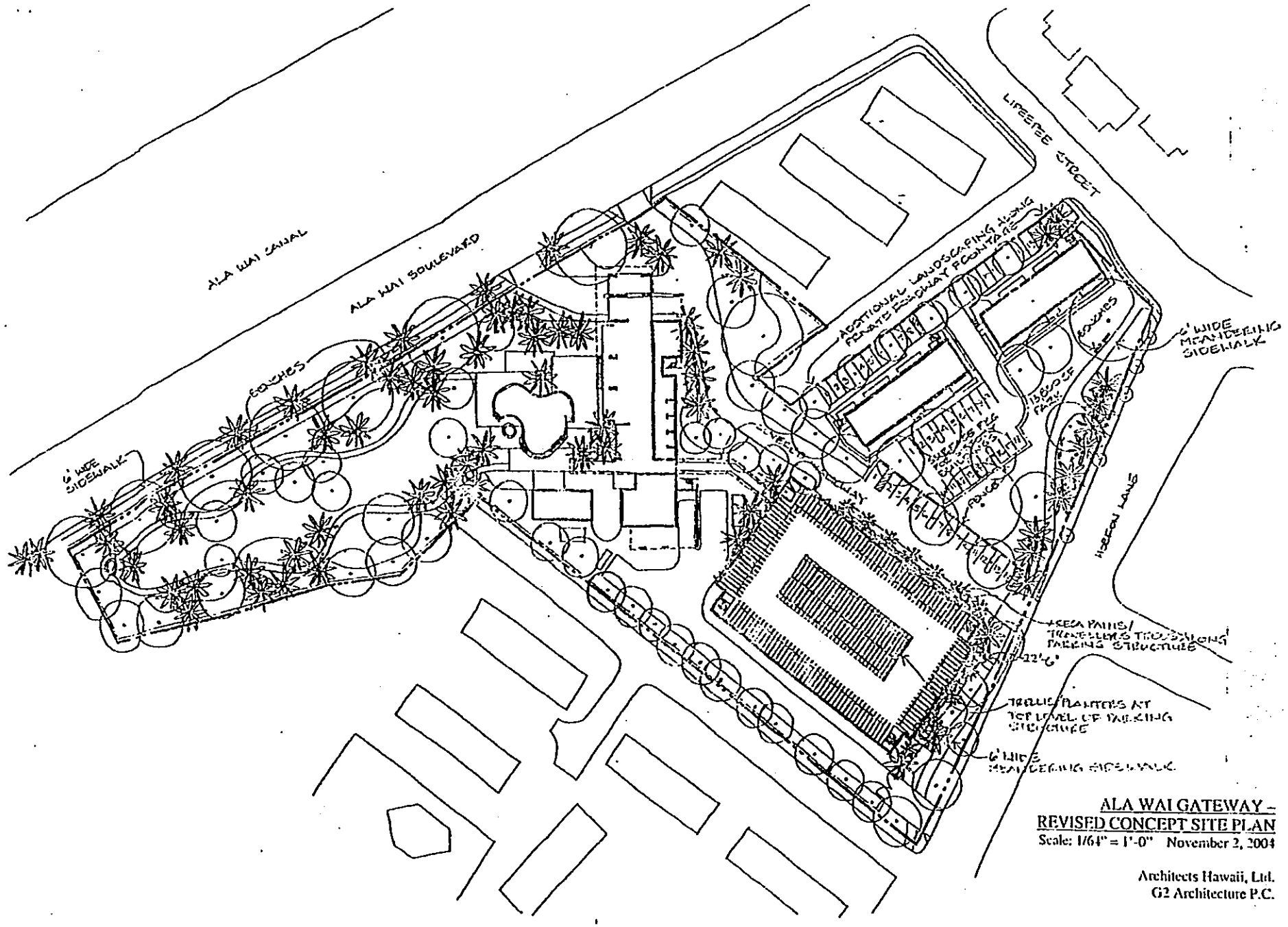
We trust that the aforementioned responses are consistent with our previous discussions and agreements and that the revised Waikiki Special District Application and associated materials that have been resubmitted for your consideration can be accepted for processing and the ultimate approval of the project development.

The Development Team looks forward to continuing to work with the Department of Planning and Permitting for the successful implementation of this significant development in Waikiki.

Respectfully:

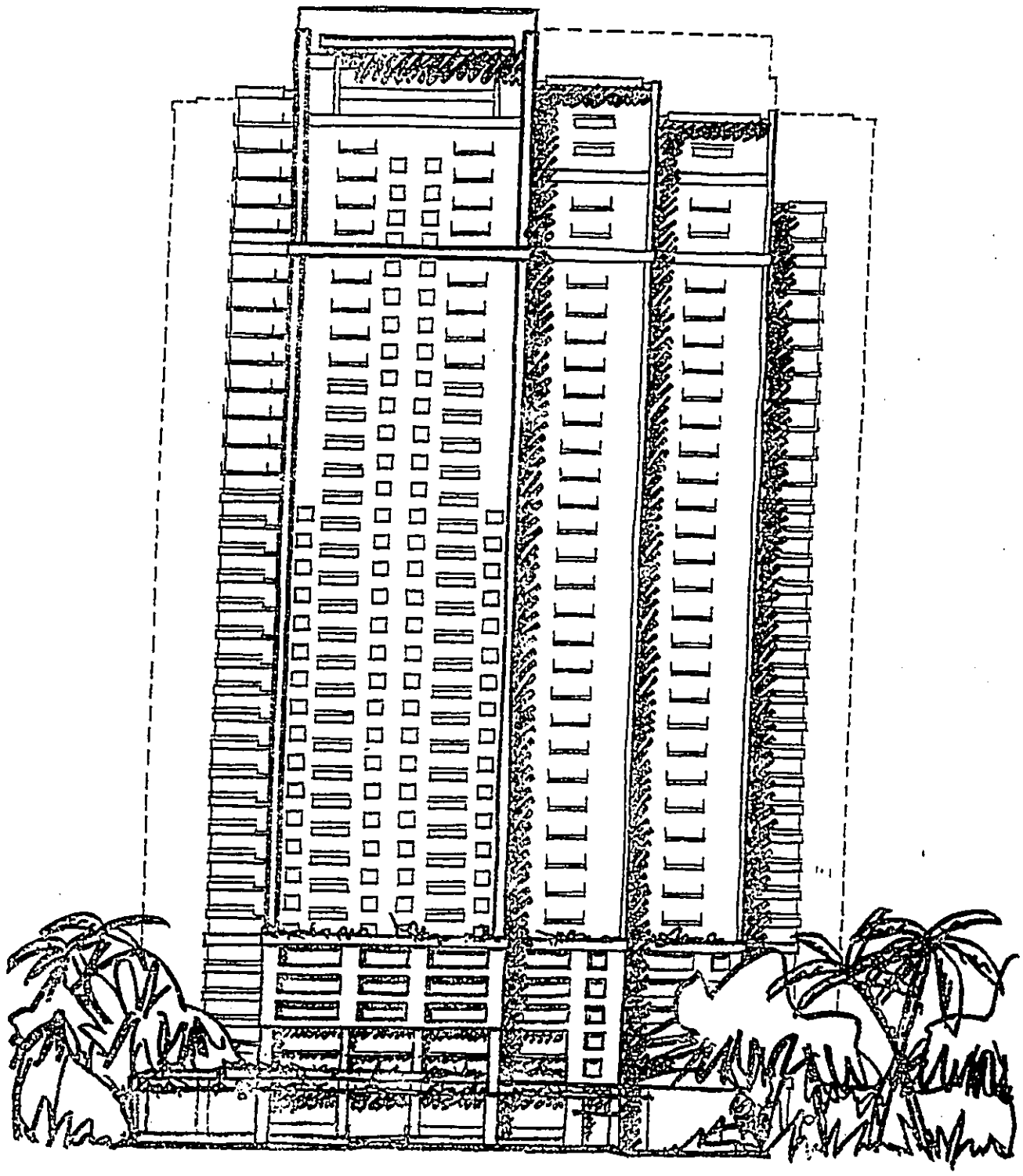
CM &D
Construction Management & Development, Inc.

