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90/SMA-57(DEB)

December 18, 1990

Dr. Bruce Anderson
Acting Director
Office of Environmental Quality Control
State of Hawaii
Kekuanaoa Building, Room 104
465 South King Street
Honolulu, Hawaii 96813

Dear Dr. Anderson:

Final Environmental Impact Statement (EIS)
Waikikian Hotel
Resort Hotel Development
JAMI Corporation
Tax Map Keys: 2-6-9: 2, 3 and 10

We are notifying you that the above Final EIS document is ACCEPTED pursuant to Chapter 343, HRS, and Title 11, Administrative Rules, Department of Health, Chapter 200, Environmental Impact Statement Rules.

A copy of our Acceptance Report is attached. If you have any questions, please contact Diane E. Borchardt of our staff at 527-5038.

Very truly yours,

Donald Clegg

DONALD A. CLEGG
Director of Land Utilization

DAC:lg

Attachment: Acceptance Report
cc w/attach.: Tyrone T. Kusao, Tyrone T. Kusao, Inc.

1990 - Oahu - FEIS -
Waikikian Hotel

FILE COPY

Final Environmental Impact Statement

Waikikian Hotel

Waikiki, Oahu, Hawaii

JAMI Corporation

November 1990

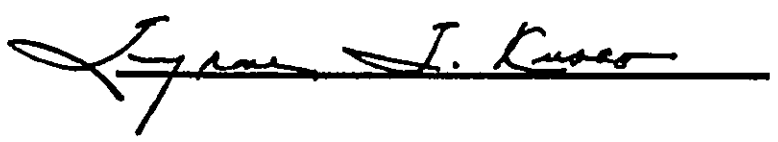
Final Environmental Impact Statement

Waikikian Hotel

Waikiki, Oahu, Hawaii

Prepared For:
JAMI Corporation

Prepared By:
Tyrone T. Kusao, Inc.
1188 Bishop Street
Suite 2507
Honolulu, Hawaii 96813



November 1990

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Applied Research Group, Bishop Museum

C. Air Quality Studies
Rowan Williams Davies & Irwin Inc.

D. Noise Study
Y. Ebisu Associates

E. View Assessment
Michael S. Chu, Land Architect

F. Pedestrian Level Wind Study
Rowan Williams Davies & Irwin Inc.

G. Sun/Shade Study
Rowan Williams Davies & Irwin Inc.

H. Transportation/Traffic
Wilbur Smith Associates

I. Impact on Utilities and Services
Hida, Okamoto & Associates, Inc.

Chapter 1

Summary

WAIKIKIAN HOTEL

Environmental Impact Statment

1. SUMMARY

A. Property Profile

Land use characteristics of the project site are profiled below:

Location:	Waikiki, Oahu
Tax Map Key:	2-6-9: 02, 03 & 10
Land Area:	82,559 square feet (1.9 acres)
State Land Use District:	Urban
Development Plan Map:	Resort
Public Facilities Map:	NA
Existing Zoning:	Resort Hotel Precinct
Height Limit:	350 feet
Special District:	Waikiki
Special Management Area:	Yes
Flood Zone:	AO (02 & 03); A (10)

B. Description of the Action

The action proposed is to demolish the Waikikian Hotel and rebuild a new hotel on the site with approximately 264 units (totalling 236,330 square feet), 20,000 square feet of commercial and administrative office space, and parking for 180 automobiles.

There will be three parking levels, starting at grade, and a tower containing 256 of the guest rooms to a total height of 350 feet. A separate, four-story structure will contain eight additional "Ocean Terrace" guest rooms.

Of the total 20,000 square feet of commercial/office space, approximately 8,000 will be occupied by office and administrative functions, 7,000 will be set aside for shops, and 5,000 square feet will house the Tahitian Lanai, which will continue its restaurant on the site.

C. Beneficial and Adverse Impacts

1. Physical Environment

(a) There is likely to be short-term localized degradation in water quality resulting from earth-moving activities during construction.

(b) There will be some loss of mature trees on the site, as a result of redevelopment and redesign of existing facilities.

(c) For the short-term, some avifauna will be displaced during construction.

(d) Archaeological resources may be present and exposed during construction-related excavation activities.

(e) Short-term, temporary impacts may include the generation of fugitive dust and automotive pollutants from construction vehicle activity, affecting existing air quality in the vicinity of the project site.

(f) There may be some long-term noise impacts for certain on-site units, because of traffic noise from Ala Moana Boulevard; short-term noise impacts are considered unavoidable during construction, but will be mitigated to the extent possible.

(g) The longitudinal facade of the hotel pedestal and tower at the mauka portion of the site will visually impact the roadway view corridor at Ala Moana Boulevard, and will contribute to the existing impact of high-rise buildings on the adjacent public right-of-way, although pedestrian-level views will be improved with a new walkway and

landscape treatment. The proposed Ocean Terrace at the makai portion of the site may impact on the manmade open space of the harbor and lagoon and lateral views available from the harbor and sandy beach.

(h) There are some avoidable impacts from the wind and sun on the proposed on-site recreation deck.

2. Socio-Economic

(a) The proposed redevelopment will result in positive regional and state-wide benefits in the form of increased direct and indirect revenues to State and City government, a direct and indirect increase in employment opportunities within the visitor and construction industries, and support of Waikiki as a primary visitor-destination center within the State.

(b) Some additional demands on recreational facilities and public services and facilities can be anticipated because of the increase in visitor population.

3. Public Facilities and Services

(a) Afternoon peak hour traffic at the Kalia-Ena Road/Ala Moana Boulevard intersection will experience operational problems; however, this is likely to occur with or without the project.

(b) The project will place additional demand on City liquid and solid waste disposal facilities and some improvements to the existing sewer system will be required; other public facilities and services are considered adequate.

(c) Short-term, construction-related impacts will occur as the result of planned drainage improvements; a long-term improvement in drainage is anticipated.

(d) An increase in visitor units (132) will likely result in some increased use of nearby parks and recreational facilities.

D. Proposed Mitigation Measures

1. Wetlands/Water Quality

Short-term construction-related impacts on water quality will be mitigated through the use of berms and swales to retain runoff generated during periods of heavy rains.

2. Flora and Fauna

The loss of mature trees on the site will be offset by adherence to the landscape plan, which will seek to retain the basic, existing "tropical garden" ambiance and will also include additional landscaping improvements to significant entry points to the site and its perimeter, such as the public right-of-way to the harbor and shoreline.

3. Archaeological

A complete program of on-site monitoring and data recovery is proposed to anticipate and mitigate any possible findings during construction activities. All such precautions will be coordinated with appropriate agencies.

4. Air Quality

Short-term potential impacts will be monitored and all appropriate governmental requirements to control fugitive dust and other typical construction-related pollutants will be followed.

5. Noise Impact

Long-term, on-site noise impacts on certain of the proposed visitor units will be addressed with choice of building materials and total closure and air-conditioning. Short-term audible noise, while unavoidable, will be mitigated through the use of properly muffled equipment and adherence to governmental noise regulations.

6. Views

While the impact at the mauka portion of the site (roadway corridor and adjacent public right-of-way) is unavoidable, the visual impact of the Ocean Terrace units can be reduced through architectural design to include the terracing of floors, landscaping, and the use of appropriate colors and materials.

7. Wind and Sun/Shadow Impacts

Landscaping and site design refinements will be evaluated to reduce potential on-site impacts on the proposed recreation deck of the new Waikikian Hotel.

E. Public Facilities and Services

1. Transportation/Traffic

The left-turn storage lane on Ala Moana Boulevard, Diamond Head direction, will be extended from the existing 175 feet to 250 feet in length to mitigate current and future operational problems. Some mitigating measures may also be needed to prohibit traffic from turning right off the Ala Moana through-lane into the proposed parking lot entrance, e.g. a physical barrier or sign.

2. Liquid/Solid Waste Disposal

Sections of the existing sewer system which service the project site will be inadequate to accommodate any additional sewage flow for more than the existing 132 hotel rooms, and sewer relief lines will be required along Ala Moana Boulevard for a distance of approximately 1,400 linear feet. Future State and

City revenues derived from the redevelopment project will contribute a fair-share portion of the cost for improvements to existing solid waste disposal facilities.

3. Drainage

The long-term impact of improved drainage facilities is expected to be beneficial, however, short-term impacts related to construction activity will be mitigated by adhering to all State and City requirements relating to air, noise, and traffic disruption impacts.

4. Parks

Some increase in use of nearby parks is probably unavoidable; however, on-site recreational and leisure amenities will offset the demand on public facilities.

F. Alternatives Considered

The no action alternative is considered unfeasible because the site is under-utilized, and there are health and safety concerns on the site as now developed, requiring major repair cost.

Alternative permitted uses within the Resort Hotel Precinct are not considered as appropriate as redeveloping those hotel and commercial uses which have existed on the site since 1956.

Alternative designs were considered, but because of the configuration of the site, extremely narrow and elongated, design options were severely limited.

G. Unresolved Issues

To the extent that potential findings are possible on the site during site preparation and construction activities, they may be considered an unresolved issue. An archaeological on-site monitoring and data recovery program is expected to resolve these issues as they arise.

Refinements in both site-planning, design, and landscaping are expected to occur during the development process; these will be directed at mitigating identified impacts.

While the net increase of 132 visitor units is a modest increase in Waikiki's visitor industry inventory, a Development Plan text amendment will be required by the Department of General Planning. (Refer also to *Section H.*, which follows, and *Chapter 12* starting on page 147.)

H. Compatibility With Land Use Plans and Policies

The proposed redevelopment project essentially supports State and City economic objectives for the visitor industry in general and the enhancement of Waikiki as a primary visitor-destination center in particular. While it would result in a net increase of 132 visitor units within Waikiki, the increase is not considered a significant conflict with existing City Development Plan guidelines for 30,000 visitor units within Waikiki.

I. List of Permits or Approvals Required

A Special Management Permit (SMP), Major, will be required because the project site is located entirely within the Special Management Area.

A Waikiki Special District Permit (Major) will be also be required.

Building Permits, Grading Permits, Demolition Permits and other construction-related permits will be required after the above noted discretionary permits are obtained.

Chapter 2

Statement Of Purpose And Need For Action

2. STATEMENT OF PURPOSE AND NEED FOR ACTION

The purpose of this final Environmental Impact Statement (EIS) is to describe a proposal for redeveloping the site of the existing Waikikian Hotel and Tahitian Lanai, to identify potential impacts of the redevelopment proposal, both beneficial and adverse, and to propose measures to either avoid or minimize adverse impacts on the environment.

A list of agencies, organizations, and individuals consulted during preparation of the draft EIS is found in *Chapter 13* starting on page 151 of this document. Their comments, and responses to the comments, are included as *Chapter 14* starting on page 156.

The existing Waikikian Hotel, Tahitian Lanai, and several small, visitor-oriented retail shops now occupy the site proposed for redevelopment. Existing structures on the site are low-rise, timber structures for the most part, dating back to 1956 and in need of repair; as a whole, the site is considered underutilized and overdue for redevelopment. Major repairs are required to meet current health and safety requirements.

The project site is strategically located in what is considered a primary visitor-designation center for the State and Oahu. It is a popular, well-known attraction for both resident and visitor, largely because of the Tahitian Lanai, Hilton Hawaiian Lagoon, and its proximity to recreational

amenities such as the shoreline park and harbor nearby. Redevelopment, within this narrow context, is clearly appropriate at this time.

Within a broader context, redevelopment of the site should be considered in terms of its ultimate contribution to the visitor industry as a whole and to the upgrading and increased attractiveness of the Waikiki District.

The State Department of Business and Economic Development (DBED) estimates that within two decades, Hawaii will host 11.5 million visitors per annum, or close to double the current number, and that the daily visitor count will double to more than 260,000. It is also predicted that visitors of international origin will account for an increasing percentage of the total and that they will come from a "wider spectrum of the economy." According to DBED's *Hawaii State Plan, Tourism, 1990*: "Such visitors will be increasingly sophisticated world travelers who expect high quality products and service levels."

Situated as it is, within one of the State's prime visitor-destination centers, the Waikikian Hotel site can be redeveloped to fully contribute to the visitor industry and still be maintained as a popular resident attraction as well. Waikiki's contribution and tourism as a whole's contribution to the gross state product, tax revenues, and secondary economic benefits, such as new jobs created, is well-documented. Redevelopment of the project site is seen as a positive contribution to this significant part of the economy.

As with any form of change and growth, growth in the visitor industry and development changes to a prime visitor site can result in both positive and negative impacts on the physical and social/cultural fabric of the community. These potential positive and negative impacts are identified and evaluated in the material which follows. It should also be noted that the Hawaii State Plan for Tourism, referenced above, observes that: "Tourism is considered to be more compatible with Hawaii's goals and environment than many other forms of activity."

Chapter 3

Project Description

3. PROJECT DESCRIPTION

A. Location

The 1.9-acre site is located between Ala Moana Boulevard and the Hilton Hawaiian Lagoon in Waikiki. The existing Waikikian Hotel, the Tahitian Lanai, and several small retail shops now occupy the site. Existing uses are described more fully below. *Figure 1.* is an *Islandwide Location Map* and *Figure 2.* is a *Vicinity Map.*

The parcels to be redeveloped are level, but relatively narrow and irregularly shaped. Only a portion of the site fronts Ala Moana Boulevard, with one property line running parallel to a paved public right-of-way to the Ala Wai Yacht Harbor and another adjoining the Hawaiian Hilton Village complex. At the western end of the site, the property line abuts a sandy beach and the Hawaiian Hilton Lagoon. The interior of the site is heavily landscaped with tropical plants and mature native trees in the area of the restaurant and guest rooms.

B. Existing Use

The site contains the existing 132-room Waikiian Hotel, and commercial uses. At the east end of the site is a seven-story structure

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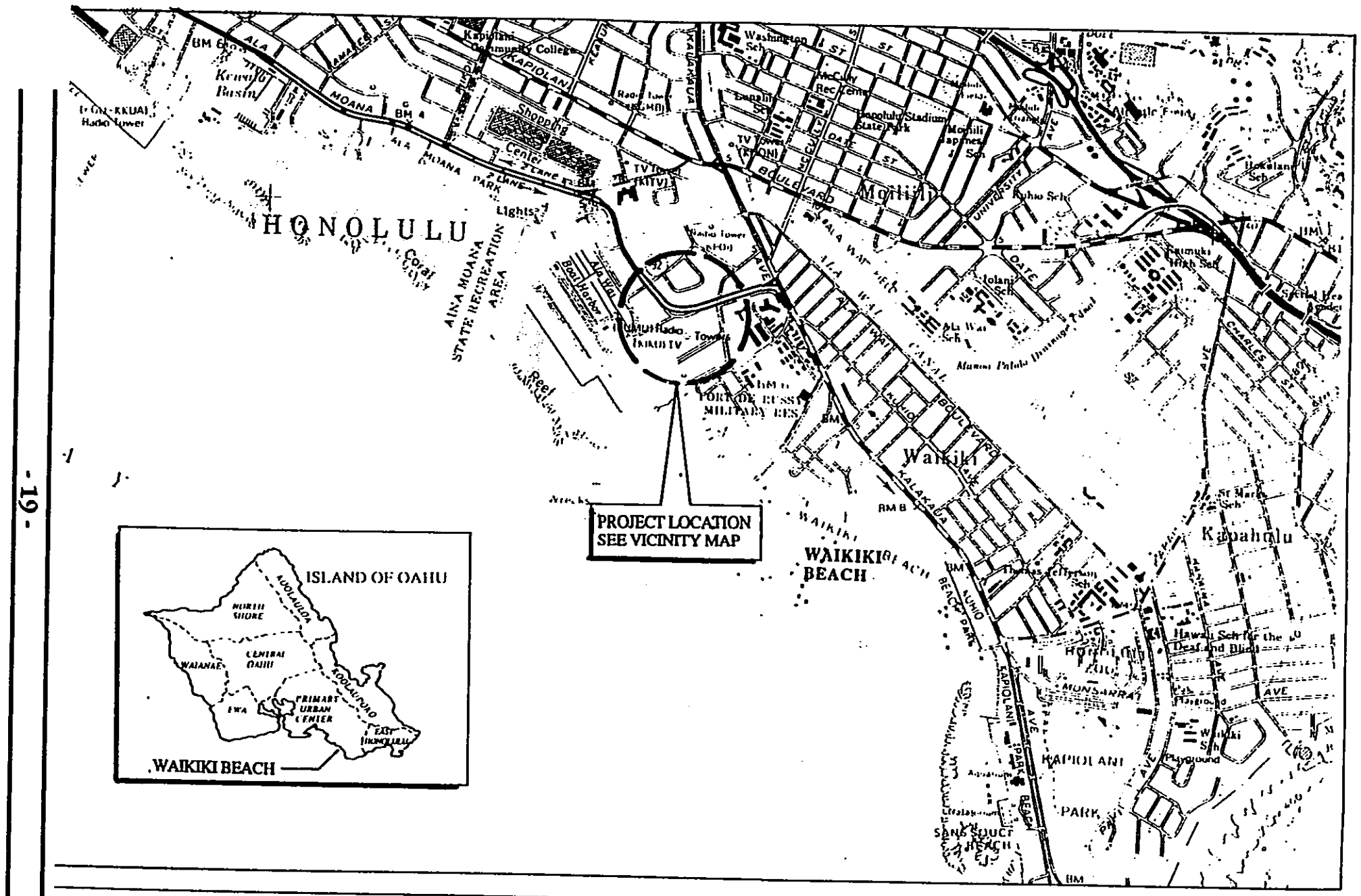
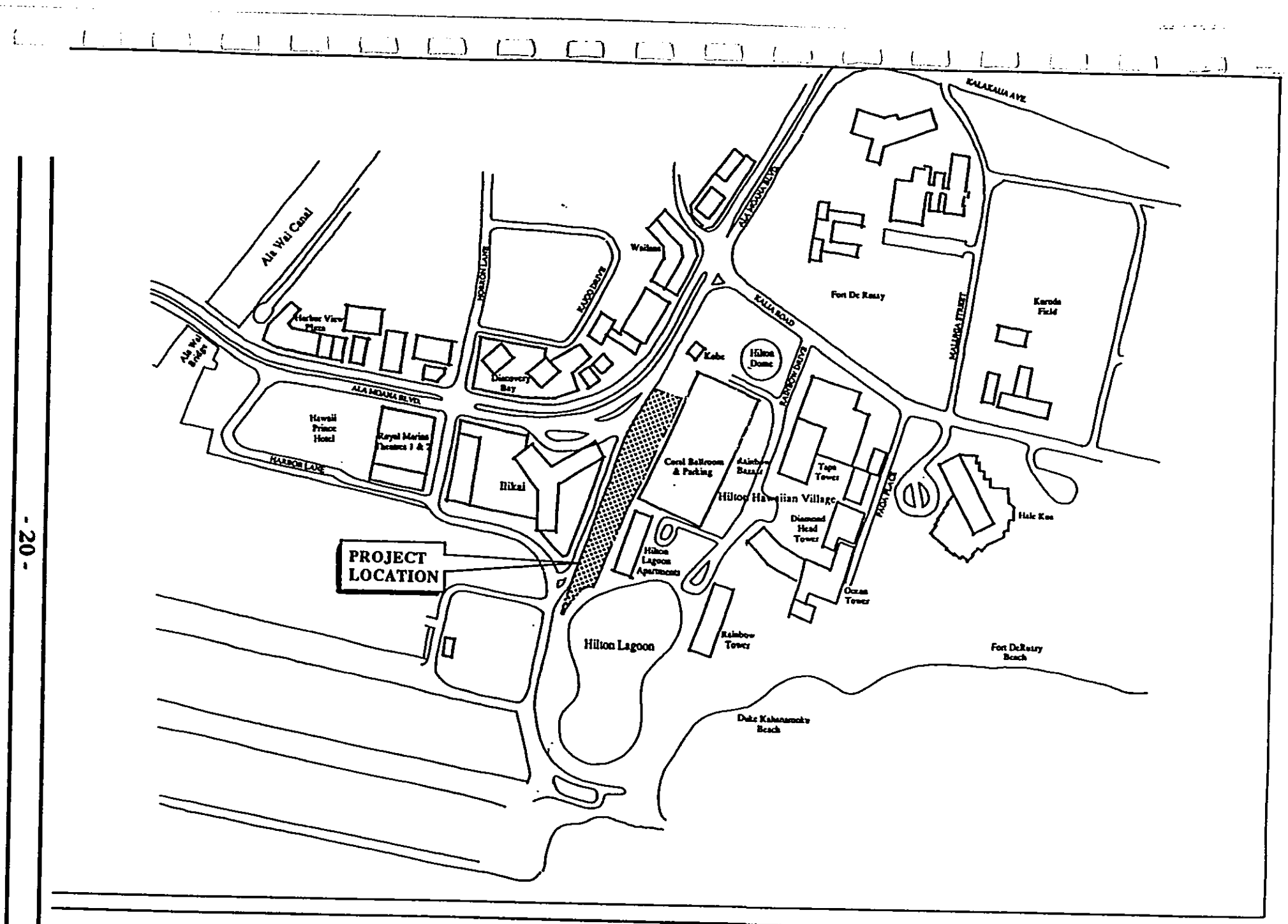