Gregory T. Rapp
Project Manager



ALA WAI GATEWAY –
REVISED CONCEPT SITE PLAN
Scale: 1/64" = 1'-0" November 2, 2004

Architects Hawaii, Ltd.
G2 Architecture P.C.



ALA WAI GATEWAY – REVISED CONCEPT SCHEME 2

Scale: 1/32" = 1'-0"

November 2, 2004

Architects Hawaii, Ltd.
G2 Architecture P.C.

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 309 • KAPOLEI, HAWAII 96707
TELEPHONE: (808) 692-5561 • FAX: (808) 692-5131 • INTERNET: www.co.honolulu.hi.us

2004 OCT 20 AM 8 39

JEREMY HARRIS
MAYOR
CITY & COUNTY OF HONOLULU

WILLIAM D. BALFOUR, JR.
DIRECTOR

EDWARD T. "SKIPPA" DIAZ
DEPUTY DIRECTOR

October 5, 2004

TO: ERIC G. CRISPIN, AIA, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

FROM: WILLIAM D. BALFOUR, JR., DIRECTOR

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
ALA WAI GATEWAY CONDOMINIUM DEVELOPMENT

Thank you for the opportunity to review and comment on the Draft Environmental Assessment relating to the Ala Wai Gateway Condominium Development.

The Department of Parks and Recreation has no comment on this project other than to require the developer's compliance with the Park Dedication Ordinance as it applies to the enlargement and or altering of an existing multi-family development.

Should you have any questions, please contact Mr. John Reid, Planner, at 692-5454.

For WILLIAM D. BALFOUR, JR.
Director

WDB:mk
(78880)

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

November 22, 2004

Mr. William D. Balfour, Jr., Director
Department of Parks and Recreation
City and County of Honolulu
1000 Uluohia Street, Suite 309
Kapolei, Hawaii 96707

Attention: Mr. John Reid, Planner

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Mr. Balfour:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA). The applicant will work with the Department of Planning and Permitting to ensure compliance with the Park Dedication for the Ala Wai Gateway Condominium Development.

Your letter and this response will be included in the Final EA.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

JEREMY HARRIS, Mayor

EDDIE FLORES, JR., Chairman
CHARLES A. STED, Vice-Chairman
HERBERT S. K. KAOPUA, SR.
DAROLYN H. LENDIO

RODNEY K. HARAGA, Ex-Officio
LARRY J. LEOPARDI, Ex-Officio

CLIFFORD S. JAMILE
Manager and Chief Engineer

DONNA FAY K. KIYOSAKI
Deputy Manager and Chief Engineer

2004 OCT 7 AM 8 32

October 5, 2004

CITY & COUNTY OF HONOLULU

TO: ERIC G. CRISPIN, AIA, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

FROM: *for* CLIFFORD S. JAMILE, MANAGER AND CHIEF ENGINEER

SUBJECT : YOUR LETTER OF SEPTEMBER 30, 2004 ON THE DRAFT ENVIRONMENTAL ASSESSMENT (2004/ED-24(sn) FOR ALA WAI GATEWAY CONDOMINIUM DEVELOPMENT, TMK: 2-6-11: 1, 2, 4, 32, 37, 40

The existing water system is presently adequate to accommodate the proposed condominium development.

The availability of water will be confirmed when the Building Permit is approved.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

The proposed development is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirement prior to the issuance of the Building Permit Application.

If you have any questions, please contact Joseph Kaakua at 748-5442.

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

November 22, 2004

Mr. Clifford S. Jamile
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96813

Attention: Mr. Joseph Kaakua

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-5-11: 1, 2, 4, 32, 37, and 40

Dear Mr. Jamile:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA).

The applicant appreciates that the existing water system is adequate ot accommodate the proposed condominium development.

The applicant understands that the developer may be required to pay your Water System Facilities Charges for resource development, transmission and daily storage.

The applicant further understands that the proposed development is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirement prior to the issuance of the Building Permit Application.

Your letter and this response will be included in the Final EA.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111
http://www.honolulupd.org
www.honolulu.gov

JEREMY HARRIS
MAYOR

BOISSE P. CORREA
CHIEF

GLEN R. KAJIYAMA
PAUL D. PUTZULU
DEPUTY CHIEFS

OUR REFERENCE CS-KP

October 27, 2004

TO: ERIC G. CRISPIN, AIA, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

FROM: BOISSE P. CORREA, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT, ALA WAI GATEWAY CONDOMINIUM DEVELOPMENT, TMKS: 2-6-11: 1, 2, 4, 32, 37, AND 40

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

This proposed project will have a significant impact on the services to be provided by the Honolulu Police Department both during and after the construction phase.

During the construction phase, officers will have to respond to complaint calls because of dust, noise, and slow-moving construction vehicles in the area.

When the development is occupied, and even with the improvements recommended in the traffic study, this project will cause an increase in traffic congestion in an already congested area. More general complaints will be generated with an increase in population. Both will place a greater demand on calls for police service to the area.

If there are any questions, please call Major Thomas Nitta of District 6 at 529-3361 or Ms. Carol Sodetani of the Support Services Bureau at 529-3658.

BOISSE P. CORREA
Chief of Police

By
KARL GODSEY
Assistant Chief of Police
Support Services Bureau

Serving and Protecting with Aloha

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

November 22, 2004

Boisse P. Correa, Chief of Police
Honolulu Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawaii 96813

Attention: Major Thomas Nitta and Ms. Carol Sodetani
Support Services Bureau

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Chief Correa:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA). The following responds to your comments:

The applicant understands your concern about the potential impact on the services to be provided by the Honolulu Police Department both during and after the construction phase. The applicant hopes to minimize calls and complaints to the police department during construction by staging construction activities on-site as much as possible. The applicant's large site should allow for most activities to be staged off of the street. When work on the abutting streets are required, the applicant's contractor will follow a traffic control plan approved by the City. The applicant will submit to the Department of Health a dust management control plan to minimize dust impacts on the surrounding residents and streets. The applicant will also follow the construction noise regulations of the Department of Health and is considering foundation methods that may not require pile driving.

The applicant's traffic study has indicated that with the proposed traffic improvements that traffic impacts will not be significant. Following construction, the applicant expects to have a resident manager and private

security company providing security services to protect residents of the new condominium tower to reduce the need for additional police patrols. The neighbors have indicated that this area has created problems for the police in the past and are looking forward to having it improved with a new development that will provide a residential presence and security for the area.

The proposed development will produce a significant increase in property tax revenue (over that existing for the property) for the City and this additional revenue should help to off-set some of the additional City services required for this development.