WAIKIKIAN HOTEL

Islandwide Location Map

FIGURE 1



WAIKIKIAN HOTEL
Vicinity Map

FIGURE 2

with 44 guest rooms; the retail uses, primarily gift shops and convenience stores, occupy the ground floor of this structure. At the west end of the site is the Tahitian Lanai and two wooden, two-story structures containing 88 cabana-type guest accommodations.

The Waikikian Hotel occupies approximately 87,281 square feet of the site, with the Tahitian Lanai accounting for about 6,425 square feet and the retail uses occupying the remaining 1,400 square feet. The combined existing uses on the project site total approximately 95,106 square feet of floor area.

About 28 on-site parking spaces are provided just off the Ala Moana Boulevard frontage. Parking for the Tahitian Lanai is located on land leased from the State adjacent to the Ala Wai Yacht Harbor. *Appendix A.* contains *Site Photos* showing existing conditions on the site.

C. Surrounding Uses

To the north of the project site, across the paved public right-of-way, is the Ilikai Hotel. As noted previously, one length of the project site runs in a westerly direction parallel to this right-of-way. To the east are four parcels fronting Ala Moana Boulevard to the intersection at Kalia Road, which contain Waikiki Mini Shops, a car rental service, and the Kobe Restaurant. Immediately abutting a

portion of the project site to the south is the Hilton Hawaiian Village (Hilton Parking Garage and Rainbow Tower).

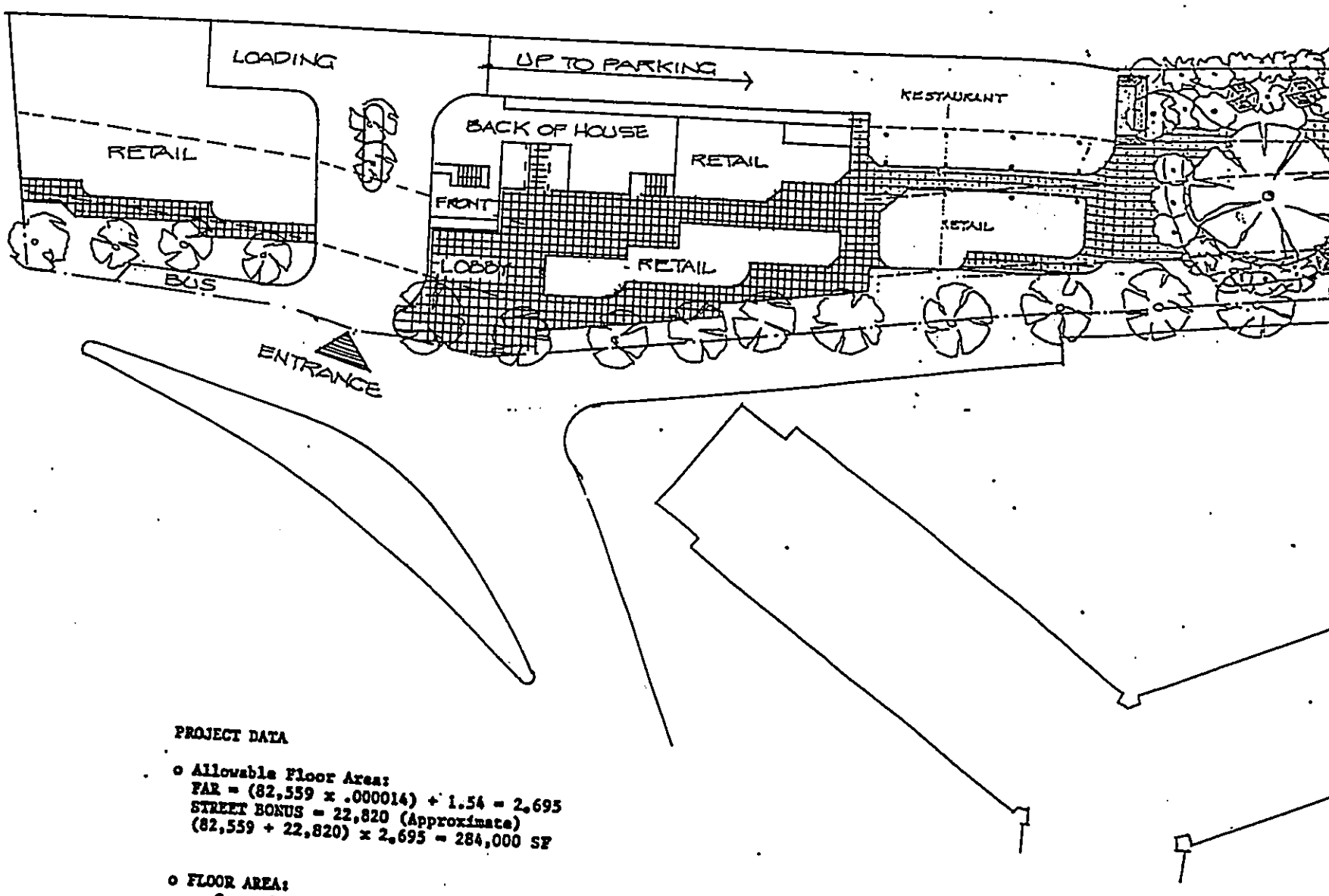
The surrounding area is a typical mixture of hotels and commercial uses which either directly serve or indirectly support the principal visitor-oriented function of the Waikiki Resort Precinct. Both the existing uses on the site and those proposed are compatible with uses and zoning in the surrounding area.

To the west, as previously noted, is the Hilton Lagoon, the Ala Wai Yacht Harbor and beyond, adjacent to the shoreline, is a public park.

D. Project Proposal

The applicant is proposing to demolish the Waikikian Hotel and rebuild a new hotel on the site with approximately 264 units (totalling 236,330 square feet), 20,000 square feet of commercial and administrative office space, and parking for 180 automobiles.

There will be three parking levels, starting at grade, and a tower containing 256 of the guest rooms to a total height of 350 feet. A separate, four-story structure will contain eight additional "Ocean Terrace" guest rooms. Please refer to *Figures 3.A.* through *3.C.*, Site drawings.



PROJECT DATA

- Allowable Floor Area:
  FAR = (82,559 x .000014) + 1.54 = 2.695
  STREET BONUS = 22,820 (Approximate)
  (82,559 + 22,820) x 2.695 = 284,000 SF

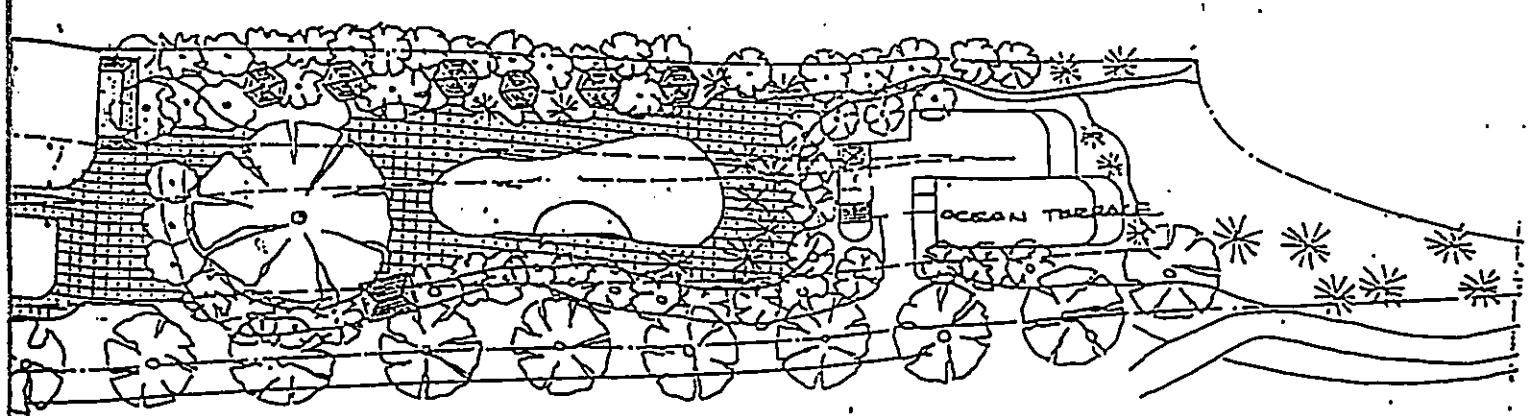
- FLOOR AREA:

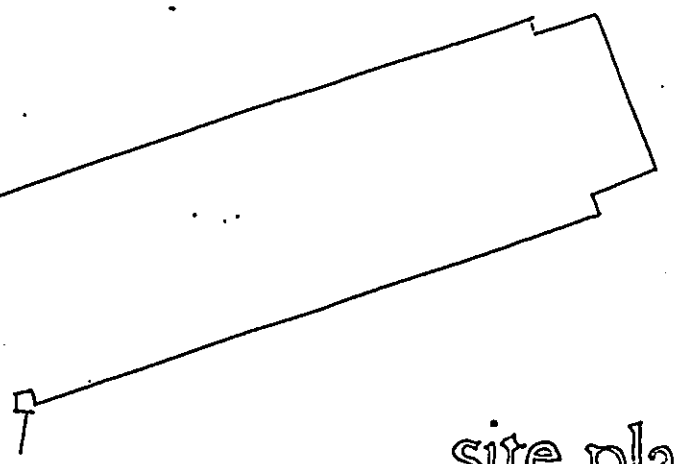
Guest Room	236,330
B.O.H/Public Space	
Mechanical	34,670
Commercial	12,000
TOTAL	283,000

- NOS. OF GUEST ROOM:
  256 Units (Hotel Tower)
  8 Units (Ocean Terrace)
  264 Units Total