Your letter and this response will be included in the Final EA.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
3375 KOAPAKA STREET, SUITE H425 • HONOLULU, HAWAII 96819-1869
TELEPHONE: (808) 831-7761 • FAX: (808) 831-7750 • INTERNET: www.honolulufire.org

2004 OCT 25 A7:11 03

CITY & COUNTY HONOLULU

JEREMY HARRIS
MAYOR

ATTILIO K. LEONARDI
FIRE CHIEF

JOHN CLARK
DEPUTY FIRE CHIEF

October 21, 2004

TO: ERIC G. CRISPIN, AIA, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

FROM: ATTILIO K. LEONARDI, FIRE CHIEF

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT
CHAPTER 343, HAWAII REVISED STATUTES
ALA WAI GATEWAY CONDOMINIUM DEVELOPMENT

APPLICANT:	IRONGATE ALA WAI INVESTORS, LLC
AGENT:	KUSAO & KURAHASHI, INC.
LOCATION:	372 AND 376 HOBRON LANE (PARCEL 1) 362 HOBRON LANE (PARCEL 2) 352 HOBRON LANE (PARCEL 4) 386 HOBRON LANE (PARCEL 40) 1609 ALA WAI BOULEVARD (PARCEL 32) 1819 LIPEEPEE STREET (PARCEL 37)
TAX MAP KEYS:	2-6-011: 001, 002, 004, 032, 037, AND 040
REQUEST:	WAIKIKI SPECIAL DISTRICT - MAJOR 2004/ED-24 (SN)
PROPOSAL:	NEW 212-UNIT, 350-FOOT CONDOMINIUM TOWER WITH PARKING AND AMENITIES

We received your memorandum dated September 30, 2004, requesting our review and comments on the above-mentioned project.

The Honolulu Fire Department (HFD) requires that the following be complied with:

1. Provide a fire apparatus access road for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction when any portion of the facility or any portion of an exterior wall of the first story of the building is located more than 150 feet (45 720 mm) from fire apparatus access as measured by an approved route around the exterior of the building or facility. (1997 Uniform Fire Code, Section 902.2.1)

2. Provide a water supply, approved by the county, capable of supplying the required fire flow for fire protection to all premises upon which facilities or buildings, or portions thereof, are hereafter constructed, or moved into or within the county.

   On-site fire hydrants and mains capable of supplying the required fire flow shall be provided when any portion of the facility or building is in excess of the 150 feet (45 720 mm) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building. (1997 Uniform Fire Code, Section 903.2 as amended)

3. Submit civil drawings to the HFD for review and approval.

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

Attilio K. Leonardi

ATTILIO K. LEONARDI
Fire Chief

AKL/SK:bh

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

November 22, 2004

Attilio K. Leonardi, Fire Chief
Fire Department
City and County of Honolulu
3375 Koapaka Street, Suite H425
Honolulu, Hawaii 96819

Attention: Battalion Chief Loyd Rogers

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Chief Leonardi:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA). The following responds to your comments:

1. The applicant will provide a fire apparatus access road that meets the minimum requirements cited in your letter.

2. The applicant will provide a water system where all appurtenances, hydrant spacing, and fire flow requirements meet Board of Water Supply standards.

3. The applicant will submit civil drawings to the Honolulu Fire Department for review and approval.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi
cc: Irongate Ala Wai Investors LLC

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, KAPOLEI HALE, SUITE 215, KAPOLEI, HAWAII 96707
TELEPHONE : (808) 692-5054 FAX: (808) 692-5857

2004 OCT 14 PM 1 47

CITY & COUNTY OF HONOLULU

JEREMY HARRIS
MAYOR

LARRY J. LEOPARDI, P.E.
DIRECTOR AND CHIEF ENGINEER

JOSEPH MAGALDI
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 04-881

October 12, 2004

MEMORANDUM

TO: ERIC CRISPIN, AIA, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

FROM: LARRY LEOPARDI, P.E., DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF FACILITY MAINTENANCE

SUBJECT: **DRAFT ENVIRONMENTAL ASSESSMENT (DEA)**
ALA WAI GATEWAY CONDOMINIUM DEVELOPMENT

We have no comments to offer regarding the subject DEA at this time. Please keep us informed as the project progresses.

Should you have any questions, please contact me at 692-5054.

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

November 22, 2004

Larry Leopardi, P.E.
Director and Chief Engineer
Department of Facility Maintenance
City and County of Honolulu
1000 Uluohia Street
Kapolei Hale, Suite 215
Kapolei, Hawaii 96707

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Mr. Leopardi:

Thank you for your response on the Ala Wai Gateway Draft Environmental Assessment (EA). The applicant will keep your department informed as the project progresses.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4529 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

2004 NOV 8 PM 4 24
CITY & COUNTY OF HONOLULU

JEREMY HARRIS
MAYOR

GEORGE "KEOKI" MIYAMOTO
ACTING DIRECTOR

ROBERT J. FISHMAN
DEPUTY DIRECTOR

TP10/04-78823R

November 5, 2004

MEMORANDUM

TO: ERIC G. CRISPIN, AIA, DIRECTOR
DEPARTMENT OF PLANNING AND PERMITTING

FROM: GEORGE "KEOKI" MIYAMOTO, ACTING DIRECTOR

SUBJECT: ALA WAI GATEWAY CONDOMINIUM DEVELOPMENT

In response to your September 30, 2004 letter, we have reviewed the draft environmental assessment (EA) for the subject project. The following comments are the result of this review:

1. The Access and Transportation Impacts Section of the draft EA should also discuss pedestrian and transit impacts. Presently, there are no plans to route bus services along Hobron Lane. The project should be constructed to meet or exceed the Americans with Disabilities Act Accessibility Guidelines with respect to pathways leading to existing bus stops on Ala Moana Boulevard near Hobron Lane and on the Ala Wai Canal Bridge.

2. TheHandi-Van is a curb-to-curb paratransit service. For the proposed project, the curbs are along Hobron Lane and Ala Wai Boulevard.

3. The proposed Hobron Lane driveway should be aligned with Kaioo Drive.

4. The operations at the Ala Wai Boulevard driveways should be clarified. The design/layout should be configured to minimize driveway widths. It should also be noted that Ala Wai Boulevard is subject to a 15,000 pound limit on passenger vehicles.

5. The need for and impacts, mitigative measures, and traffic details of the proposed dedicated right-turn lane on the eastbound approach of the Lipoepoe Street/Hobron Lane intersection and, the conversion from an all-way stop controlled intersection should be clarified.

Should you have any questions regarding these comments, please contact Faith Miyamoto of the Transportation Planning Division at Local 6976.

GEORGE "KEOKI" MIYAMOTO

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

November 22, 2004

Mr. George "Keoki" Miyamoto
Acting Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawaii 96813

Attention: Ms. Faith Miyamoto
Traffic Planning Division

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Mr. Miyamoto:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA). The following responds to your comments:

1. The Access and Transportation Impacts Section of the Final EA will include a discussion on pedestrian and transit impacts. The project will be constructed to meet or exceed Americans with Disabilities Act Accessibility Guidelines with respect to improvements that the applicant is making to the project frontage to improve access for Americans with disabilities.

2. The Final EA will note that the Handi-Van is a curb-to-curb paratransit service that will not enter the project site for drop off and pick up.

3. The proposed Hobron Lane driveway that is located across Kaioo Drive will be chained off and utilized only for Fire Department access in case of an emergency. With this limited use for emergencies only, the applicant understands that the realignment this Hobron Lane driveway with Kaioo Drive will not be necessary. The existing alignment allows for provision

of a greater amount of open space for the landscaped park planned for public use.

4. The operations at the Ala Wai Boulevard driveways have been clarified with arrows showing the entry and exit drive and laneage at the entry drive. The 20-foot width at the exit drive is necessary to allow fire and emergency vehicle access. The 20-foot entry drive will allow drop offs to occur in one lane while a through lane for residents and guests is maintained to minimize queuing on Ala Wai Boulevard.

5. The "Access and Transportation" section of the Final EA will provide further clarification of the need for and impacts and mitigative measures for the proposed dedicated right-turn lane on the eastbound approach of the Lipeepee Street/Hobron Lane intersection. The widening detail for the Lipeepee Street eastbound approach at Hobron Lane will be shown on "WSD1.00" the site plan for the project. The conversion from an all-way stop at the controlled intersection will also be clarified.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

Aaron

LINDA LINGLE
GOVERNOR OF HAWAII

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU
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
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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS
LD-NAV

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 25, 2004
2004 ED-24IRONGATE.RCM

Honorable Eric G Crispin, AIA
Director of Planning and Permitting
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Crispin:

SUBJECT: Draft Environmental Assessment
File No.: 2004-ED-24 (sn)
Project: Irongate Ala Wai Investors, LLC
New 212-unit, 350-foot condominium tower
Authority: C&CoH Department of Planning and Permitting
TMK: (1) 2-6-11: 1, 2, 4, 32, 37 and 40

Thank you for the opportunity to review and comment on the subject matter

A copy of the document pertaining to the subject matter was transmitted or made available to the following Department of Land and Natural Resources' Divisions for their review and comment:

- Division of Forestry and Wildlife
- Division of State Parks
- Engineering Division
- Commission on Water Resource Management
- Office of Conservation and Coastal Lands
- Land-Oahu District Land Office

Enclosed please find a copy of the Engineering Division and Commission on Water Resource Management comments.

Based on the attached responses, the Department of Land and Natural Resources has no other comment to offer on the subject matter.

If you have any questions, please contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0384.

Very truly yours,

DIERDRE S. MAMIYA
Administrator

C: ODLO

LINDA LINGLE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU
DEPUTY DIRECTOR - WATER

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

2004 OCT 12 PM 2 12

October 8, 2004
LD/NAV
Ref.: 2004 ED-24

Suspense Date: 10/19/04

MEMORANDUM:

TO: *XXX Division of Forestry and Wildlife
*XXX Land-Oahu District Land Office
*XXX Engineering Division
*XXX Commission on Water Resource Management
*XXX Office of Conservation and Coastal Lands
*XXX Land-Planning and Development

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Draft Environmental Assessment
File No.: 2004 ED-24 (sn)
Applicant: Irongate Ala Wai Investors, LLC
Proposed: New 212-unit, 350-foot condominium tower
TMK: (1) 2-6-11: 1, 2,4, 32, 37 and 40
Authority: C&CoH Department of Planning and Permitting

Please review the document pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date. Should have any questions, lease contact Nick Vaccaro at 587-0384.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

***Note: One copy of the document is available for review in the Land Division Office, Room 220.**

(✓) We have no comments. ( ) Comments attached.

Signed: Cecil Santos Date: 10/13/04

Name: CECIL SANTOS Division: LAND

RECEIVED
LAND DIVISION
2004 OCT 15 P 3:52
DEPT OF LAND & NATURAL RESOURCES STATE OF HAWAII

2004 OCT 27 PM 2 12

LINDA LINGLE
GOVERNOR OF HAWAII

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

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DEPUTY DIRECTOR - WATER

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

October 8, 2004
LD/NAV
Ref.: 2004 ED-24

Suspense Date: 10/19/04

MEMORANDUM:

TO: ~~*XXX~~ Division of Forestry and Wildlife
*XXX Land-Oahu District Land Office
*XXX Engineering Division
*XXX Commission on Water Resource Management
*XXX Office of Conservation and Coastal Lands
*XXX Land-Planning and Development

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Draft Environmental Assessment
File No.: 2004 ED-24 (sn)
Applicant: Irongate Ala Wai Investors, LLC
Proposed: New 212-unit, 350-foot condominium tower
TMK: (1) 2-6-11: 1, 2,4, 32, 37 and 40
Authority: C&CoH Department of Planning and Permitting

Please review the document pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date. Should have any questions, lease contact Nick Vaccaro at 587-0384.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

***Note: One copy of the document is available for review in the Land Division Office, Room 220.**

(X) We have no comments. ( ) Comments attached.

Signed: Paul J Conry Date: OCT 11 2004

Name: PAUL J. CONRY, ADMINISTRATOR
~~DIVISION OF FORESTRY AND WILDLIFE~~ Division:

LINDA LINGLE
GOVERNOR OF HAWAII

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LAND DIVISION
2004 OCT 19 P 3:41

STATE OF HAWAII
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LAND DIVISION
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HONOLULU, HAWAII 96809

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU
DEPUTY DIRECTOR - WATER

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KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

October 8, 2004
LD/NAV
Ref.: 2004 ED-24

Suspense Date: 10/19/04

MEMORANDUM:

TO: *XXX Division of Forestry and Wildlife
*XXX Land-Oahu District Land Office
*XXX Engineering Division
*XXX Commission on Water Resource Management
*XXX Office of Conservation and Coastal Lands
*XXX Land-Planning and Development

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Draft Environmental Assessment
File No.: 2004 ED-24 (sn)
Applicant: Irongate Ala Wai Investors, LLC
Proposed: New 212-unit, 350-foot condominium tower
TMK: (1) 2-6-11: 1, 2,4, 32, 37 and 40
Authority: C&CoH Department of Planning and Permitting

Please review the document pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date. Should have any questions, lease contact Nick Vaccaro at 587-0384.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

***Note: One copy of the document is available for review in the Land Division Office, Room 220.**

( ) We have no comments.
(X) Comments attached.

Signed: ERIC T. HIRANO, CHIEF ENGINEER
Date: 10/18/04

Name:
Division: Engineering

–DEPARTMENT OF LAND AND NATURAL RESOURCES
ENGINEERING DIVISION

2004 OCT 27 PM 2 12

CITY & COUNTY HONOLULU

LD/NAV

Ref.: 2004 ED-24

COMMENTS

(X) We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone AO.

( ) Please take note that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Zone ___.

( ) Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is ___.

(X) Please note that the project site must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyau-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.

Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:

(X) Mr. Robert Sumimoto at (808) 523-4254 or Mr. Mario Siu Li at (808) 523-4247 of the City and County of Honolulu, Department of Planning and Permitting.

( ) Mr. Kelly Gomes at (808) 961-8327 (Hilo) or Mr. Kiran Emler at (808) 327-3530 (Kona) of the County of Hawaii, Department of Public Works.

( ) Mr. Francis Cerizo at (808) 270-7771 of the County of Maui, Department of Planning.

( ) Mr. Mario Antonio at (808) 241-6620 of the County of Kauai, Department of Public Works.

( ) The applicant should include project water demands and infrastructure required to meet water demands. Please note that the implementation of any State-sponsored projects requiring water service from the Honolulu Board of Water Supply system must first obtain water allocation credits from the Engineering Division before it can receive a building permit and/or water meter.

( ) The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update.

( ) Additional Comments: _____

_____

(X) Other: Please correct information on page 24, Flood Plain Management of the document. Reference to Flood Insurance Rate Map of the Federal Emergency Management Agency, not City and County of Honolulu.