- CARPARK:
  180 Car Park Stalls

- LOADING:
  5 Space Allowed





site plan

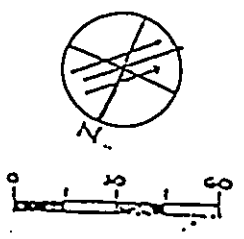


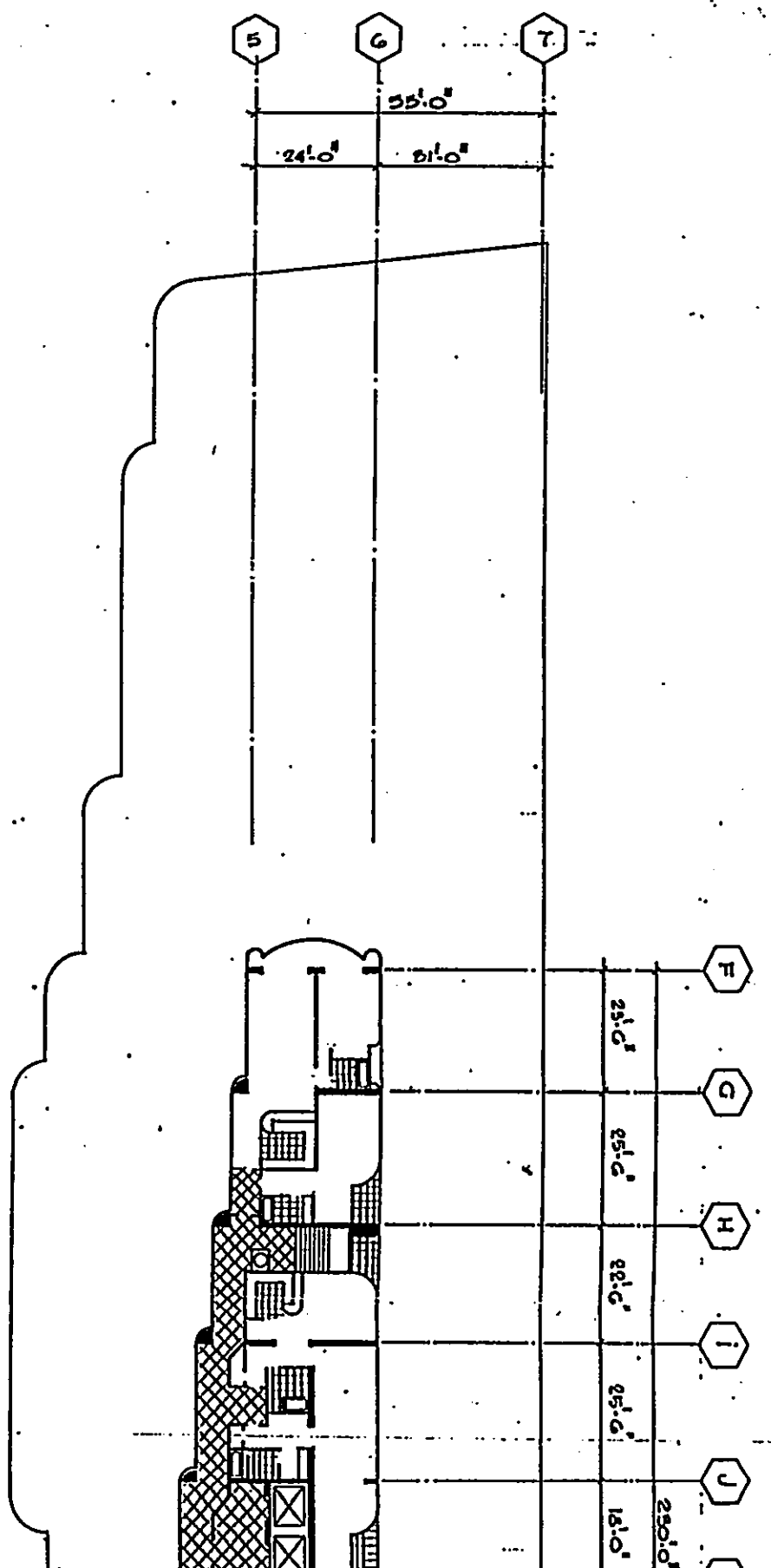
FIGURE 3A
SITE DRAWINGS

KOP HAWAII
Architecture Planning Interior Design

THE WAIKIKIAN HOTEL

Honolulu, Hawaii

7 May 1990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55'-0"
24'-0"
31'-0"
F
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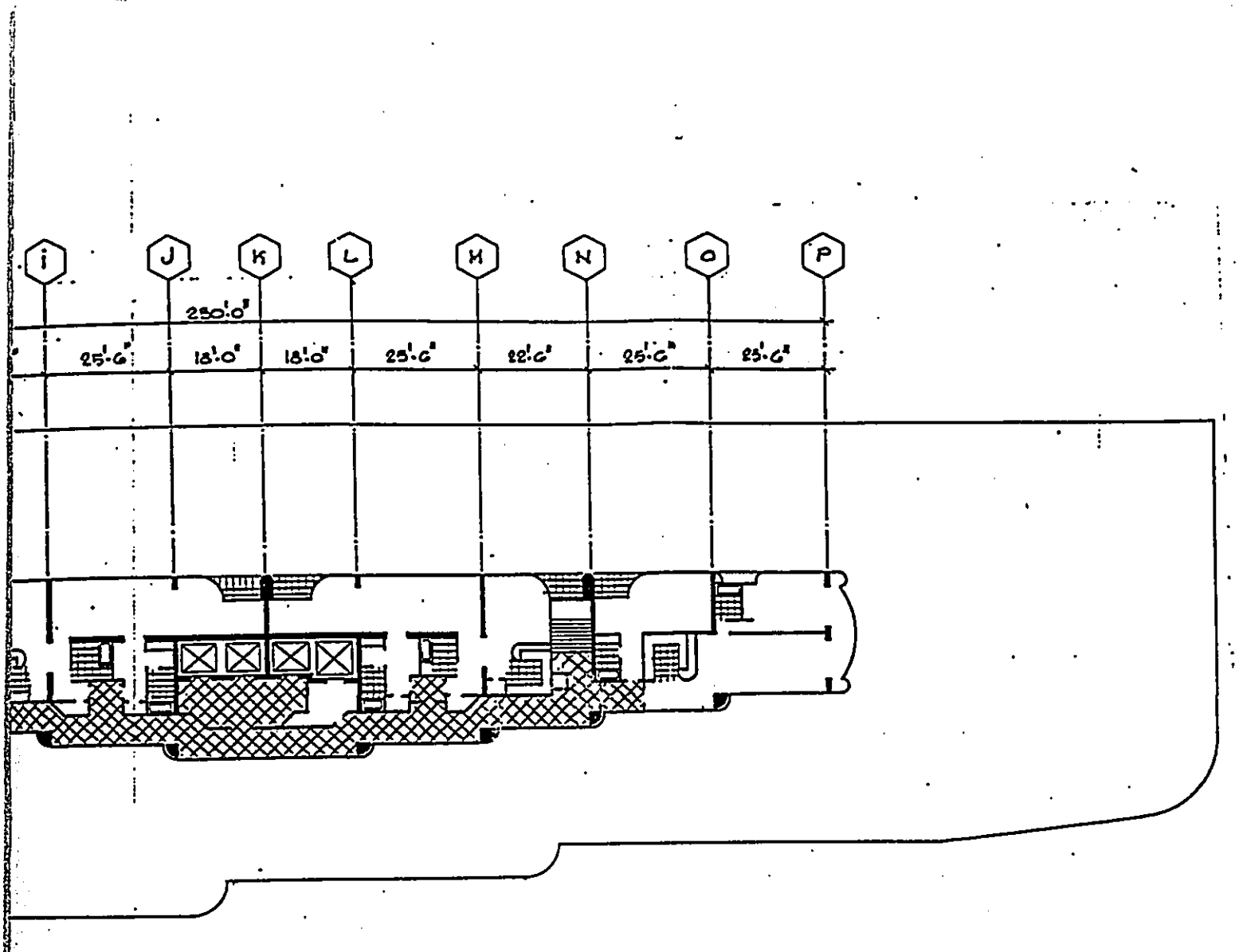
25'-0"
25'-0"
25'-0"
25'-0"
15'-0"
250'-0"



N

typical tower plan

0 8' 16' 24' 32'

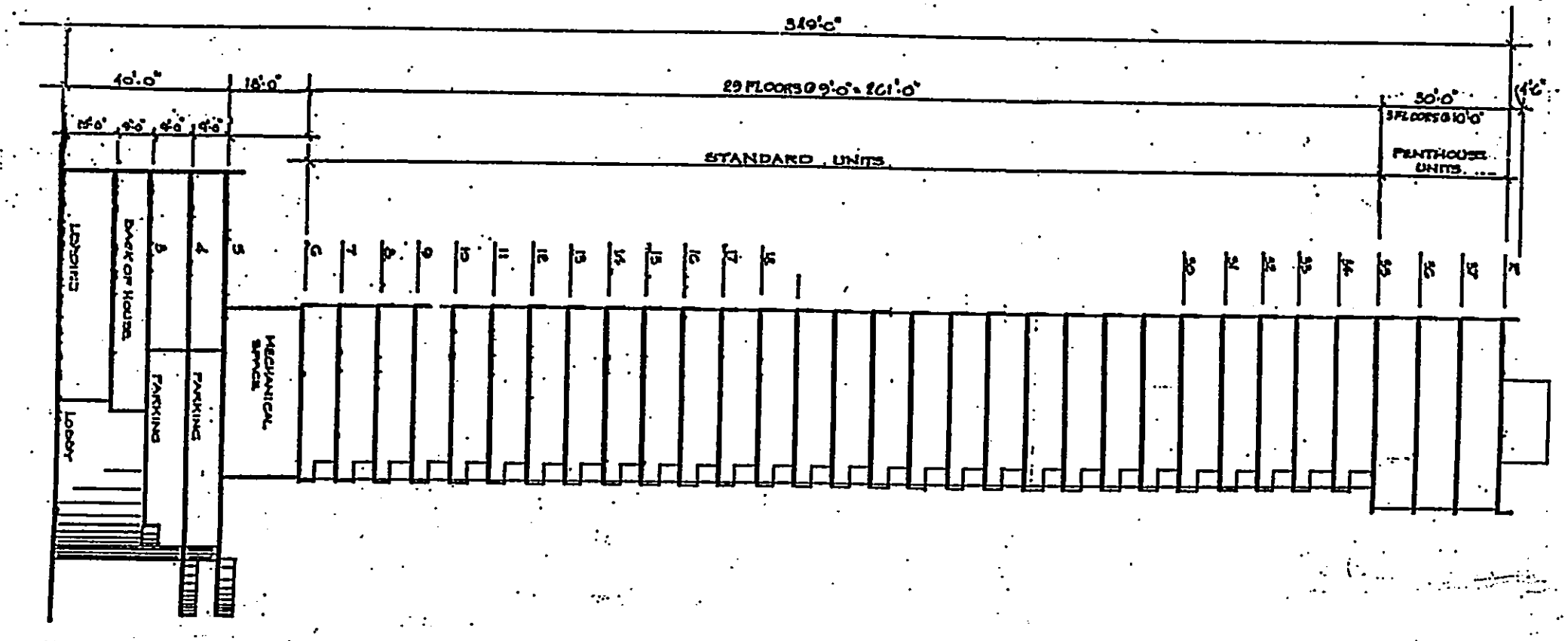
FIGURE 3B
SITE DRAWINGS

KOP HAWAII
Architecture
Planning
Interior Design

THE WAIKIKIAN HOTEL

Honolulu, Hawaii

7 May 1990


340'-0"
40'-0"
16'-0"
29 FLOORS @ 9'-0" = 261'-0"
30'-0"
3 FLOORS @ 10'-0"
4'-0"
25'-0"
4'-0"
4'-0"
4'-0"
STANDARD UNITS
PENTHOUSE UNITS
LOBBY
BACK OF HOUSE
5
4
3
2
1
6
7
8
9
10
11
12
13
14
15
16
17
18
50
51
52
53
54
55
56
57
58
MECHANICAL SPACE
LOBBY
PARKING
PARKING

building section

FIGURE 3C
SITE DRAWINGS

KOP HAWAII
Architecture
Planning
Interior Design

THE WAIKIKIAN HOTEL

Honolulu, Hawaii

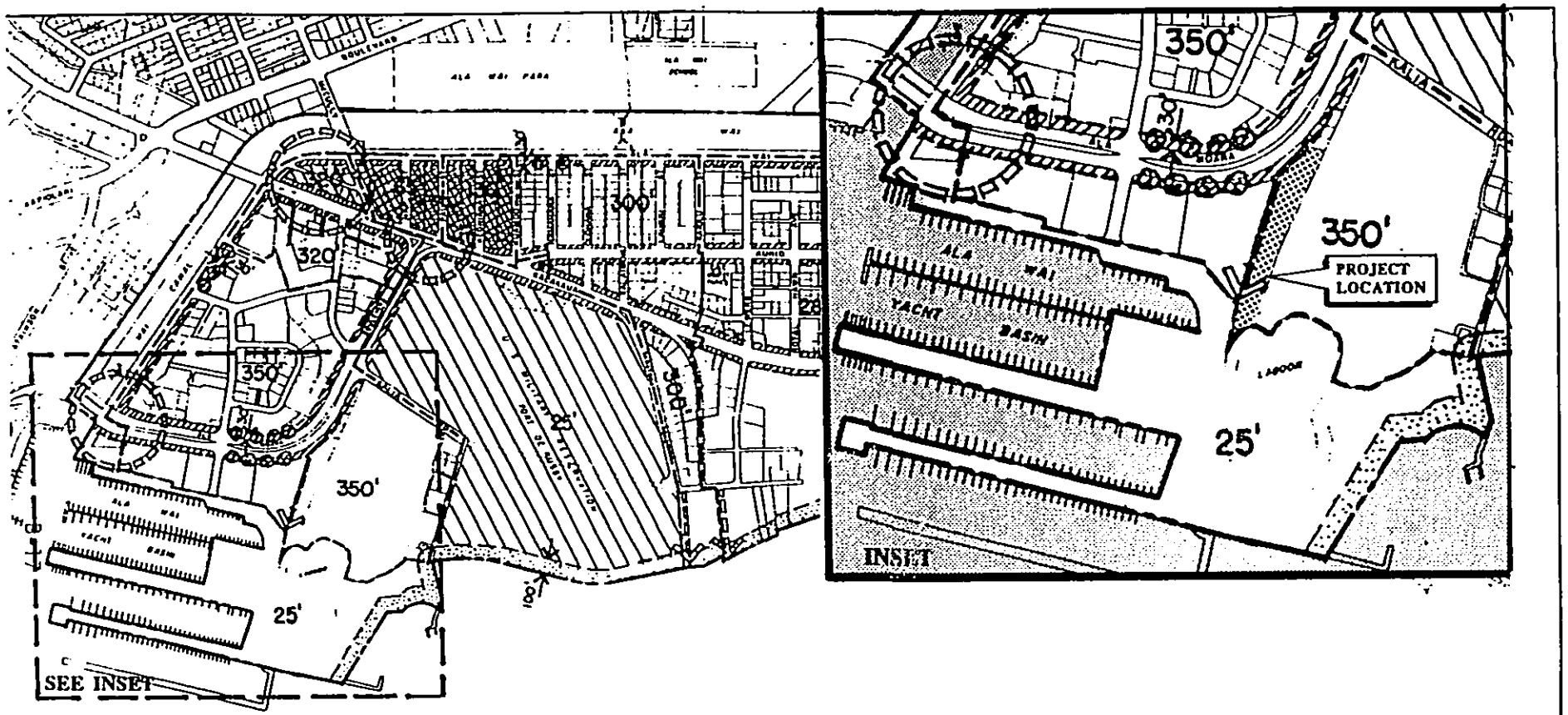
7 May 1990

Of the total 20,000 square feet of commercial/office space, approximately 8,000 will be occupied by office and administrative functions, 7,000 will be set aside for shops, and 5,000 square feet will house the Tahitian Lanai, which will continue its restaurant on the site.

The project site is in the Resort Hotel Precinct of the Waikiki Special District. Both the existing and proposed uses are principal permitted uses in the Precinct, however, because demolition and major new construction are proposed, and the site is also within the Special Management Area (SMA), a Special Management Area Permit and Waikiki Special District (Major) Permit are required. Refer to *Figures 4.A.* through *4.C., Waikiki Special District Exhibits*, and *Figure 5. SMA Boundary Map.*

All existing structures on the project site will be demolished. Other construction activities will include clearing, but minimal grading, since the site is relatively level. All new construction work will be done at grade, and no major alteration of land forms is proposed.

The proposed landscape concept is discussed in further detail in *Section 5. A. 5.* The concept is to retain as many of the existing trees, especially Coconuts, as possible, and to relocate or replace all other trees in conflict with the new construction.



LEGEND

- WAIKIKI SPECIAL DESIGN DISTRICT BOUNDARY
- WAIKIKI GATEWAYS. AREAS WITH SPECIAL DESIGN CONSIDERATION FOR OPEN SPACE AND ARCHITECTURAL TREATMENT.
- AN AVERAGE 30' SETBACK ALONG MAJOR STREETS MEASURED FROM EXISTING RIGHT-OF-WAY ON KAPAHULU AVE., KALAKAUA AVE., ALA MOANA AND ALA WAI BOULEVARDS AND MEASURED FROM DEVELOPMENT PLAN RIGHT-OF-WAY ON KUHIO AVE. AVERAGE 30' SETBACK.
- ALL MAJOR STREETS SHALL BE LANDSCAPED WITH STREET TREES.
- 100' SHORELINE SETBACK WITH A BUILDING HEIGHT ENVELOPE OF 1 TO 1 (45°) MEASURED FROM SHORELINE
- FORT DERUSSY MAUKA-MAKAI VIEW CORRIDOR.
- HEIGHT LIMIT PLANE TO PRESERVE PUNCHBOWL/DIAMOND HEAD VIEW PLANE.
- EXISTING MINI-PARKS. ADDITIONAL SHOULD BE PROVIDED
- EXAMPLE OF POTENTIAL MINI-PARKS LOCATIONS. MINI-PARKS SHOULD FOLLOW AREAS OF MAJOR PEDESTRIAN CONCENTRATION
- DEVELOPMENT PLAN BEACH RIGHTS-OF-WAY OTHER PEDESTRIAN BEACH RIGHTS-OF-WAY SHOULD BE PROVIDED. ALL BEACH RIGHTS-OF-WAY SHOULD BE ATTRACTIVELY IMPROVED AND LANDSCAPED.
- DEVELOPMENT PLAN PEDESTRIAN MALL. ADDITIONAL MALL AREAS SHOULD BE PROVIDED.
- LONG AXIS OF ALL NEW STRUCTURES SHOULD BE LOCATED ON A MAUKA-MAKAI DIRECTION WHENEVER POSSIBLE. BULK STRUCTURES SHOULD MINIMIZE MAUKA-MAKAI VIEW OBSTRUCTION.
- DEVELOPMENT PLAN PEDESTRIAN BRIDGE
- LAND AREAS RECOMMENDED AS OPEN SPACE

FOR OTHER DESIGN CONTROLS SEE ORDINANCE TEXT

WAIKIKI DISTRICT

1000 0 1000

(Am. Ord. 86-96)