Should you have any questions, please call Mr. Andrew Monden of the Planning Branch at 587-0229.

Signed: _____
ERIC T. HIRANO, CHIEF ENGINEER

Date: 10/18/04

LINDA LINGLE
GOVERNOR OF HAWAII

RECEIVED
LAND DIVISION

2004 OCT 22 P 3:40

2004 OCT 27 PM 2

PETER T. YOUNG
CHAIRPERSON

MEREDITH J. CHING
CLAYTON W. DELA CRUZ
JAMES A. FRAZIER
CHIYOME L. FUKINO, M.D.
LAWRENCE H. MIIKE, M.D., J.D.
STEPHANIE A. WHALEN

YVONNE Y. IZU
DEPUTY DIRECTOR

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

DEPT OF LAND & NATURAL RESOURCES
STATE OF HAWAII

HONOLULU

October 22, 2004

Ref: Irongate Ala Wai DEA.dr

TO: Ms. Dede Mamiya, Administrator
Land Division

FROM: Yvonne Y. Izu, Deputy Director
Commission on Water Resource Management (CWRM)

SUBJECT: Draft Environmental Assessment, Irongate Ala Wai Investors, LLC

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

[X] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

[ ] We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[ ] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[ ] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.

[ ] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.

[ ] Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

[ ] We are concerned about the potential for degradation of instream uses from development on highly erodible slopes adjacent to streams within or near the project. We recommend that approvals for this project be conditioned upon a review by the corresponding county's Building Department and the developer's acceptance of any resulting requirements related to erosion control.

[ ] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).

[ ] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.

[ ] OTHER:

If there are any questions, please contact Lenore Y. Nakama at 587-0218.

LINDA LINGLE
GOVERNOR OF HAWAII

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04 OCT 11 A10:56

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
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POST OFFICE BOX 621
HONOLULU, HAWAII 96809

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU
DEPUTY DIRECTOR - WATER

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COMMISSION ON WATER RESOURCE MANAGEMENT
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CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

October 8, 2004
LD/NAV
Ref.: 2004 ED-24

Suspense Date: 10/19/04

MEMORANDUM:

TO: *XXX Division of Forestry and Wildlife
*XXX Land-Oahu District Land Office
*XXX Engineering Division
*XXX Commission on Water Resource Management
*XXX Office of Conservation and Coastal Lands
*XXX Land-Planning and Development

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Draft Environmental Assessment
File No.: 2004 ED-24 (sn)
Applicant: Irongate Ala Wai Investors, LLC
Proposed: New 212-unit, 350-foot condominium tower
TMK: (1) 2-6-11: 1, 2,4, 32, 37 and 40
Authority: C&CoH Department of Planning and Permitting

Please review the document pertaining to the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date. Should have any questions, lease contact Nick Vaccaro at 587-0384.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

***Note: One copy of the document is available for review in the Land Division Office, Room 220.**

( ) We have no comments. (X) Comments attached.

Signed: Lenore Y. Nakama Date: 10-20-04

Name: LENORE Y. NAKAMA Division: CWRM

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

November 22, 2004

Ms. Dierdre S. Mamiya
Administrator, Land Division
State, Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Ms. Mamiya:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA). The following responds to your comments:

Engineering Division

The applicant appreciates your confirmation that the project site is located in Flood Zone AO, according to the Flood Insurance Rate Map (FIRM).

The applicant will note in the Final EA that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), since it is within a Special Flood Hazard Area. The applicant will also comply with the requirements of the City and County of Honolulu, Land Use Ordinance related to Flood Hazard Districts.

The applicant will correct information on page 24, Flood Plain Management, to reference the Federal Emergency Management Agency, not the City and County of Honolulu.

Commission on Water Resource Management

The project will be coordinated with the County Water Use and Development Plan (with the Board of Water Supply).

Your letter and this response will be included in the Final EA.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

LINDA LINGLE
GOVERNOR OF HAWAII

RECEIVED
OCT 15 2004
DEPT. OF PLANNING AND PERMITTING
650 SOUTH KING ST.
HONOLULU, HI 96813

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. Box 3378
HONOLULU, HAWAII 96801-3378

CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

October 12, 2004

In reply, please refer to:
File:

04-907A CAB

Mr. Eric G. Crispin, AIA
Director of Planning and Permitting
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Crispin:

SUBJECT: Draft Environmental Assessment for Ala Wai Gateway Condominium Development Project; Waikiki, Oahu. Ref: 2004/ED-24(sn)

This letter is to transmit the following comments for the subject document:

Construction/Demolition Involving Asbestos:

Since the proposed project would entail renovation/demolition activities, the applicant should contact the Asbestos Abatement Office in the Noise, Radiation and Indoor Air Quality Branch at 586-5800.

Control of Fugitive Dust:

A significant potential for fugitive dust emissions exists during all phases of construction. Proposed construction activities will occur in proximity to existing residences, businesses, public areas and thoroughfares, thereby exacerbating potential dust problems. It is recommended that a dust control management plan be developed which identifies and addresses all activities that have a potential to generate fugitive dust. Implementation of adequate dust control measures during all phases of development and construction activities is warranted.

Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust.

The contractor should provide adequate measures to control dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:

a) Plan the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
b) Provide an adequate water source at the site prior to start-up of construction activities;
c) Landscape and provide rapid covering of bare areas, including slopes, starting from the initial grading phase;
d) Minimize dust from shoulders and access roads;
e) Provide adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
f) Control dust from debris being hauled away from the project site.

If you have any questions, please contact Mr. Barry Ching of the Clean Air Branch at 586-4200.

Sincerely,

WILFRED K. NAGAMINE
Manager, Clean Air Branch

BC:jhm

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

November 22, 2004

Mr. Wilfred K. Nagamine, Manager
Clean Air Branch
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801-3378

Attention: Mr. Barry Ching
Clean Air Branch

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Mr. Nagamine:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA). The following responds to your comments:

Construction/Demolition Involving Asbestos

Prior to construction/demolition activities involving asbestos, if any is present, the applicant will contact the Asbestos Abatement Office in the Noise, Radiation and Indoor Air Quality Branch of the Department of Health at 586-5800.

Control of Fugitive Dust

Construction activities will comply with the provisions of Hawaii Administrative Rules, Section 11-60.1-33 on Fugitive Dust.

The applicant will develop a dust management control plan, including, as needed, the following:

a. Plan the different phases of construction, focusing on minimizing the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes, and locating potentially dust-generating equipment in areas of the least impact;

b. Provide an adequate water source at the site prior to start up of construction activities;

c. Landscape and provide rapid covering of bare areas, including slopes, starting from the initial grading phase;

d. Minimize dust from shoulders and access roads;

e. Provide adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and

f. Control dust from debris being hauled away from the project site.

Your letter and this response will be included in the Final EA.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

LINDA LINGLE
GOVERNOR OF HAWAII

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186
E-mail: oeqc@health.state.hi.us

October 25, 2004

Eric Crispin
Department of Planning and Permitting
650 South King Street, 7th Floor
Honolulu, Hawaii 96813

Attn: Sharon Nishiura

Dear Mr. Crispin:

Subject: Draft Environmental Assessment (EA), **Ala Wai Gateway Condominium**

We have the following comments:

Cultural impacts assessment:
A cultural impacts assessment was missing from the draft EA. In the final EA include such an assessment. Most of the required background material is already included in the EA. You need to draw a conclusion, i.e., perform the assessment, from the information presented.