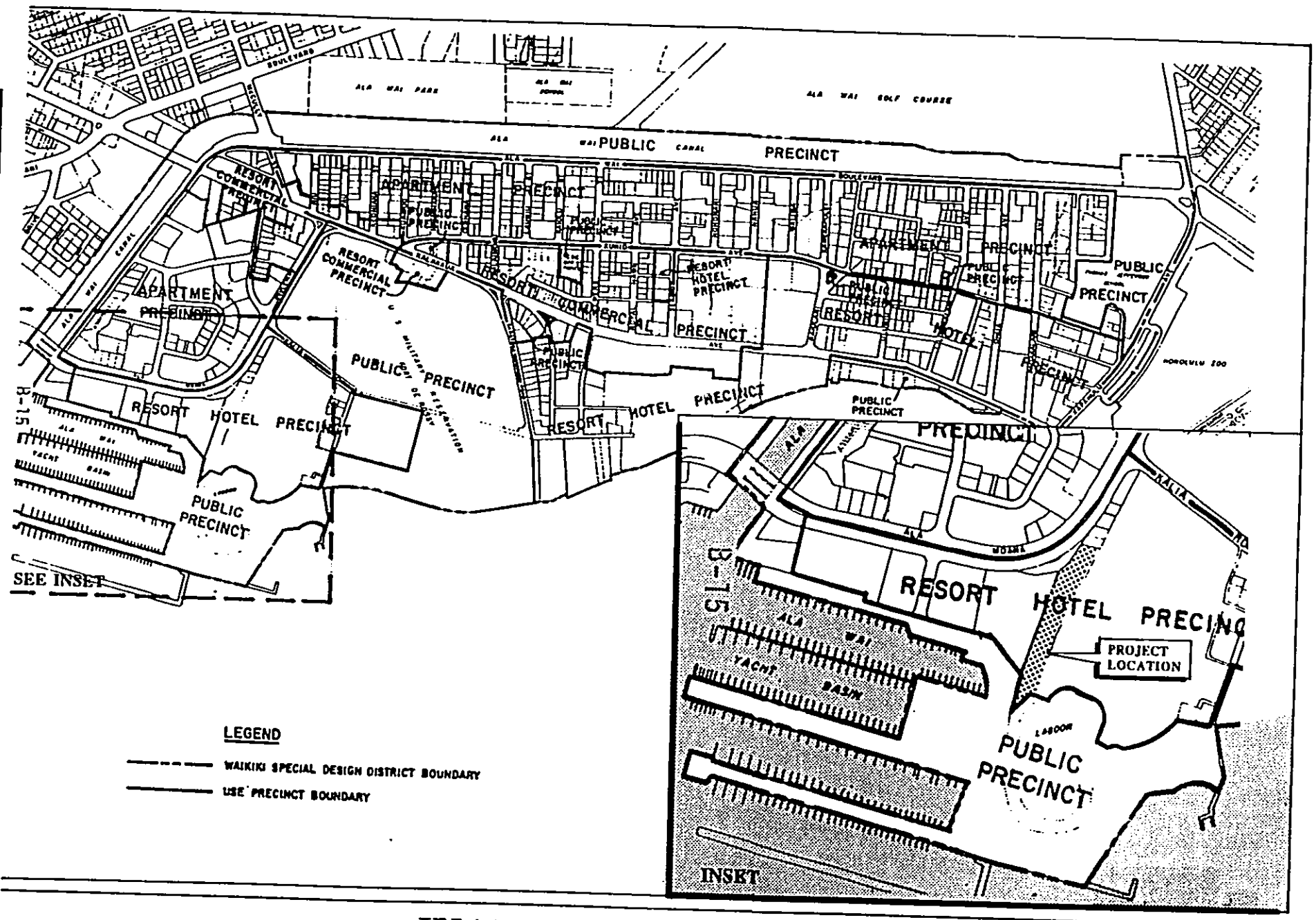
EXHIBIT 15

URBAN DESIGN CONTROLS

WAIKIKIAN HOTEL

FIGURE 4A

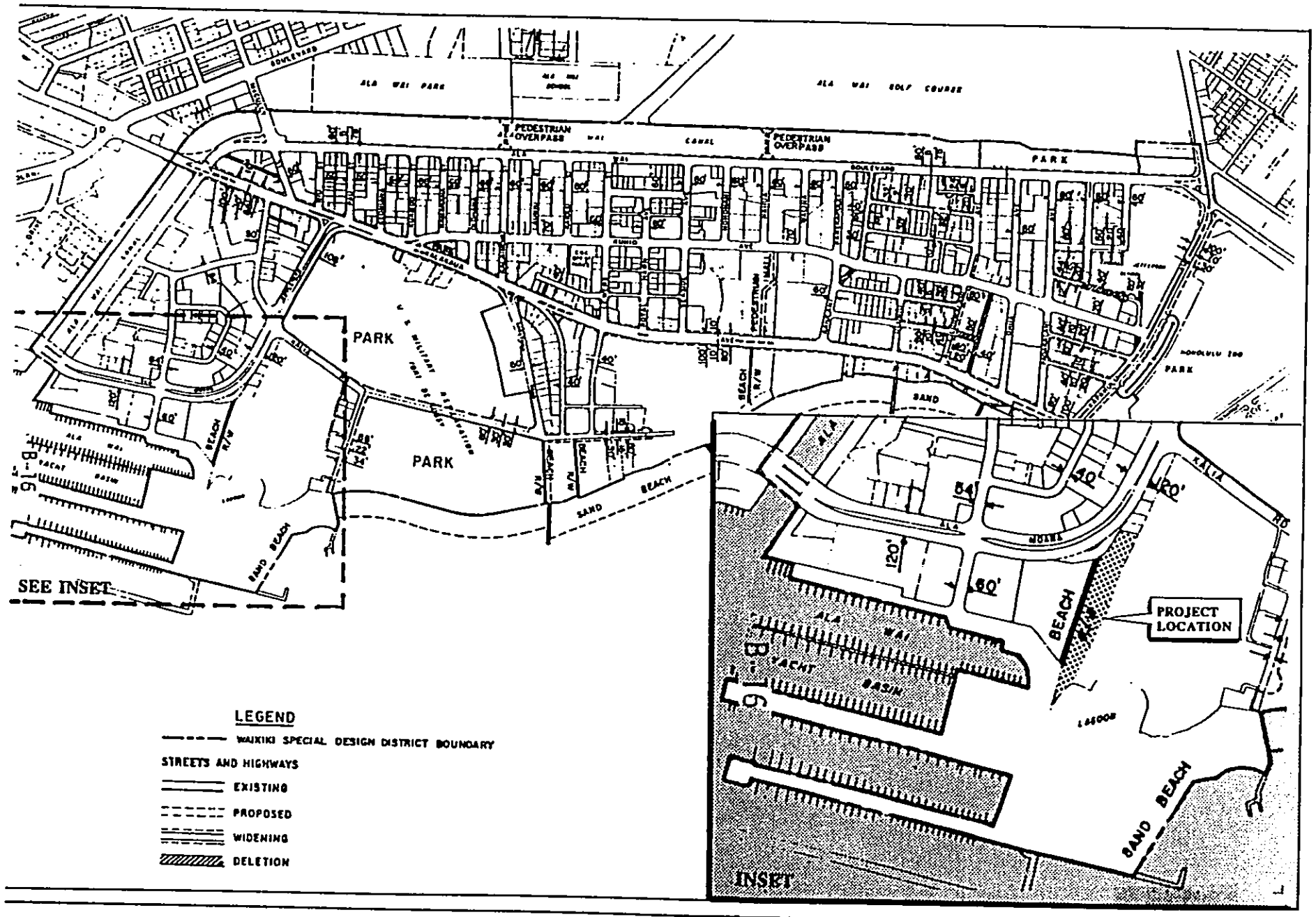
Urban Design Controls, Waikiki District Map



WAIKIKIAN HOTEL

Use Precincts, Waikiki District Map

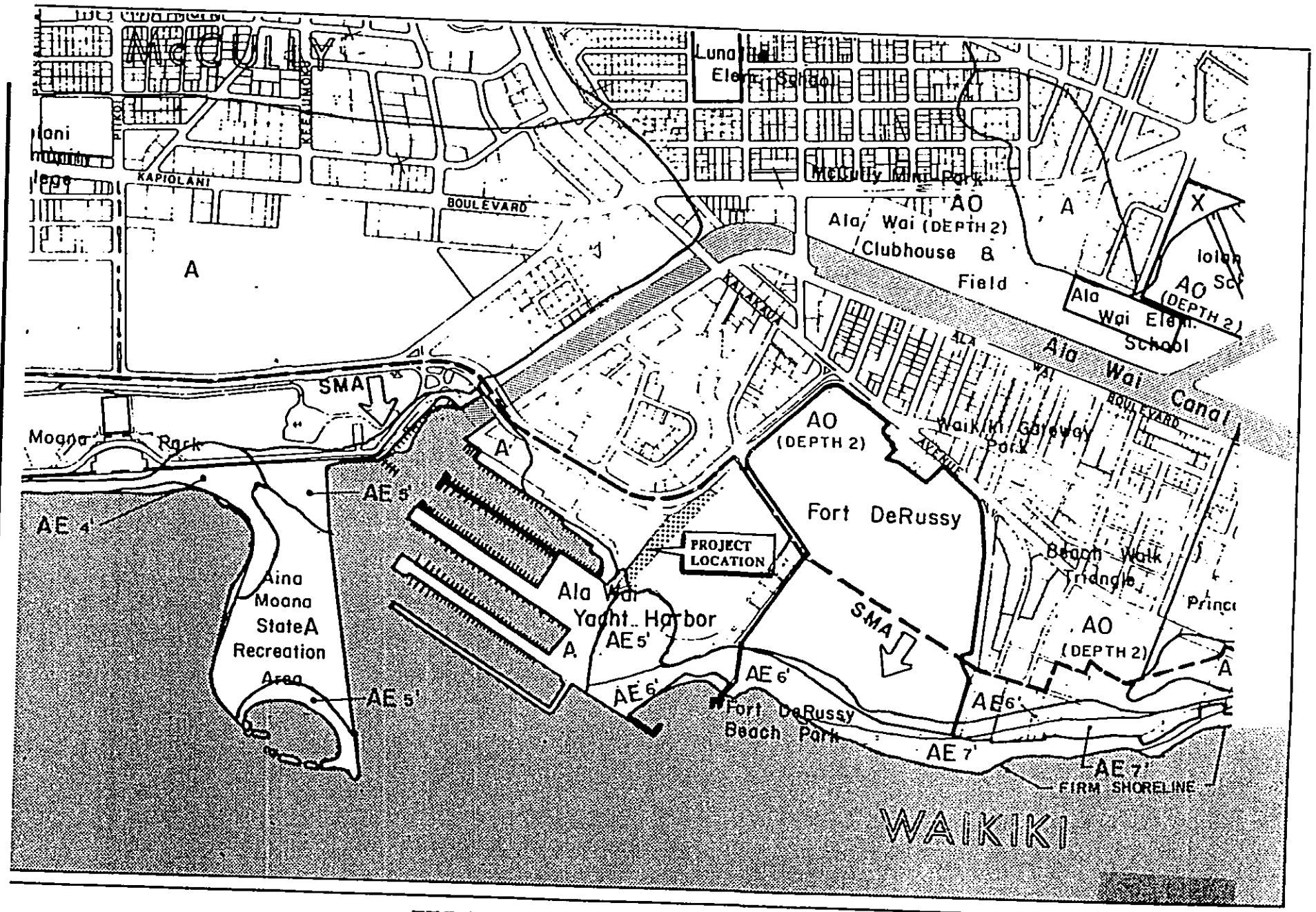
FIGURE 4B



WAIKIKIAN HOTEL

Circulation Plan, Waikiki District Map

FIGURE 4C



WAIKIKIAN HOTEL
Special Management Area Map

FIGURE 5

Project amenities will include a recreation deck, located above the parking structure, which will be landscaped and provide passive recreational activities, such as shuffleboard, a putting green and sitting and sunning areas. A swimming pool will be provided at ground level. The proposed amenities, will complement the health and exercise facility located at the recreation deck level.

The pedestrian circulation for the proposed project is planned to accommodate the free-flow of movement by hotel guests and employees. Essentially, there will be a continuous pathway from the lobby area to the lagoon area at the makai end of the project. Varying in width, the paved pathway extends from a relatively wide lobby space, through a retail area, continuing to the pool deck/outdoor dining area and onto the sand lagoon edge.

The anticipated pavement material is intended to be of a stone material, such as quartzite or slate and/or specially-finished concrete.

All areas will be handicapped accessible.

The right-of-way paralleling the Ewa boundary of the property between the project and the Ilikai Hotel has no pedestrian accommodation at the present time, with pedestrians sharing the same driveway pavement as vehicles.

The project proposes a new pedestrian paved walkway along the right-of-way to provide safer pedestrian movement. The new walkway will be curb height and meet the requirements of standard sidewalks. The new walkway will extend the entire length of the property.

A wall and fence system is planned between the right-of-way and the landscaped areas within the project. There will be several locations along this walkway that will provide public access to the property. The wall and fence system is primarily intended for security and privacy; however, there will be visual access in certain locations.

Trees, consisting of shade trees and Coconuts, are proposed along the way to provide relief and interest.

E. Development Schedule

A start date in mid-1991 is planned, with completion in mid-1993.

F. Estimated Costs

Development costs are estimated at $70 million.

Chapter 4

Alternatives To The Proposed Action

4. ALTERNATIVES TO THE PROPOSED ACTION

A. No Action Alternative

Existing structures on the project site are low-rise, timber structures, more than three decades old. Aside from the obvious underutilization of the resort site, there are also health and safety concerns on the site as now developed. Since proposed redevelopment is not scheduled until mid-1991, interim repair work at an estimated cost of $135,325 will be required simply to address current health and safety problems. Leaving the site in its existing state, without redevelopment, is both economically unfeasible and, for the long-term, not practical from a health and safety standpoint. The no action alternative is not considered feasible for these reasons.

B. Alternate Uses

The site is planned and zoned for resort use and has been for some time. It is ideally situated for resort and supportive, visitor-oriented, commercial uses. The Land Use Ordinance (LUO) would permit a variety of uses (refer to *Table 1.*). Hotel and commercial uses are considered the most appropriate for the project site, because: (1) they would essentially replace and not supplant

existing uses (since 1956); (2) the site is appropriately located in one of the State's primary visitor-designation areas; and (3) redevelopment of the existing Waikikian Hotel is clearly the most practical and feasible use for the site.

Table 1

Permitted Uses: Resort Hotel Precinct

(Reference, Section 7.80-5, LUO)

1.	Art galleries and museums.
2.	Car rental establishments, excluding repair facilities.
3.	Commercial parking lots and garages.
4.	Day-care facilities.
5.	Hotels.
6.	Marina accessories
7.	Meeting facilities.
8.	Other uses and structures: Uses and structures customarily associated with and clearly incidental and subordinate to permitted uses and structures.
9.	Public uses and structures.
10.	Recreational facilities, outdoor.
11.	Retail establishments, provided there is no outdoor storage or display of merchandise, financial institutions, office buildings for visitor industry-oriented activities, including eating establishments, theaters, indoor amusement and recreation facilities, excluding amusement arcades.
12.	Time sharing.
13.	Transient vacation rentals.
14.	Utility installations, Type A.

C. Design Alternatives

Alternate designs were considered, but design options are severely limited for several reasons. The configuration of the site, extremely narrow and elongated, essentially precludes alternative designs. In addition to this severely limiting physical factor, the site is now part of the City's Waikiki Special District and must comply with all setback, height, and open space requirements applicable to the District. Development as achieved in 1956, when the hotel was originally constructed, was not subject to such rigorous standards. It should be noted that no variance from existing zoning requirements is being proposed and that the intent is to meet all requirements of the Special District. The project will also be designed with an awareness of and consideration to master plan concepts and urban design guidelines for Waikiki which are currently being developed by the City.

An alternative considered and rejected was to construct a twin tower on a common pedestal. Our design team studied this alternative and concluded that it would not be economically feasible. The increase in circulation, such as elevator space, corridors, exit stairways, etc., creates a reduction of approximately 19 percent in the hotel unit F.A.R., which interpolates to a loss of 48 units.

Further analysis has indicted that there is a possibility of reducing the tower mass significantly (approximately 33 percent) by reduc-

ing the total length of the tower and adding units to the proposed Ocean Terrace. The length of the tower would be reduced from 230 to 153 feet, and correspondingly, the Ocean Terrace will increase from 4 to 19 floors. The footprint for the Ocean Terrace is not expected to increase. This alternative will be pursued in greater detail at the time of design development of the project.

The current design would, it should also be noted, retain not only the Tahitian Lanai, a well-known and popular recreational attraction to resident and visitor alike, but much of the tropical landscaping and outdoor ambiance associated with the existing resort and commercial uses on the site.

Chapter 5

Environmental Setting / Project Impacts

5. ENVIRONMENTAL SETTING/PROJECT IMPACTS

A. PHYSICAL ENVIRONMENT

1. Topography

There are no unique topographical features on the site and it is relatively level. *Figure 6.* is a *Topographical Survey Map*.

2. Soils

The United States Department of Agriculture Soil Conservation Survey identifies soils on the project site as Jaucas sand (JaC), 0 -15 percent slopes. In a representative profile, the soil is further described as being single grain, pale brown to very pale brown, sandy, and more than 50 inches deep. Permeability is described as rapid, and runoff very slow to slow. The hazard of water erosion is said to be slight, but wind erosion is described as a severe hazard where vegetation has been removed.

3. Flood Conditions

Parcels 2 and 3 are located within the Federal Flood Insurance Rate Map (FIRM) Zone AO, designating areas of 100-year shal

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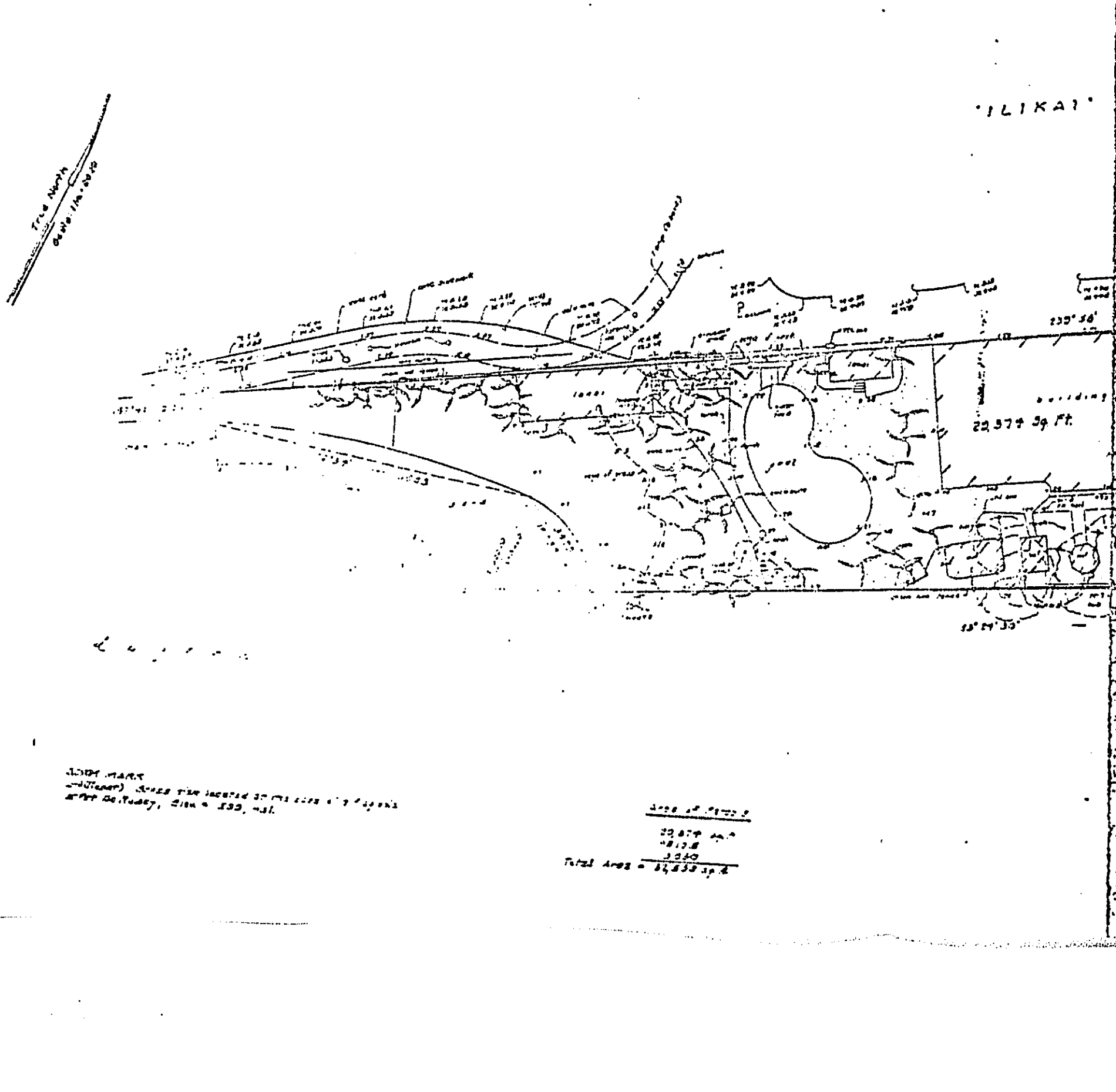

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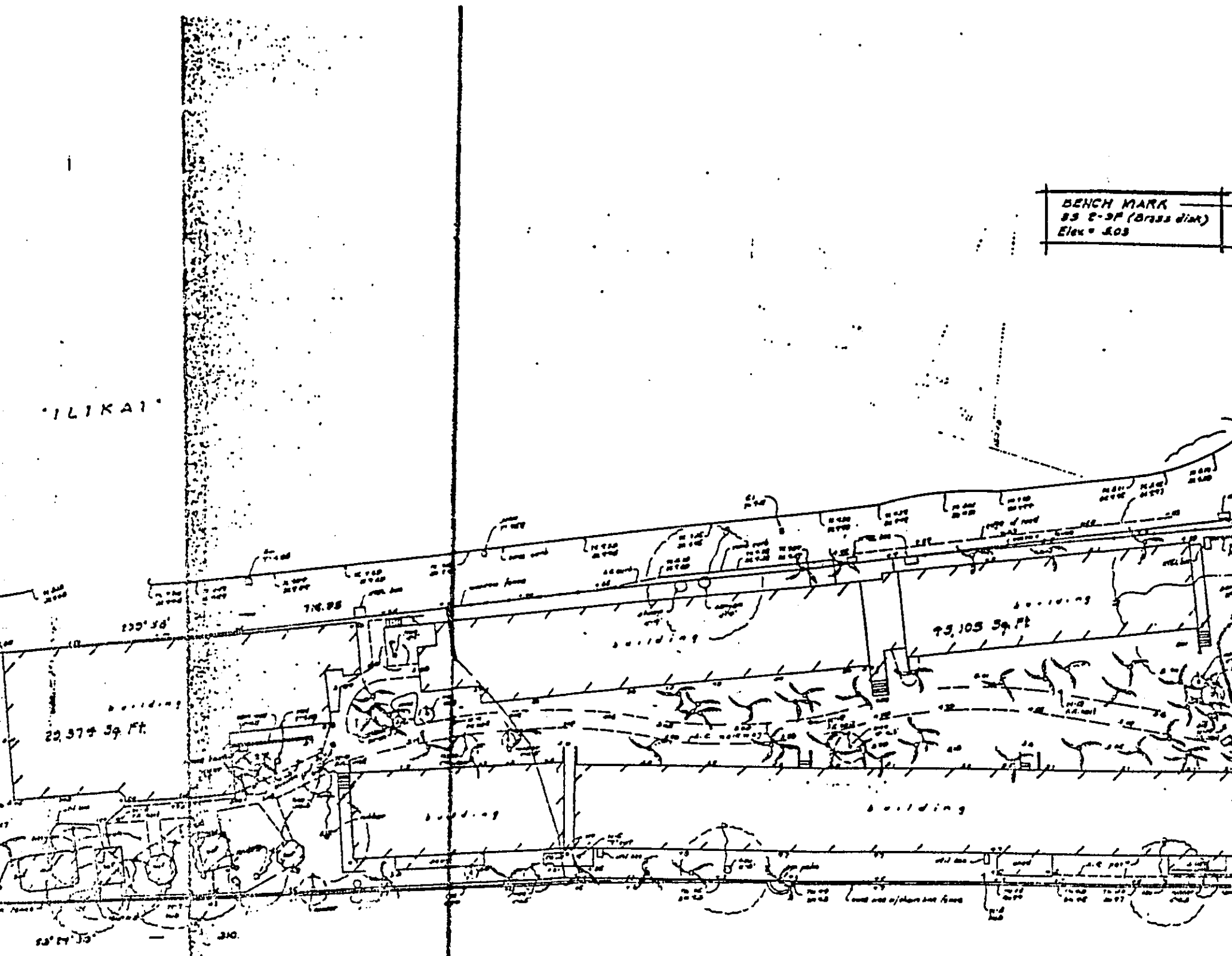

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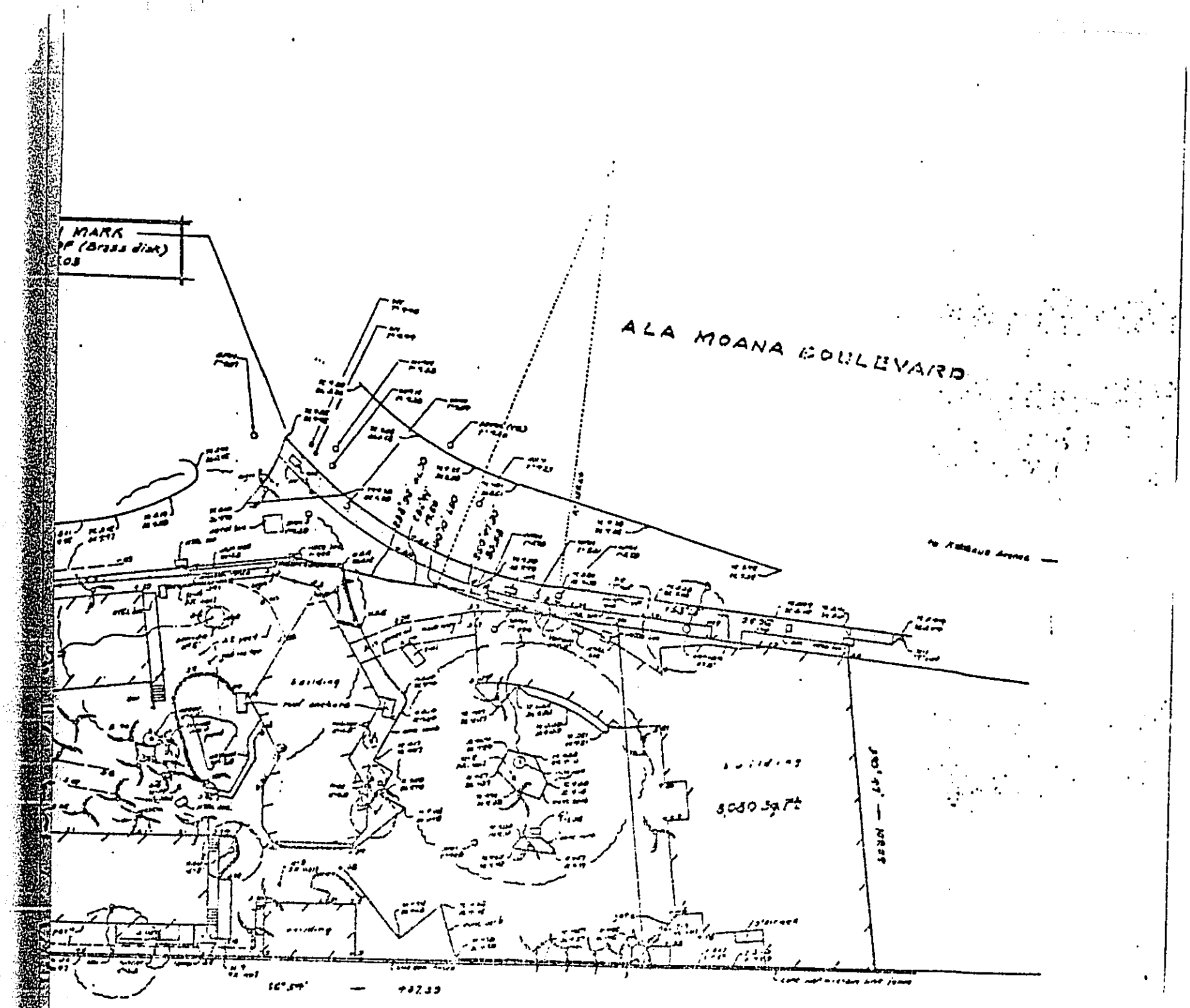


TOPOGRAPHIC SURVEY MAP
LAND COURT APPLICATION 1116 (MAP 1),
LOT B (MAP 1) OF
LAND COURT APPLICATION 1379
AND A PORTION OF R.P. 7039, L.C.AW. 1775,
AP. 1 TO PAOA

Kalia, Waikiki, Honolulu, Oahu, Hawaii

Scale: 1 In. = 20 Ft.

Tax Map Key: 2-6-09: 2, 3 & 10 March 27, 1990

FIGURE 6

JAMES T. HAMASAKI

CONTROLPOINT SURVEYING AND ENGINEERING INC.
1098 Wing Ho Lane
Honolulu, Hawaii 96817

ADVANCE PRINT

Job No. 88-178
R.A. No. 366, 367

low flooding where depths are between one to three feet. A small portion of Parcel 10 is within an A zone, areas of 100-year flooding with base flood elevations not determined. *Figure 7.* is a *Flood Elevation Map* showing designations and elevations, where determined, for the project site.

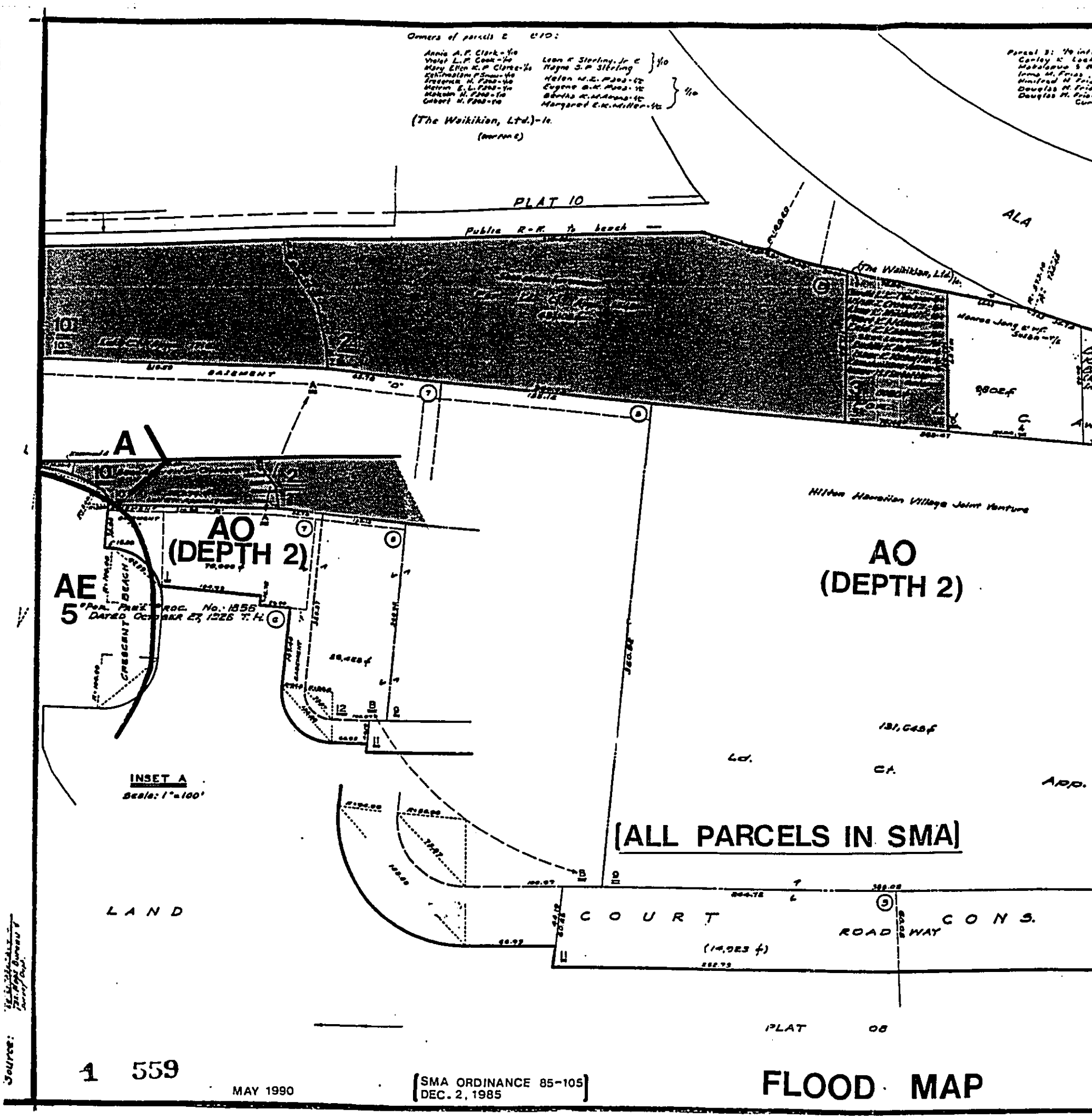
4. Wetlands/Water Quality

There will be no project impacts on wetlands and no wetland permit is required from the U.S. Army Corps of Engineers.

Due to a history of man-induced changes in the area, project-related impacts to the tidal and non-tidal segments of Hilton lagoon are not expected to be significant or long-term. Anticipated impacts entail localized degradation in water quality, resulting from earth-moving activities associated with construction of the new hotel. Most of these impacts can be ameliorated through the use of berms and swales to retain runoff from construction areas generated during periods of heavy rain.

5. Flora and Fauna

The existing planting areas are generally confined to narrow areas between the buildings and walks and the property


Owners of parcels 8 & 10:
Annie A.P. Clark - 1/10
Violet L.P. Cook - 1/10
Mary Ellen K.P. Clarke - 1/10
Kahinaolani P. Snow - 1/10
Irene M. Pond - 1/10
Melvin E.L. Pond - 1/10
Malcolm H. Pond - 1/10
Gilbert W. Pond - 1/10
Leon K. Sterling, Jr. & Wayne S.P. Sterling } 1/10
Helen W.L. Pond - 1/10
Eugene B.K. Pond - 1/10
Bertha K.M. Adams - 1/10
Margaret E.K. Miller - 1/10 } 1/10
(The Waikikian, Ltd.) - 1/10
PLAT 10
Public R-R to beach
ALA
(The Waikikian, Ltd.) 1/10
Manoa Jang & wf. Susan - 1/10
98 OE.F
Hilton Hawaiian Village Joint Venture
AO (DEPTH 2)
AE 5
AO (DEPTH 2)
INSET A
Scale: 1" = 100'
[ALL PARCELS IN SMA]
LAND COURT
ROAD WAY
CONS.
(14,023 sf)
PLAT 08
1 559
MAY 1990
[SMA ORDINANCE 85-105
DEC. 2, 1985]
FLOOD MAP

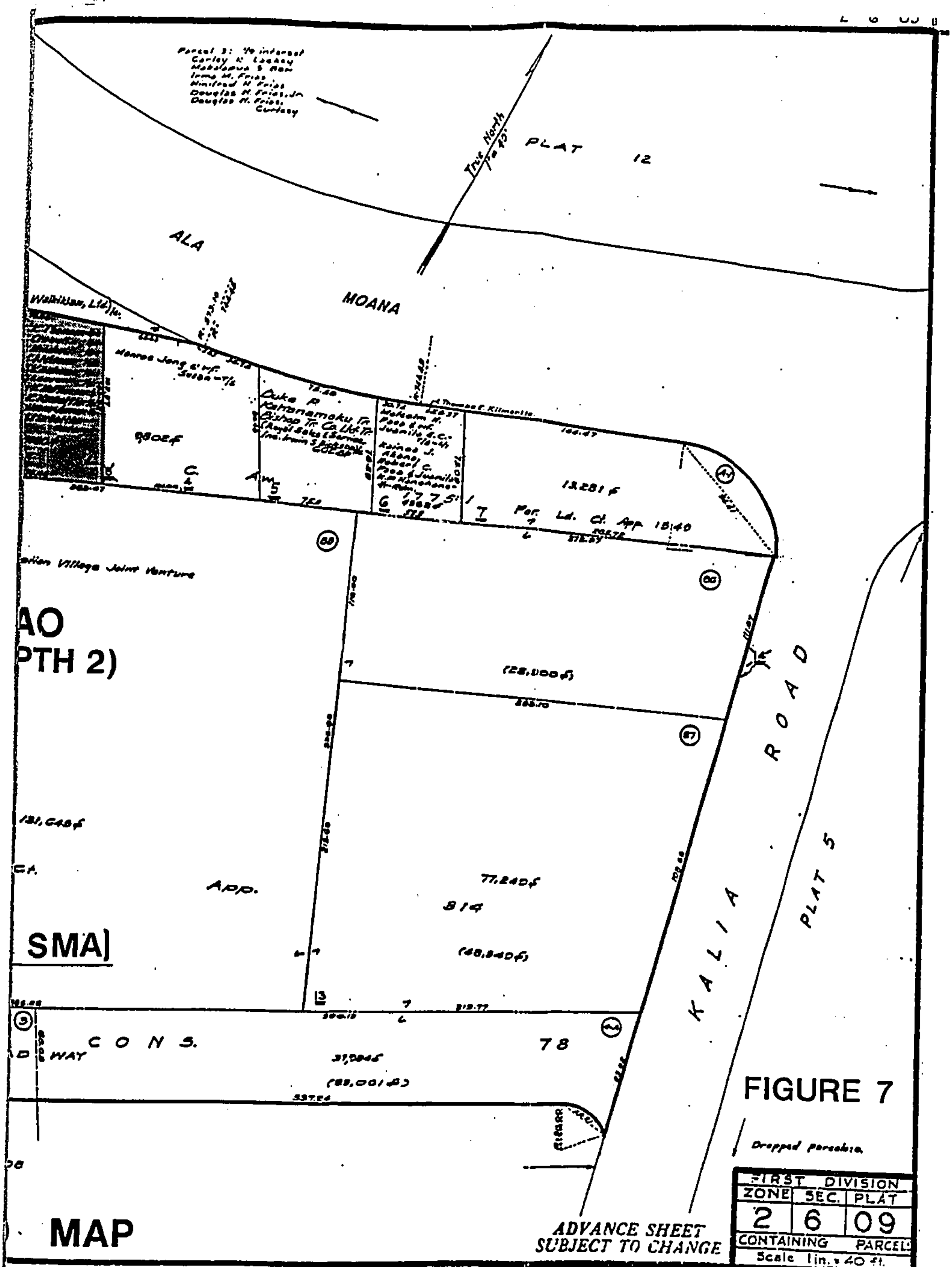

PLAT 12
ALA MOANA
True North
KALIA ROAD
PLAT 5
CONS. 78
AO
PTH 2)
SMA]
MAP
13,281 ♯
(22,000 ♯)
77,240 ♯
(48,840 ♯)
31,984 ♯
ADVANCE SHEET
SUBJECT TO CHANGE
FIRST DIVISION
ZONE 2
SEC. 6
PLAT 09
CONTAINING PARCELS
Scale 1in. = 40 ft.