For assistance refer to our *Guidelines for Assessing Cultural Impacts.* Contact our office for a paper copy or go to our homepage at *http://www.state.hi.us/health.oeqc/guidance/index.html*.

Sustainable building techniques: Please consider applying sustainable building techniques presented in the "Guidelines for Sustainable Building Design in Hawaii." In the final EA include a description of any of the techniques you will implement. Contact our office for a paper copy of the guidelines or go to our website at *http://www.state.hi.us/health/oeqc/guidance/sustainable.html*.

Pile driving: Is pile driving being considered to lay the foundation? Pile driving disturbs surrounding residents a great deal in terms of both noise and vibration. If this option is selected indicate in the final EA how you will advise the surrounding neighbors of the upcoming disruption and consult the Noise, Radiation & Indoor Air Quality Branch of the Department of Health, which has oversight over construction noise issues.

Consultations: If you have not already done so, consult with the neighborhood board about this project.

Technical terms: In the final EA define or describe the technical term "axonometric."

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

Sincerely,

Genevieve Salmonson

GENEVIEVE SALMONSON
Director

c: Keith Kurahashi

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
MANOA MARKET PLACE
2752 WOODLAWN DRIVE, SUITE 5-202
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November 22, 2004

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
236 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Attention: Ms. Nancy Heinrich

Dear Ms. Salmonson:

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Ms. Salmonson:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA). The following responds to your comments:

Cultural impacts assessment:

A cultural impact assessment will be prepared by Cultural Survey Hawaii and included in the Final EA.

Sustainable building techniques

The applicant will consider applying certain sustainable building techniques presented in the "Guidelines for Sustainable Building Design in Hawaii". The Final EA will include a list of the techniques that we will implement.

Pile driving:

The applicant is considering alternatives to pile driving to lay the foundation. Should pile driving be required, the applicant will provide notice to the

surrounding neighbors (either with a meeting or through a mail-out) to warn them of the disruption and projected period of pile driving. The applicant will consult with the Noise, Radiation & Indoor Air Quality Branch of the Department of Health on construction noise issues.

Consultation:

The applicant met with the Waikiki Neighborhood Board on September 14, 2004.

Technical terms:

The Final EA will contain the following definition of "axonometric":

> The Webster Dictionary defines "axonometric" as, "being or prepared by the projection of objects on the drawing surface so that they appear inclined with three sides showing and with horizontal and vertical distances drawn to scale but diagonal and curved lines distorted". The axonometric plan provided attempts to provide a three dimensional appearance to the buildings.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

UNIVERSITY OF HAWAI'I
Environmental Center

November 8, 2004
EA: 0306

Mr. Gregory Rapp
C/o Construction Management & Development Inc.
For Irongate Ala Wai Investors, LLC
10880 Wilshire Blvd., #1460
Los Angeles, CA 90024

Dear Mr. Rapp:

Draft Environmental Assessment
Ala Wai Gateway Condominium Development
Honolulu, Oahu

The applicant proposes to develop a 350-foot high residential condominium on 175,352 square feet of land (6 adjoining parcels) located between Ala Wai Boulevard, Hobron Lane and Lipe'epe'e Street in Waikiki. The project site is in the Apartment Precinct of the Waikiki Special District and has a maximum height limit of 350 feet. The proposed condominium development is a 37-story tower with a mechanical penthouse on top. It will consist of 212 residential units and recreational amenities, including a swimming pool and a landscaped garden area. A total of 466 parking spaces will be provided by a 6-story parking structure and surface parking along Hobron Lane. The development will have driveway access to both Ala Wai Boulevard and Hobron Lane. A 3-story, 18 unit apartment building at 1609 Ala Wai Boulevard (Parcel 32) and two storage buildings (Parcel 4) will be demolished. The two, three-story 18-unit apartment buildings at 1819 Lipe'epe'e Street (Parcel 37) will be retained. (Draft Environmental Assessment Project Summary.)

This review was conducted with the assistance of Kem Lowry, Urban and Regional Planning; Karl Kim, Urban and Regional Planning; and Landin Johnson of the Environmental Center.

General Comments

This draft Environmental Assessment (EA) appears to be prepared competently, and it touches on most of the important issues and concerns related to this proposed development. There are, however, in our reviewers' opinions, a number of concerns and issues that could have been discussed more completely.

2500 Dole Street, Krauss Annex 18, Honolulu, Hawaii 96822
Phone: (808) 956-7361
An Equal Opportunity/Affirmative Action Institution

Specific Comments

Coastal Zone Management Area

The EA states "The development site is not within the coastal zone management area or within the City's Special Management Area" (p.32). This is incorrect. According to Hawai'i Revised Statues (HRS), Chapter 205A-1, the Hawai'i "coastal zone management area" (CZM) is defined as:

> ...all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the United States territorial sea.

This project is within the CZM area, as all lands within the State of Hawai'i are in the CZM area.

Socio-Economic Impacts: Housing

It would appear that the project is replacing a complex which provided housing opportunities for low and moderate income residents. Will the new units be priced such that residents and those working in Waikiki can afford them? What is the estimated price of the proposed units? How will this project address affordable housing needs in Honolulu? What proportion of the units will be held by investors as opposed to residents who will actually live in the units? Are there any residency requirements? Will there be preferences given to people currently living and working in Waikiki? What proportion of the owners will come from out-of-state? Was a market analysis done for this project? As indicated by these queries, the economic costs and benefits of the proposed project do not seem to be adequately described. In addition, displacement of broad spectrum residential housing undermines the community diversity that has distinguished Waikiki from most other resort destinations, which typically lack the multifaceted community composition that Waikiki has, until now, sustained.

Infrastructure Issues

This document, like most EAs, does not adequately assess the cumulative impacts of new development on existing water, wastewater, and roadway systems. Instead, it seems to take a project-oriented view. Yet there are impacts which extend beyond the site itself that should be documented and assessed. Moreover, some of the project specific impacts, such as the availability of adequate water pressure for fire hydrants do not appear to have been completely assessed. Moreover, as the letter from the BWS states "in order to determine the flows that are available to the site, you will have to ascertain

the actual field pressure by taking on-site pressure readings at various times of the day and correlating that [sic] field data with the above hydraulic design data" Also, wastewater concerns could be addressed more completely, as the sewer connection application noted, "wastewater flows from this project shall be split between Ala Wai Boulevard system and Hobron Lane system. Existing Ala Wai system is inadequate to support this project."

Traffic Impacts & Related Transportation Issues

The EA mentions several mitigation measures designed to minimize the impacts of traffic, but it is not clear whether these measures represent project commitments.

While the document contains extensive detail on vehicular traffic, little attention is given to other travel modes - pedestrian, transit, etc., which, given its location and proximity to employment centers, shopping centers, and other activity generators, should have been more thoroughly investigated. Are there opportunities to reduce the parking requirements because of the accessibility to other travel modes? Issues regarding traffic and pedestrian safety are not adequately discussed.

Aesthetics and Views

As a major new structure in Waikiki, this project will have an impact on aesthetics and view corridors. While an initial assessment of the impact has been carried out, our reviewers suspect that occupants of surrounding buildings and properties will have concerns not only about views, but also regarding the impact of the structure on sunlight, shadows, wind, and other environmental considerations. The design, moreover, appears to be somewhat monotonous and does not seem to improve the overall quality of the neighborhood in which it is located. Other than the landscaping plan, it seems that there is very little that the project does to "promote a Hawaiian Sense of Place." Moreover, given its critical location and functioning as a gateway, it is not altogether clear how this project visually enhances this particular entranceway to Waikiki. The notion of a "private" mini-park also needs to be more fully explained. If, as the name implies, this park will lack "public pedestrian access" as encouraged in the Waikiki Special District Guidelines, it would fail to meet those guidelines.