FIGURE 7

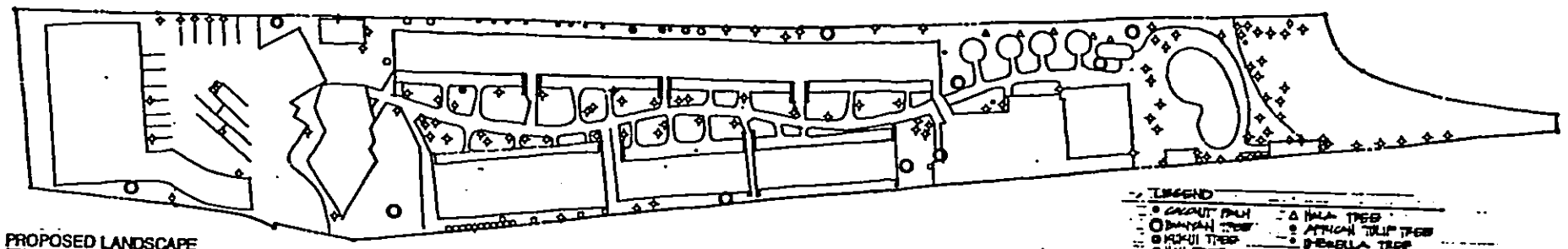
boundaries. The existing site contains a number of mature existing trees, including Coconut (*Cocos nucifera*), Hala (*Pandanus odoratissimus*), Banyan (*Fiscus sp.*), Seagrape (*Coccoloba uvifera*) and other species. Numerous shrubs and groundcovers are a variety of common ornamental species. There are no rare or exotic species on the property.

The proposed landscape concept, as shown in *Figure 8.*, is to retain and enhance the garden experience. Plantings will be lush, with an emphasis on flowering and exotic tropical species. Plantings will be particularly dense along the Diamond Head and Ewa boundaries for screening and sound attenuation. The major tree type will continue to be the Coconut, complimented by flowering accent trees, shrub and groundcovers.

A water feature is proposed for the lobby area as a focal point and to reduce the noise impacts from Ala Moana Boulevard. A screen wall, with several pedestrian entrances on to the property is planned for the Ewa boundary.

Since the project site has been developed with resort and commercial uses since 1956, fauna observed on the site are those common to other urbanized areas, such as rats and mice. Because of the existing heavy vegetation and mature trees, avifauna are numerous. These include birds, such as sparrows, doves, cardinals and others, which are frequently observed in

EXISTING TREES



PROPOSED LANDSCAPE

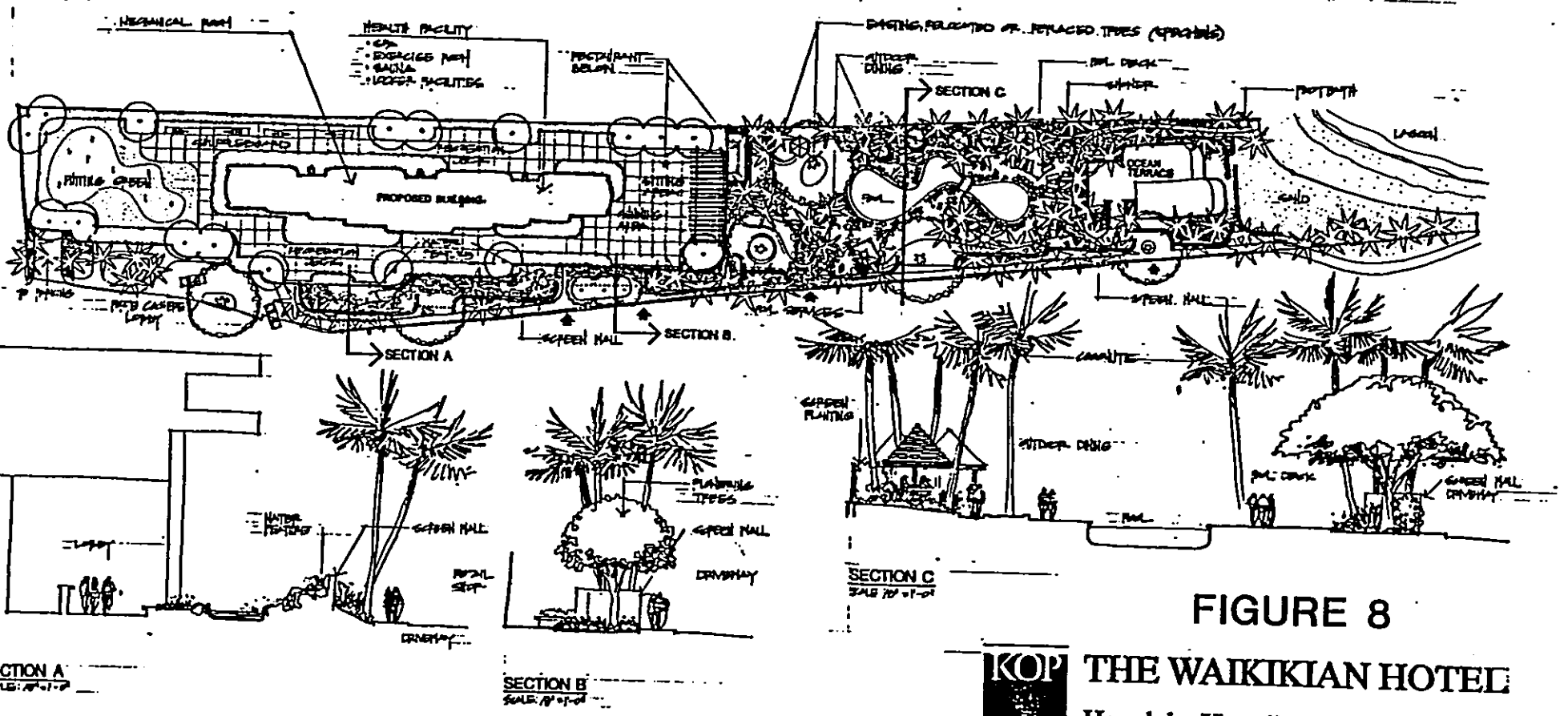


FIGURE 8

KOP HAWAII

THE WAIKIKIAN HOTEL

Honolulu, Hawaii

LANDSCAPE PLAN

other areas of Honolulu. There are no known threatened or endangered species of fauna on the site.

Redevelopment of the site, especially for the short-term during construction, will impact on the existing plants and trees on the site, although the intent is to maintain the lushly landscaped "garden" character which is now in place within the interior. It is likely that avifauna will be temporarily displaced, because of the construction activities on the site. Since there are no known threatened or endangered species of either flora or fauna, however, no significant negative impacts are anticipated for the long-term.

6. Archaeological

A pre-field data search for the Waikikian Hotel redevelopment was performed by the Public Archaeology Section of Bishop Museum Applied Research Group. (Please refer to *Appendix B.*) Objectives of the search were to: (a) assess prehistoric and historic activities and land use of the project area; (b) determine the extent of potential impacts to the site area during development and/or construction; and (c) facilitate testing and monitoring through the identification of archaeologically-sensitive locales within the project area.

The data search focused on early and late historical documents. Archaeological reports and published literature were consulted to identify prehistoric context and associated subsurface depositions potentially existing within the site. The majority of documents researched were land records containing feature descriptions of the site area, locations of structures, and development of the property. Sanborn Fire Insurance maps provided locations of post-1900 structural relocations and subsequent expansion of structures existing on the site prior to demolition for the current Waikikian Hotel.

Appendix B. contains a detailed prehistoric and early historic overview of Waikiki in general, and a development history of the Paoa Estate (1847-1956) specifically, which is the site of the proposed redevelopment.

It should be noted that the project area is totally altered and no archaeological surface remains are present. Coral fill material was deposited on the site area in 1928.

Introduction of this material raised the project area ground surface thereby potentially lessening some heavy construction impacts to subsurface features during construction of the Waikikian Hotel in 1955/56. Introduced fill material also may better the chances of the preservation of subsurface and surface remaining. Secondary disturbed deposits are expected

from disturbance of fill material and subsurface excavations for installation of the Hotel's foundations, piers, and utility service.

Historically, early site land records specifically describe an irrigation waterway and a well.

The locations of these subsurface features are unknown, as are the location of privies not mentioned in land records. An early historic fence, location of two houses and a barn by 1895, and building locations prior to the 1920's reclamation project are known and possibly still exist in situ below the fill material. Remains of a Japanese tea house are likely to have been removed during construction of the Waikikian Hotel, or may still be present as scattered disturbed deposits.

In summary, several phases of archaeological monitoring and testing are necessary to protect potential archaeological data and resources in conjunction with the several stages of construction proposed for the Waikikian Hotel. Recommended preliminary archaeological data recovery measures are found in *Chapter 11., Mitigation Measures Proposed to Minimize Impacts*starting on page 137. A complete data recovery plan will be formulated contingent upon the results of this initial testing phase.

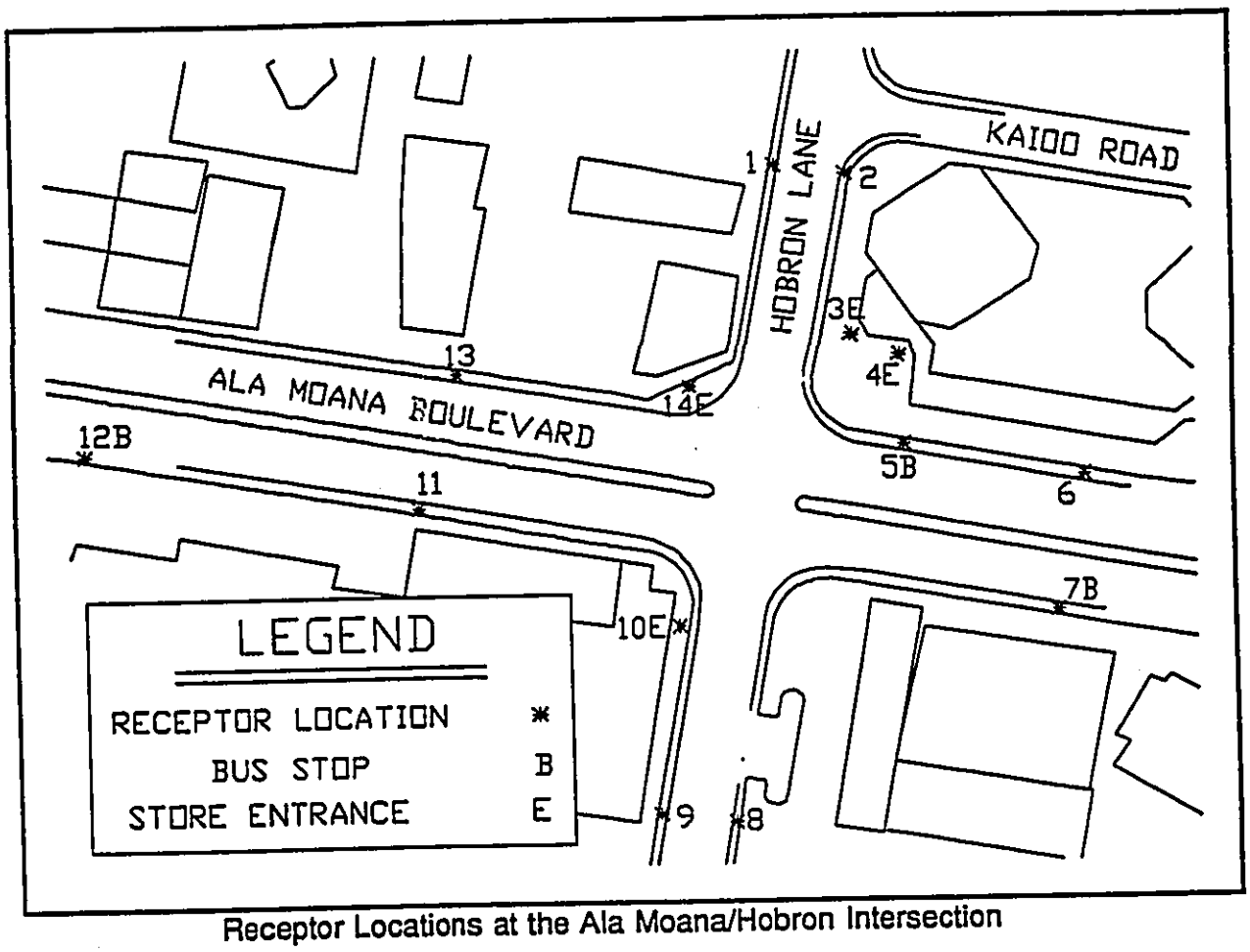
7. Air Quality

Air quality concerns are addressed in a study by Rowan Williams Davies & Irwin Inc. (RWDI) and included as *Appendix C.* The objectives of this study were as follows:

a. To numerically model vehicular emissions (both mobile and idling emissions) at the following intersections: Ala Moana Boulevard and Hobron Lane, and Ala Moana Boulevard, Ena Road and Kalia Road.

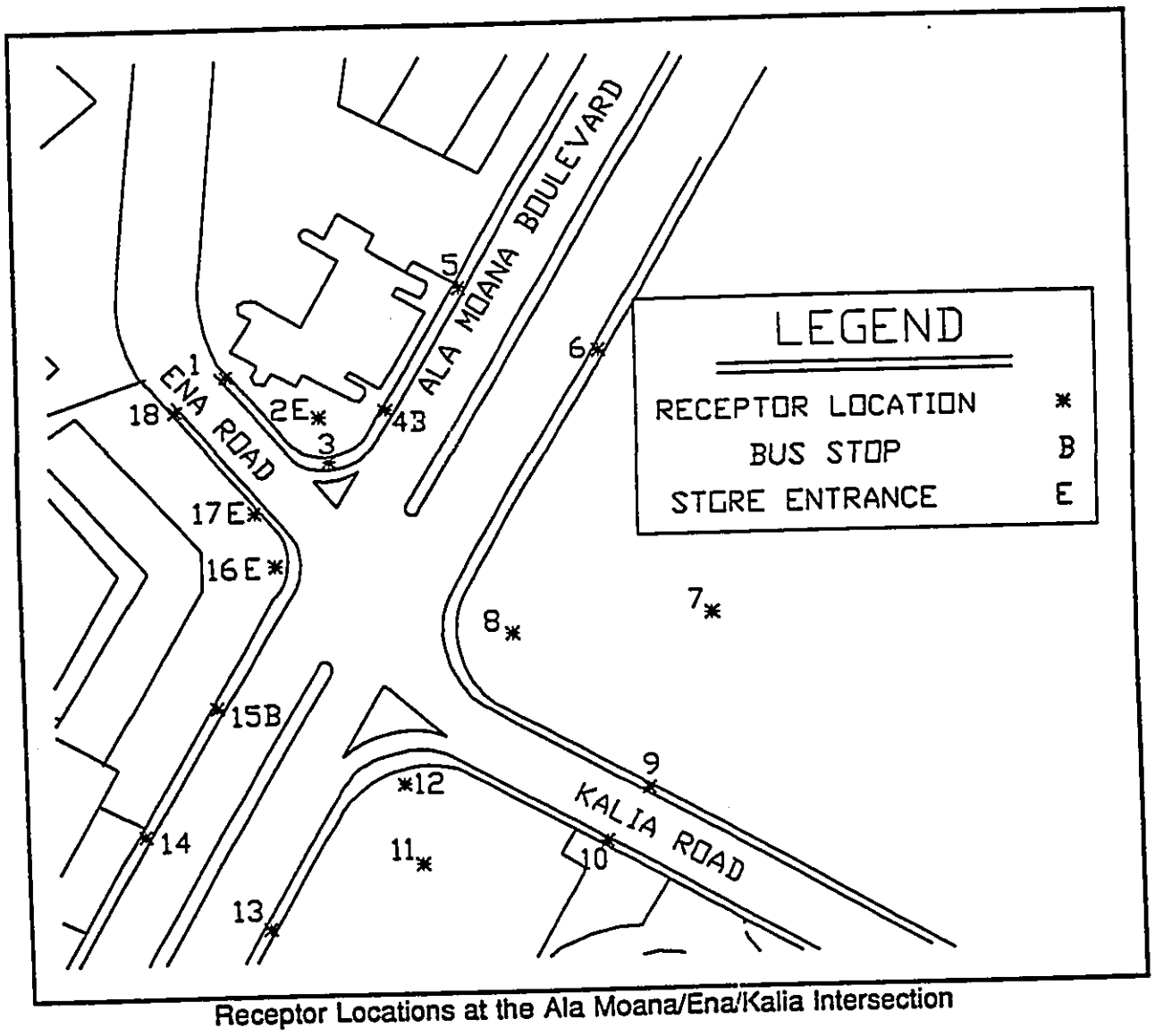
b. To predict worst-case one-hour (AM and PM) and eight-hour carbon monoxide (CO) concentrations at selected receptor locations situated in the vicinity of the two identified intersections (Refer to *Figure 9.* and *Figure 10.* showing receptor locations.); and

c. To compare the predicted worst-case one-hour and eight-hour carbon monoxide concentrations to State and National Ambient Air Quality Standards (AAQS). *Table 2.* contains State and National AAQS.



Receptor Locations at the Ala Moana/Hobron Intersection

FIGURE 9



Receptor Locations at the Ala Moana/Ena/Kalia Intersection

FIGURE 10

Table 2
State and National Ambient Air Quality Standards

			Federal	
	Averaging Period	State (ppm)	Primary[a] (ppm)	Secondary[b] (ppm)
Carbon Monoxide	1-hour*	8.7	35	35
	8-hour*	4.35	8.7	8.7

* Not to be exceeded more than once per year.

a National Primary Standard: The level of air quality necessary, with an adequate margin of safety, to protect the public health.

b National Secondary Standard: The level of air quality necessary to protect the public welfare from any known or anticipated adverse effect of the pollutant.

A detailed discussion of the methodology used is contained in *Appendix C.* Three traffic scenarios were selected for the worst-case numerical analysis, as follows:

a. Projected 1993 traffic with the Waikikian Hotel redevelopment;

b. Projected 1993 traffic without the Waikikian Hotel redevelopment; and

c. Existing 1990 traffic (CO concentrations were only predicted for the eight-hour averaging period).

Worst-case conditions incorporated the following events: low wind speeds; steady wind directions for the duration of the averaging period; low temperatures; low traffic speeds; high traffic volumes; and high background concentrations. It should be noted that the frequency with which worst-case conditions occur simultaneously is extremely low. If State and National AAQS are not exceeded under the modelled worst-case conditions, it can be anticipated that they will never be exceeded.

Findings of the study with regard to potential air quality impacts resulting from the project are summarized below:

a. Under worst-case conditions, carbon monoxide concentrations are well below the 1-hour and 8-hour National AAQS at all receptors locations (both intersections);

b. Under worst-case conditions carbon monoxide concentrations are below the 1-hour State AAQS at all receptors locations (both intersections);

c. Under normal conditions carbon monoxide concentrations are well below the 8-hour State AAQS at all receptor locations (both intersections). Under worst-case conditions CO concentrations at receptor locations 1 and 11 of the Ala Moana/Hobron intersec-

tion and receptor locations 4, 9, 10 and 13 of the Ala Moana/Ena/Kalia intersection may exceed State AAQS by no more than 0.45 ppm. Due to the conservative nature of these "worst-case" conditions, the frequency with which these exceedences may occur is extremely low;

d. A comparison of the "with" and "without" the Waikikian Hotel redevelopment scenarios indicates that the traffic volumes associated with the proposed Waikikian Hotel development will only increase worst-case CO concentrations by a maximum of 0.2 ppm. Also, the locations identified in conclusion c. are still projected to exceed State AAQS under worst-case conditions for the "without" scenario;

e. Comparison of the two 1993 scenarios to the existing (1990) scenario indicates that, despite projected increases in traffic volume, there is a trend toward lower CO concentrations. This trend is a result of the U.S. Environmental Protection Agency's forecasts that, as new cars are equipped with better catalytic converters and old cars retire, vehicular pollutant emission rates will decrease.

For the short-term, air quality impacts can be anticipated from construction activity. During site preparation and construction, it is likely that fugitive dust will be generated. It can also be expected that construction vehicle activity will increase automotive pollutant concentrations in the vicinity of the project site itself. The overall impact due to construction vehicle activity will be minimal and adequate dust control measures should be adequate to mitigate impact on air quality during the construction period.

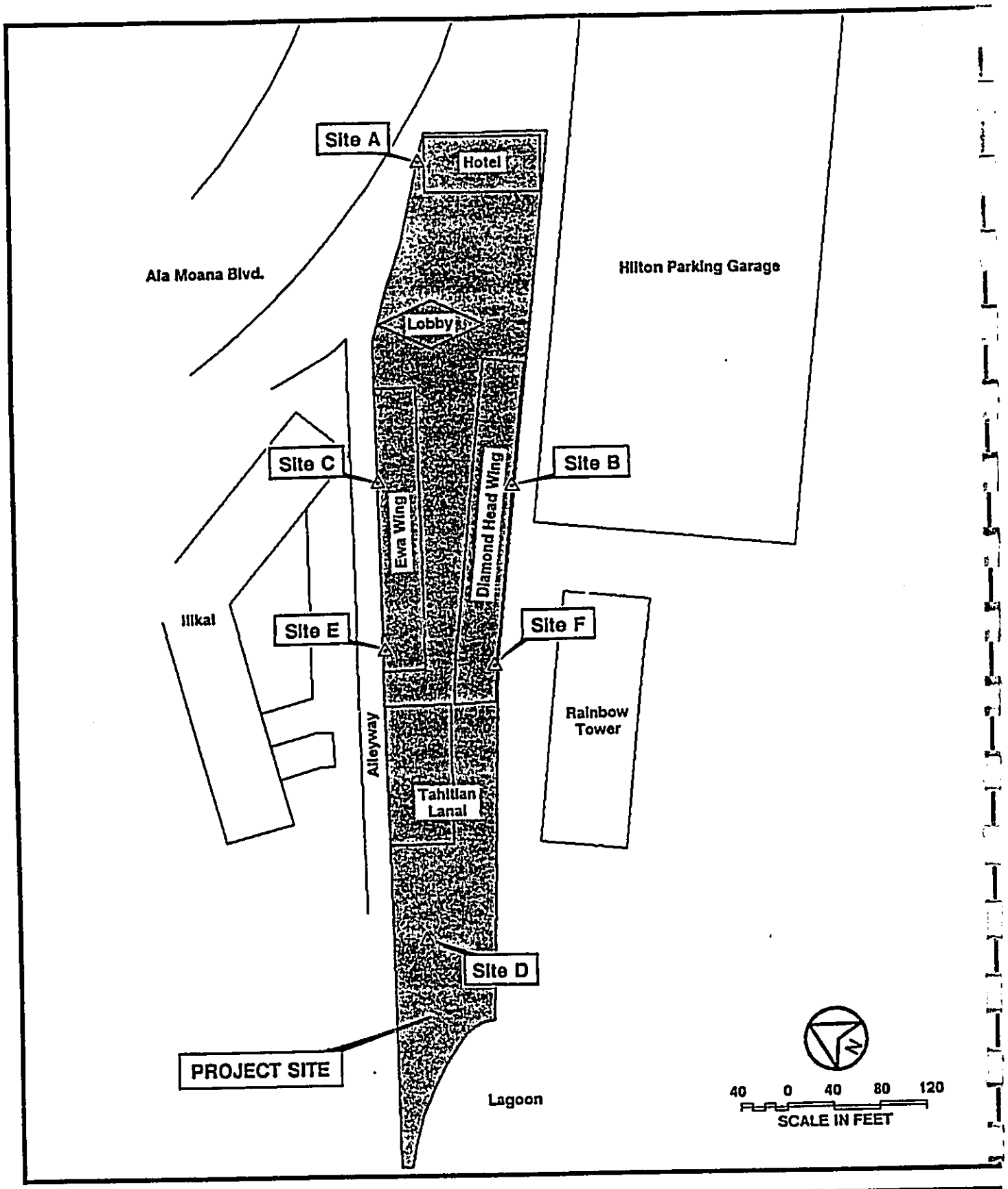
8. Noise Impact

Appendix D. includes a noise study for the proposed Waikikian Hotel project, prepared by Y. Ebisu and Associates. The study describes the existing and future traffic noise environment in the area of the proposed project. Traffic noise level increases and impacts associated with the proposed development were determined within the project site and along the public roadways expected to service the project traffic. A specific objective of the study was to determine future traffic noise level increases associated with both project and non-project traffic, and the potential noise impacts associated with these increases. Assessments of possible future impacts from short-term construction noise and vibration at the project site were also included as noise study objectives.

It should be noted that the noise description currently used by Federal agencies, such as FHA/HUD, to assess environmental noise is the Day-Night Average Sound Level (Ldn). This description incorporates a 24-hour average of instantaneous A-Weighted Sound Levels as read on a standard Sound Level Meter. By definition, the minimum averaging period for the Ldn descriptor is 24 hours. Additionally, sound levels which occur during the nighttime hours of 10:00 p.m. to 7:00 a.m. are increased by 10 decibels (dB) prior to computing the 24-hour average by the Ldn descriptor.

For the purposes of this study, existing traffic and background ambient noise levels were measured at six locations on the project site. The purpose of these measurements was to provide a basis for developing the project's traffic noise contributions along the roadways which will service the proposed development, and to describe the existing noise environment at the makai portions of the project site which are shielded from traffic noise. The locations of the measurement sites are shown in *Figure 11.*

Noise measurements were performed during the month of July 1990, and their results are summarized in *Table 3*. The results of the traffic noise measurements were compared with calculations of existing traffic noise levels to validate the computer model used. The traffic noise measurements results and their



LOCATIONS OF NOISE MEASUREMENT SITES

FIGURE 11

comparisons with computer model predictions of existing traffic noise levels are summarized in *Table 4*.

Table 3

Results Of Background Ambient Noise Level Measurements
(July 25-26, 1990)

Location	Time (HRS)	Lmin	Leq	L10	Lmax
A. 4th Floor, Hotel at Ala Moana Blvd	2226-2248	57.6	67.2	70.0	78.6
	0013-0032	55.5	64.2	67.0	82.6
	0425-0437	54.5	59.5	63.0	69.5
B. Diamond Head Wing at Hilton Parking Garage	1457-1513	58.5	62.5	65.0	76.2
	2109-2118	57.0	58.9	61.0	73.3
	0038-0052	55.2	56.7	58.0	68.1
	0445-0453	56.0	56.9	58.0	62.8
	0910-0925	58.0	65.4	70.0	83.1
C. Ewa Wing(Mauka) at Alleyway/Ilikai	1518-1529	59.4	64.1	69.0	75.8
	2123-2133	57.2	60.7	63.0	72.7
	0057-0108	55.5	57.1	58.0	67.9
D. Tahitian Lanai Near Lagoon	1532-1545	56.0	59.6	62.0	67.1
	2200-2213	56.0	57.5	59.0	67.7
	0112-0128	50.7	53.0	54.0	59.2
	0519-0533	53.8	54.9	56.0	61.8
E. Ewa Wing (Makai) at Alleyway/Ilikai	0458-0513	59.4	61.9	66.0	73.2
	0930-0939	60.1	68.1	71.0	85.1
F. Diamond Head Wing at Condominium	0539-0544	56.8	57.7	59.0	61.7
	0946-0958	56.5	60.2	62.0	75.2

Table 4
Traffic Noise Measurement Results

Location	Time of Day (HRS)	Avg. Speed (MPH)	Hourly Traffic Volume			Measured	Predicted
			Auto.	Med. Truck	Heavy Truck		
A. 90 FT from the center line of Ala Moana Blvd 35 FT AGL (7/25/90).	1600 To 1700	37	3,042	85	154	71.3	71.3
A. 90 FT from the center line of Ala Moana Blvd. 35 FT AGL (7/26/90).	0700 To 0800	37	2,215	117	91	70.3	70.4

Calculations of average exterior and interior noise levels from construction activities were performed for typical naturally ventilated and air-conditioned dwellings. Predicted noise levels were compared with existing background ambient noise levels, and the potential for noise impacts was assessed. Potential noise impacts from pile driving operations were also examined.

The study's findings with regard to existing and potential noise impacts are summarized below:

Existing Noise Environment

The existing traffic noise levels in the project environs along Ala Moana Boulevard are in the "Significant Exposure, Normally Unacceptable" category. Within the interior (makai) half of the project site, where traffic noise is

shielded by existing low-rise and high-rise buildings, existing noise levels are in the "Moderate Exposure, Acceptable" category. Typical average noise levels at locations near Ala Moana Boulevard range from 65 to 70 dB, with maximum and minimum levels of 33 and 55 dB, respectively. Near the lagoon at the makai end of the project site, average background noise levels range from 55 to 60 dB, with maximum and minimum levels of 68 and 51 dB, respectively.

The results of background ambient noise measurements on the project site indicate that the locations on the project site which are near Ala Moana Boulevard are relatively noisy, while the interior locations toward the beach are approximately 10 dB quieter than those near the Boulevard.

Potential Noise Impacts

Impacts from traffic noise are possible at the proposed hotel units in the project tower, and particularly at those end units which face Ala Moana Boulevard. Mitigation of high traffic noise levels for these units will be required.

The remaining units which face Diamond Head will be partially shielded from Ala Moana Boulevard, and should

experience at least 5 dB less traffic noise than the end units which face the Boulevard. Traffic noise levels along the Diamond Head side of the hotel tower should range between 60 to 65 Ldn, and be within the "Moderate Exposure, Acceptable" category.

Unavoidable, but temporary, noise impact will occur during the construction of the proposed project, particularly during the excavation and pile driving activities on the project site. Because construction activities are predicted to be audible within the project and at adjoining properties, the quality of the acoustic environment may be degraded to unacceptable levels during periods of construction. Mitigation measures to reduce construction noise to inaudible levels will not be practical in all cases, however, certain equipment and procedures are available to minimize, to the extent possible, the short-term noise impact.

Please refer to *Chapter 11., Mitigation Measures Proposed to Minimize Impact* starting on page 137.

9. View Assessment

A view assessment of the proposed new Waikikian Hotel was performed by Michael S. Chu, Land Architect, and is included as *Appendix E.* The purpose of the assessment was to identify potential visual impacts which may affect existing public visual or open space resources, and to identify possible design measures to mitigate potential impacts.

In general, Waikiki is visually characterized by its substantial urban development including many high-rise buildings along the shoreline and inland areas. Buildings more than 20 to 30 stories in height collectively create a lateral skyline of structures across Waikiki. From mauka viewing points, areas such as Punchbowl and the Tantalus lookout, this visual appearance is a dominant feature and clearly distinguishes Waikiki from the overall view of Honolulu. (Refer to Photo A., *Appendix E.*) From the Waikiki shoreline, the pedestrian environment is equally dominated by this urban form and mauka views of the Koolau Mountains are essentially masked by this skyline.

The high-rise towers at the Hawaiian Village, the tri-winged tower of the Ilikai and the newly-completed twin towers of the Hawaii Prince hotel typify the extent of development found along the makai side of Ala Moana Boulevard in the vicinity of the Waikikian Hotel site (see *Photo B., Appendix E.*). These

structures essentially separate any visual relationship between this coastal roadway and the shoreline.

Public visual and open space resources, which may be affected by the proposed redevelopment, are identified below:

From Ala Moana Boulevard:

Views

Public views (vehicular and pedestrian) of the shoreline, or other coastal resources from the nearest coastal highway are limited to a view corridor at the Ala Wai bridge and a narrow corridor of low quality at the public right-of-way adjacent to the Waikikian Hotel site. Specific views of the shoreline are not available from Ala Moana Boulevard in the vicinity of the Waikikian Hotel.

The Waikikian Hotel site is at a visually strategic location relative to the alignment of Ala Moana Boulevard.

Open Space

The sense of open space is based on the Fort DeRussy node along the Ala Moana Boulevard corridor. Secondary open spaces and landscaped areas

are important along Ala Moana Boulevard to soften the visual effect of the built environment. They consist of various roadway landscaping, front yards and upper level decks on adjacent buildings.

Coastal Features

There are no natural coastal features located or visible in the vicinity of the Waikikian Hotel and Ala Moana Boulevard, nor does the Waikikian Hotel contain any feature on its site. The Ala Wai Yacht Harbor and Hilton Lagoon may be considered important as manmade features.

From Makai Areas:

Views

Views from all roadways within the Ala Wai Yacht Harbor and the shoreline provide visibility of the shoreline environment and the associated open space.

Mauka views are halted by existing building masses at the Hawaiian Village complex and other high-rise buildings located along Ala Moana Boulevard.

Open Space

The Waikikian Hotel site is at the fringe of the large urban open space consisting of the Hilton Lagoon, Ala Wai Yacht Harbor and the Waikiki/Ala Moana shoreline. Within the context of this urban environment, the existing structures compliment the visual setting through contrast and enclosure of the open space.

Coastal Features

From the makai/shoreline area, the Hilton Lagoon and harbor are significant manmade coastal feature.

Off-site coastal features include the Waikiki/Ala Moana shoreline, the Ala Wai Yacht Harbor and Diamond Head. Views of these features from adjacent apartment and hotel units were not studied in depth, since such views are private and do not constitute public views. However, significant encroachment into existing views from such units may be anticipated.

The following impacts related to views and open space may be anticipated as a result of the redevelopment proposal:

(a) Due to the location of the project site and the roadway curvature, the longitudinal facade of the hotel pedestal and tower at the mauka portion of the site will project out into the roadway view corridor at Ala Moana Boulevard. However, it should be noted that at this location, Ala Moana does not provide any vehicular or pedestrian coastal views to be impacted. Visual impact will affect the roadway corridor and the physical and visual aspects of the urban environment in the area.

(b) The proposed development will heighten the "canyon-like" effect at the existing public right-of-way. This effect is unavoidable, given the proposed building height, placement of adjacent buildings and the narrow width of the Waikikian Hotel site. Ground level/pedestrian mitigation of this visual effect may be anticipated with the proposed landscape improvements to this area as illustrated in the project landscape plans.

(c) The proposed "Ocean Terrace" at the makai portion of the site may impact on the man-made open space of the harbor and lagoon,

since it is located beyond the present building line created by the existing buildings. Blockage of lateral views from the Harbor Road and from the sandy beach fronting the Hilton Lagoon Apartments may result.

(d) Views from off-site public viewing points, and the anticipated impacts of the new Waikikian Hotel, are summarized as follows:

1. Magic Island — Lateral views from Magic Island toward Waikiki and Diamond Head will be affected. It should be noted, however, that while the proposed structure will be visually prominent, it will be located within the existing skyline (Refer to *Photo F., Appendix E.*).

2. Waikiki Beach near Queen's Surf — Makai and lateral views from the Diamond Head side of Waikiki Beach will not be adversely affected, since the proposed hotel structure will be located within the existing skyline and will therefore not be prominent from this area.

3. Ala Wai Yacht Harbor and shoreline — Coastal views will not be adversely affected, since the

project site lies inland of the makai and lateral line of sight from the harbor and shoreline area.

4. Tantalus lookout — Makai views of Honolulu and the Waikiki skyline will not be adversely impacted, since the proposed hotel structure will be visually insignificant within the overall panorama from distant mauka areas.

10. Wind Impact

Pedestrian level wind impacts are addressed in *Appendix F.*, a wind study conducted by Rowan Williams Davies & Irwin Inc. (RWDI). The intent of the study was to determine, through the study of a scale model in a wind-tunnel, the level of wind activity anticipated to occur around the project site and how existing wind conditions would be affected. The wind speeds recorded on and around the proposed development were then assessed to determine the acceptability with respect to the intended pedestrian use in various areas on and around the project site.