One of the problems of the project specific orientation of this development (and many others), is that there is, once again, a missed opportunity to coordinate the planning and development of the neighborhood as a holistic unit. Rather than examine neighborhood amenities, assets, and resources, the overall effect is to create yet another tower with minimal interaction and relations with surrounding properties and activity generators. This project oriented view is perhaps necessary in terms of development, but it also excludes larger questions that fall within the context of the public domain.

Alternatives Considered

While many alternative designs were addressed in this section of the EA (p. 43-45), our reviewers suggest that it would be notable to have included an alternative option of a hotel to accommodate the Hawai'i Convention Center (HCC), given that the project site is presently closer than any other hotel to HCC, and given as well that at one time there was discussion of such a project, provided a pedestrian overpass was available for the HCC across the Ala Wai Canal. This alternative could have positive impacts for the promoting the goal of diversified tourism via the convention center and the "business tourism" industry if hotel accommodations were within such a close walking distance. Presently the closest hotel to the convention center is approximately a quarter mile away. Was this option considered? If not, why not? If so, why was it not found to be a preferred project compared to the present project?

Electricity and Water Conservation Design

Our reviewers highly recommend the consideration of including solar water heating systems and photovoltaic systems in the project to reduce the impacts of the project's electricity consumption and Hawai'i's dependence on the burning of fossil fuels for electricity.

Furthermore, our reviewers recommend the use of non-potable or reclaimed water for the project's landscape irrigation system to be considered given Oahu's limited water supply.

Thank you for the opportunity to review this draft EA.

Sincerely,

John T. Harrison, Ph.D.
Environmental Coordinator

cc: Kusao & Kurahashi, Inc.
C&C of Honolulu, Dept. of Planning & Permitting
OEQC
Karl Kim
Kem Lowry
James Moncur, WRRC
Landin Johnson

KUSAO & KURAHASHI, INC.
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November 22, 2004

John T. Harrison, Ph.D., Environmental Coordinator
University of Hawaii
Environmental Center
2500 Dole Street, Krauss Annex 19
Honolulu, Hawaii 96822

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Prof. Harrison:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA). The following responds to your comments:

Coastal Zone Management

The Final EA will be corrected to reflect that "the development site is within the Coastal Zone Management Area, but not within the City's Special Management Area".

Socio-Economic Impacts: Housing

The new units will be priced according to the market at the time of building permit approval, probably about the middle of next year. The new units will probably be priced in a range that will be affordable to upper management and owners of businesses in Waikiki. In today's market, similar units are selling at over $500,000. The 17 of the 18 units affordable units that are being demolished have been vacant since October of this year and it is doubtful that this apartment would have been repaired and rented at their current rates. While 17 of these 18 units have been previously removed from the affordable rental pool, the applicant understands that at the proposed Tusitala Vista development, about 100 units are planned for senior affordable housing. These 100 new affordable rentals will more than offset these 18 units being lost. The Ala Wai Gateway development will retain 36 units that are in better condition than

the 18 units being demolished and are expected continue to be rented at their present rate (affordable).

The applicant believes that due to the cost per unit that this development will not attract many investors. There will not be a residency requirement for purchase of these units. No preference will be given to people currently living and working in Waikiki. The applicant expects that most buyers will be full or part-time residents in the units with the units left vacant by off-shore part-time residents. A market study was not done for this project site, however, with the pent up demand for dwelling units in Waikiki evidenced by the rapid sale of units in nearby developments, including the Windsor and a number of hotel/condominium conversions, these units are expected to be very marketable.

The project site at present is for the most part a vacant underutilized property that does not have any redeeming value as an unimproved lot. The development of the Ala Wai Gateway will result in a productive use of this lot, introducing a residential presence on a beautifully landscaped lot that will provide 60% open space and 21,760 square feet of new public open space at the public park/gathering place on Hobron Lane, the landscaped area fronting the parking garage and the public open space provided along Ala Wai Boulevard (based on a redesign of the site plan). This development will also provide a significant increase in property tax revenue to the City over the existing vacant lot.

Infrastructure Issues

In in-fill developments, such as this, often times the applicant relies on the water and wastewater agencies to provide an initial review to determine if off-site facilities will need to be improved to support their development. If some deficiency is found then the applicant's consultant will attempt to mitigate the deficiency through an upgrade of off-site systems.

In the case of traffic, Traffic Impact Reports consider surrounding proposed development that will come on line within the context of this development's scheduled delivery of condominium units or include an expected annual increase in traffic for areas where new developments are not forthcoming.

The Final EA will include the applicant's commitment to complete fire flow testing of fire hydrants in the area to determine that flows available to the site will meet Board of Water Supply's fire flow requirements.

The Final EA will note that "Wastewater flows from this project will be split between the Ala Wai Boulevard system and the Hobron Lane system, since the Ala Wai Boulevard system is inadequate to handle all the flows from this project. The applicant will work with the Department of Planning and Permitting and/or the Department of Environmental Services to determine the appropriate flows to each system."

Traffic Impacts and Related Transportation Issues

The Final EA will include a note that "Subject to approval from the Department of Transportation Services and the Traffic Review Branch of the Department of Planning and Permitting, the applicant plans to implement all recommendations of the traffic study. As noted in the traffic impact report, with these improvements, the proposed Ala Wai Gateway development is not expected to have a significant impact on traffic operations in the project vicinity."

The Final EA will include a discussion of other travel mode opportunities, including pedestrian, transit, etc. and will note the project site's proximity to employment centers, shopping centers, recreational areas, entertainment areas, and dining areas. The proposed Ala Wai Gateway is being developed in an area where on-street parking areas are heavily parked, due to the significant amount of apartment and condominium developments in the surrounding area and the surrounding resort and commercial developments whose employees park on surrounding streets. In recognition of the scarcity of on-street parking, the applicant is providing more parking than required and would not be comfortable with a significant reduction of parking for the project. That being said, the applicant has reduced parking planned for the site by 22 stalls, in order to provide public open space and more landscape areas.

The Traffic Impact Report discusses improvements to enhance pedestrian and vehicle safety. In addition, the Department of Planning and Permitting, Traffic Review Branch has provided other recommendations to improve traffic safety

for vehicles and pedestrians and to reduce traffic queuing and congestion. These recommendations will be followed and will be noted in the Final EA.

Aesthetics and Views

As can be seen by the Axonometric Plan in Appendix IX of the Draft and Final EA, the impact on views, sunlight, shadows and wind are to a certain extent mitigated by the distance of the proposed condominium tower from other high-rise buildings and the mauka/makai orientation of the building which reduces the surface of the area exposed to the predominate southwest wind direction. This separation is created by the surrounding low-rise development and the project's proximity to the Ala Wai Drainage Canal. The design has been modified in response to the recommendations of the Design Advisory Committee resulting in a reduction of bulk and visual impact by reducing the width of the building by one bay (36 feet) and double loading a portion of the building on the now central corridor (this further reduces the face of the building in relation to impact on wind).

The Final EA will also contain the following discussion of the provision of additional public open space in response to the Design Advisory Committees recommendations:

> "Along Hobron Lane, the applicant has introduced a public park area (13,800 square feet) to serve as a gathering place for the community, dedicated to public use, and providing opportunities for a wider sidewalk and more landscaping. The applicant has also provided greater setback at the proposed parking garage which is situated 22'-6" from the property line on one end and 36'-6" on the other end (providing 3,850 square feet of public open space, beyond our fence line)."
>
> "The applicant has provided for public open space along Ala Wai Boulevard by setting the property fence back about 11 feet from their property line for most of this frontage (providing 4,110 square feet of public open space), which added to the existing 12-foot City pedestrian area provides a 23-foot setback from the curb which provides an opportunity for passive recreational use along Ala Wai Boulevard. Benches are planned within the

City right-of-way as an amenity to encourage use of this passive recreational area. The feeling of open space will be enhanced by the large landscaped area beyond the fence line."

"Altogether, the applicant will be providing 21,760 square feet of new public open space at the public park/gathering place on Hobron Lane, the landscaped area fronting the parking garage and the public open space provided along Ala Wai Boulevard."

Alternatives Considered

This option was not considered a viable option by the applicant due to the long processing time that would be required for a zone change to allow hotel development. Although designated Resort on the PUC DP Land Use Map, the site is zoned Apartment Precinct. The rezoning of the project site to a Resort Precinct that would allow hotels would take at least one year and with the land cost, this option would not be feasible. store. This area is truly mixed use. The Ala Wai Gateway will provide for the residential component in this mixed use area.

Electricity and Water Conservation Design

The applicant will consider photovoltaic systems and will utilize certain sustainable building techniques ("Guidelines for Sustainable Building Design in Hawaii"), included in the Final EA, that will lead to further energy savings for the project to reduce the impacts of the project's electricity consumption and Hawaii's dependence on the burning of fossil fuels for electricity.

Your letter and this response will be included in the Final EA for the project.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

Nov-09-2004 08:39am From-STATE Historic Preservation 808 692 8020 T-248 P.001/001 F-278

To Eric Crispin	From Vicki Sato
Co./Dept. Planning & Permitting	Co.
Phone #	Phone # 692-8041
Fax # 527-6743	Fax #

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

DAN DAVIDSON
DEPUTY DIRECTOR - LAND

YVONNE Y. IZU
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

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

November 5, 2004

Eric G. Crispin, Director
Department of Planning and Permitting
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

LOG NO: 2004.3263
DOC NO: 0411EJ05

Dear Mr. Crispin:

SUBJECT: Chapter 6E-42 Historic Preservation Review- Draft Environmental Assessment DEA
For the Ala Wai Gateway Condominium Development, Hobron Lane, Ala Wai Boulevard
And Lipoapoa Street, Waikiki
Waikiki, Kona, O'ahu
TMK: (1) 2-6-011:001, 002, 004, 032, 037 & 040

Thank you for the opportunity to comment on the DEA for the proposed Ala Wai Gateway Condominium Development. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division. We received the DEA from your office on October 5, 2004 and provide the following comment.

In September 2003, SHPD commented on the DEA for the Kapi'olani Akahi CCRC Project at these same parcels (McElderrney to Crispin, SHPD Log 2003.1666). Our earlier correspondence stated that the applicant at that time agreed to conduct an archaeological inventory survey with subsurface testing of the project area and that we looked forward to receiving a report of the findings for review and acceptance.

The current DEA includes a newly proposed development on additional parcels than the previous plan. Section E.1 of the DEA provides a brief summary regarding historic and archaeological resources on the property. This section also documents that an archaeological inventory survey of the project area has been undertaken. SHPD staff conducted field inspections during the current survey and responded to the discovery of human remains during the subsurface testing phase of the inventory. To date, SHPD has not reviewed for acceptance the report of the findings. Because the report has not been submitted to SHPD, we are unable to comment at this time, on the effect this project will have on these historic sites.

We would like to remind the applicant that the archeological inventory survey report should be submitted to SHPD in accordance with HRS §13-275.

Aloha,

Melanie A. Chinen, Administrator
State Historic Preservation Division

EJ:jen

c: V. Horn Diamond, Chair, OIBC
Nathan Napoka, History and Culture Branch

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
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November 22, 2004

Ms. Melanie A. Chinen, Administrator
State Historic Preservation Division
Department of Land and Natural Resources
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Ms. Chinen:

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA). The applicant appreciates your assistance in conducting field inspections and providing direction on additional trenching on the site during the subsurface testing phase of the inventory.

The archaeological inventory survey report is included in this Final EA and has been submitted to your office for review and acceptance.

Your letter and this response will be included in the Final EA.

Very truly yours,

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

October 7, 2004

RECEIVED
OCT 12 2004
DEPT. OF PLANNING AND PERMITTING
650 SOUTH KING ST.
HONOLULU, HI 96813

Regulatory Branch

Ms. Sharon Nishiura
Project Manager
Director of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Ms. Nishiura:

This responds to your Director's request for written comments for the draft Environmental Assessment (dEA) which will address activities proposed for construction of a new 212-unit condominium on a 175,352 square foot consolidated lot at Waikiki, Oahu Island (TMKs 2-6-11: 1, 2, 4, 32, 37, and 40).

Our records indicate that waters of the United States, as represented by the Ala Wai Drainage Canal are adjacent to, and do not occur within the proposed project area. It also appears that other special aquatic sites such as wetlands and anchialine ponds are absent. The dEA should state in appropriate sections that there is no intent for navigable waters of the U.S. (i.e. Ala Wai) to be impacted by construction of project structures and associated ground disturbing activities within the proposed subdivision areas. With these attestations it can be stated that a Department of Army (DA) permit for Section 404 activities of the Clean Water Act will not be required for these proposed improvements at Waikiki. However, should your client, in the future, determine that the discharge of fill material below the Ordinary High Water Mark of Ala Wai Drainage Canal will be required, a DA permit may be required following consultation with this office.

Thank you for your consideration of potential impacts to the aquatic environment in the Ala Wai watershed. Please contact Mr. Farley Watanabe of my staff at 438-7701, or facsimile 438-4060, if you have any questions or need additional information. Please refer to File Number POH-2004-1006 in any future correspondence with us.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

KUSAO & KURAHASHI, INC.
Planning and Zoning Consultants
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November 22, 2004

George P. Young, P.E.
Chief, Regulatory Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Ft. Shafter, Hawaii 96858-5440

Attention: Mr. Farley Watanabe

Subject: Draft Environmental Assessment No. 2004/ED-24
Ala Wai Gateway Condominium Development, Waikiki
Tax Map Key: 2-6-11: 1, 2, 4, 32, 37, and 40

Dear Mr. Young

Thank you for your comments on the Ala Wai Gateway Draft Environmental Assessment (EA).

As you have recommended, the Draft EA will state that there is no intent for navigable waters of the U.S. (i.e. Ala Wai Drainage Canal) to be impacted by construction of project structures and associated ground disturbing activities within the proposed development area. The applicant understands that with this attestation that it can be stated that a Department of Army (DA) Permit for Section 404 activities of the Clean Water Act will not be required for these proposed improvements at Waikiki.

Should it be determined in the future that discharge of fill material below the Ordinary High Water Mark of the Ala Wai Drainage Canal is necessary, the applicant will consult with your office to determine if a DA permit will be required.

Your letter and this response will be included in the Final EA.

Very truly yours,

Keith Kurahashi

Keith Kurahashi

cc: Irongate Ala Wai Investors LLC