A detailed description of the test methodology used in this study is found in *Appendix F.* To assess the pedestrian level

wind environment, a 1:400 (Approximately 1" = 32') scale model of the proposed project and surrounding buildings within a 1,600 feet radius of the development site was constructed. The scale model of the existing buildings and the proposed development are shown in *Figure 12., Microclimate Study Model.* The model was constructed from plans prepared by KOP Hawaii Inc., Sanborn maps, an area map, and site photographs.

The pedestrian level wind test model was placed in a wind tunnel, where wind blowing over the model simulates wind blowing over the actual site. Wind speeds were recorded for 16 wind directions at 51 sensors located on and around the study site. The locations of the wind speed sensors on and around the project site are shown in *Figure 13.*

Both existing site conditions and conditions with the proposed Waikikian Hotel were tested. Wind data recorded over a 38-year period at the Honolulu International Airport, the nearest meteorological station to the site, were analyzed to determine the direction from which winds occur most often in the Honolulu area. Seasonal changes in wind speeds and directions were assessed by dividing the wind information into summer and winter seasons. The results of this analysis are presented in *Figure 14.*

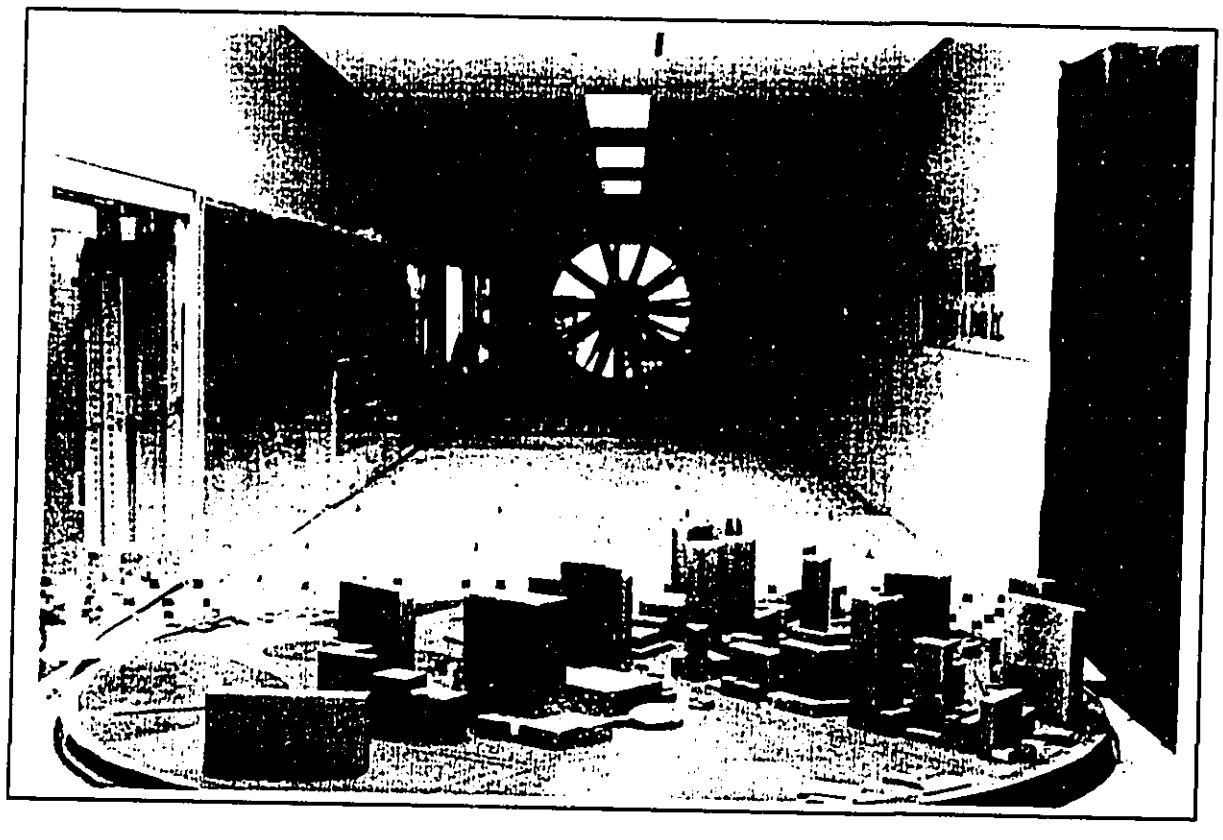


Figure 1: Microclimate Study Model
Waikikian Hotel, Honolulu, Hawaii

FIGURE 12

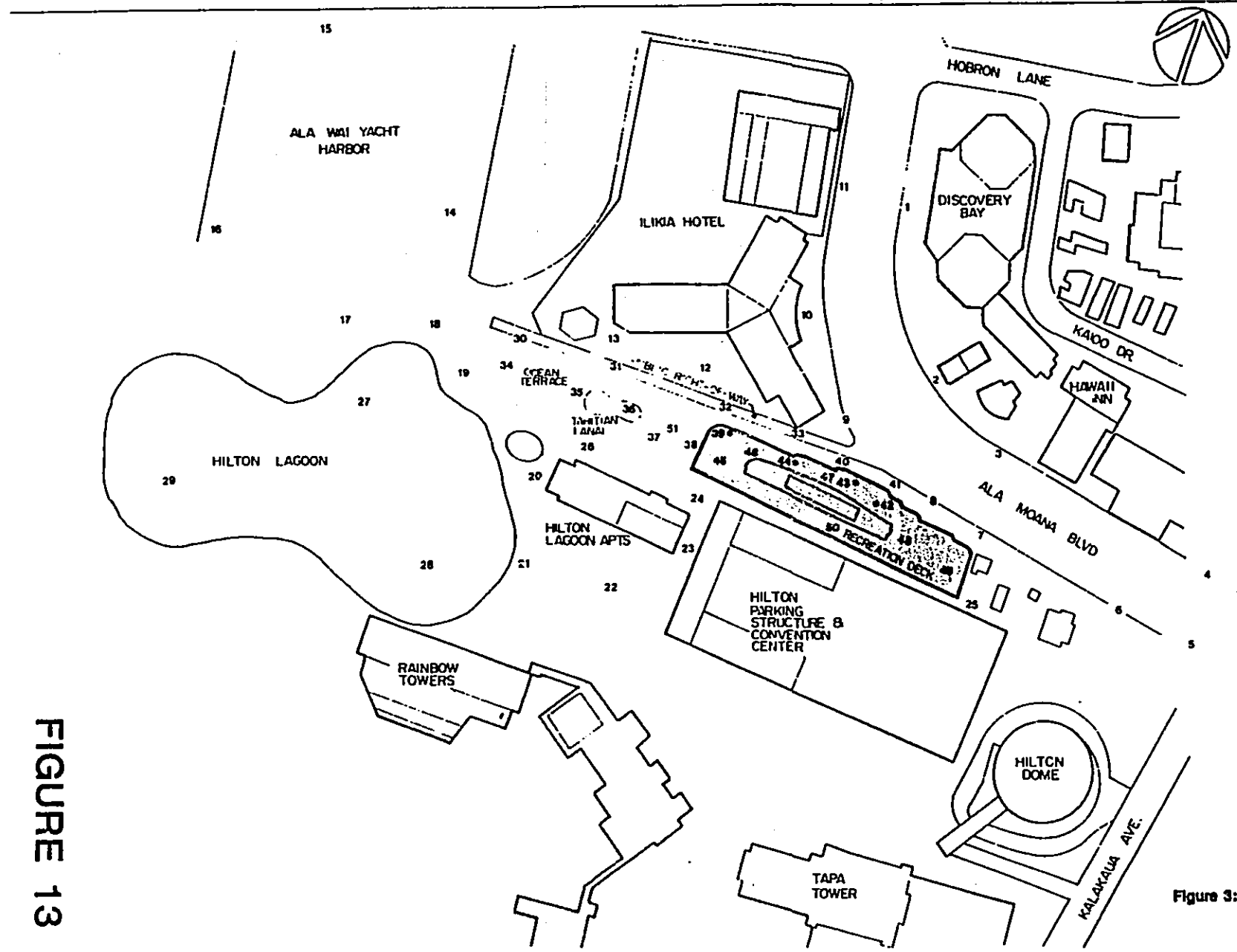
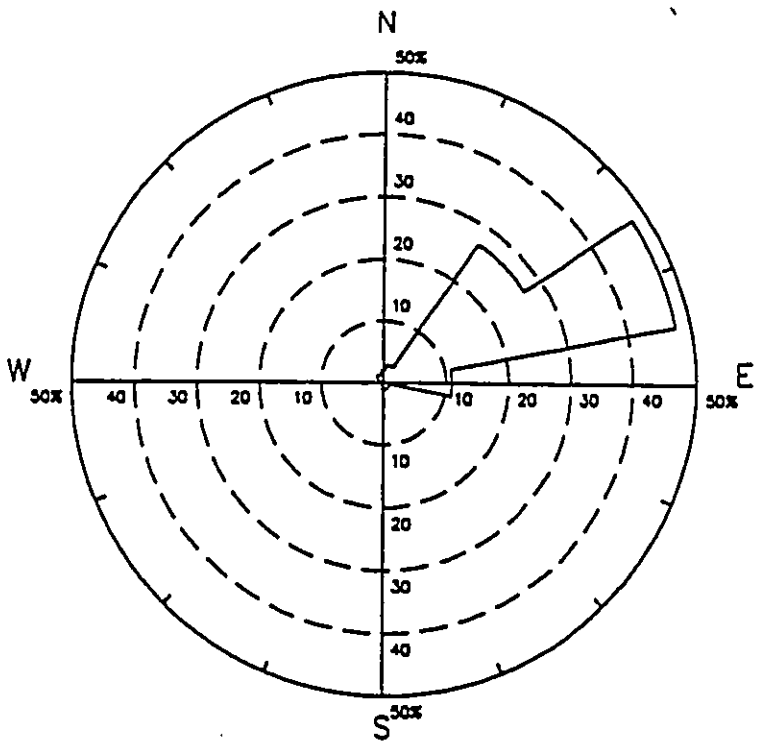


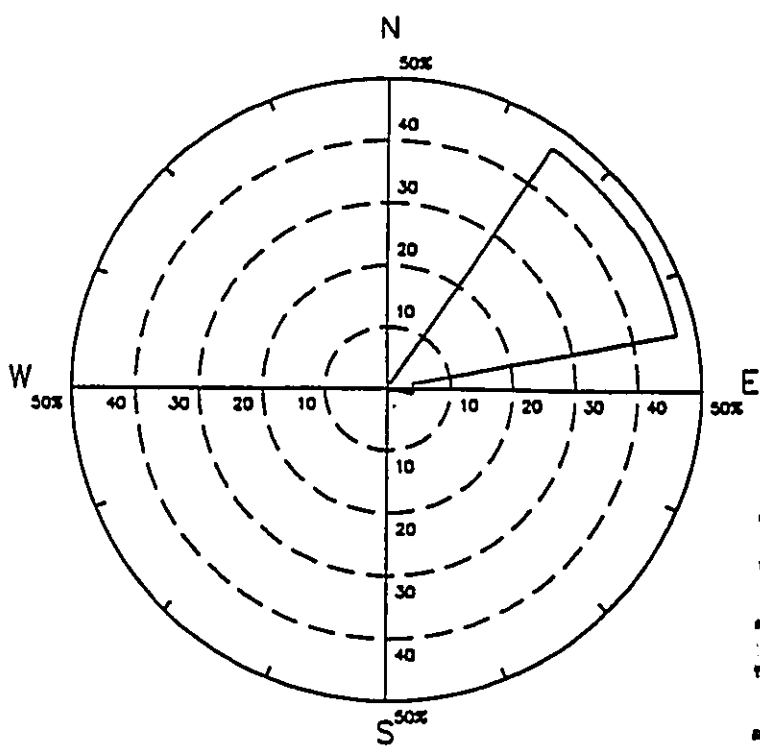
FIGURE 13

Figure 3: Location of Wind Speed Sensors
Approx. Scale 1"

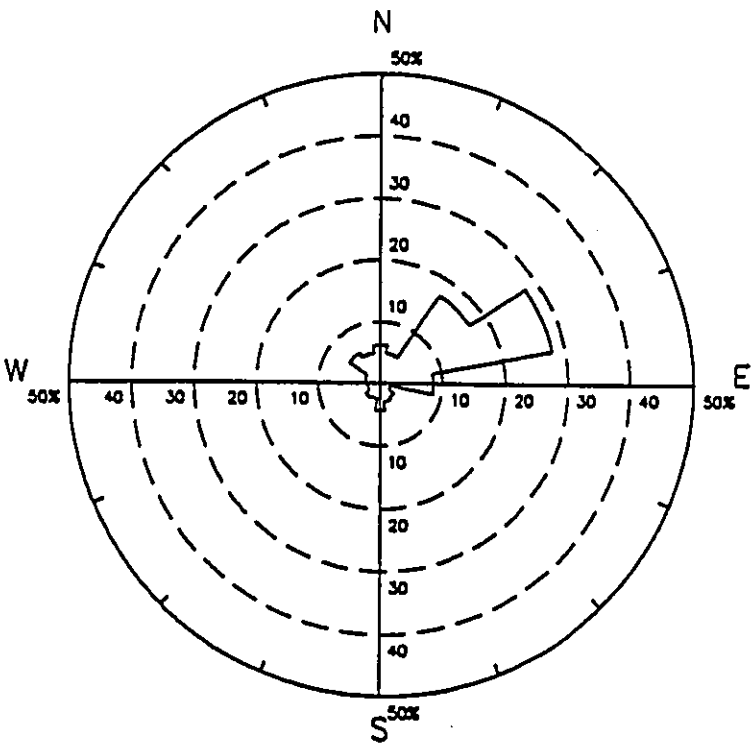
Waikiki Hotel 80-254F-1



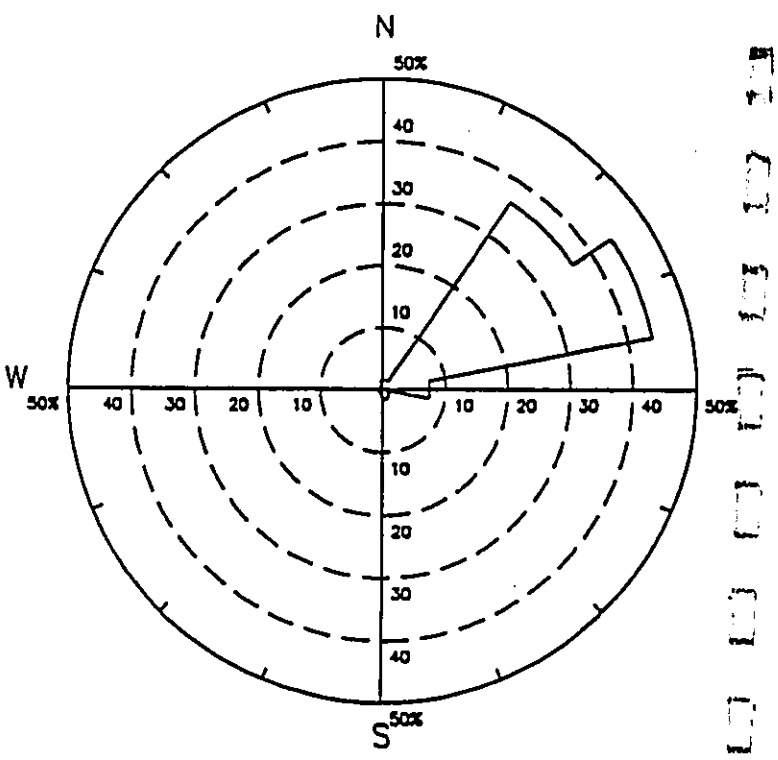
ALL SUMMER WINDS



WEEKLY SUMMER WINDS



ALL WINTER WINDS



WEEKLY WINTER WINDS

Directional Distribution of Winds
Honolulu International Airport (1949 - 1987)

FIGURE 14

Conclusions with regard to potential wind impacts from the project are summarized as follows:

a. The pedestrian level wind environment in the following off-site areas was recorded both before and after construction of the new Waikikian Hotel: Ala Moana Boulevard; Ilikai Hotel; Ala Wai Yacht Harbor; Hilton Hotel Lagoon and Beach; Rainbow Hotel; and the public right-of-way to the harbor. The study concluded that with the proposed hotel, the wind speeds in these areas typically remained the same as existing, or were slightly reduced (more comfortable). This is considered a positive environmental impact on the surroundings.

b. With the addition of the proposed hotel, wind conditions on the project site were typically comparable to those which exist. Potentially hazardous wind speeds occurred less than 0.1 percent of the time, which is within acceptable standards for wind comfort. The test results indicated relatively windy conditions on the site; however, the landscaping tested was less dense than that now proposed and would thus produce slightly conservative results. Actual conditions on the site would be slightly more comfortable than what these tests show. The recreation deck (podium

level) was wind-exposed and predominantly uncomfortable for leisure activities. Mitigative measures in terms of alternative landscaping may be needed to increase the effectiveness of the proposed landscaping, and reduce potential wind impacts, in this area.

11. Shadow Impact

A sun/shade study of the proposed Waikikian Hotel was conducted by Rowan Williams Davies & Irwin Inc. (RWDI). The study was conducted with the aid of a heliodon, also known as a sun/shade simulator, and the 1:400 scale model of the proposed development and surroundings referenced above. The study is included in its entirely as *Appendix G.*; refer also to *Figure 12., Microclimate Study Model.*

The objective of the sun/shade study was to determine the potential exposure to sunlight and shadow in key locations on and around the study site, including designated open space (i.e. proposed leisure areas) and surrounding pedestrian walkways. The shadow patterns with and without the new building in place were analyzed and are discussed in detail in *Appendix G.*

The 1:400 scale model was mounted on the heliodon which is capable of simulating the appropriate geographic and solar angles for the Honolulu region. The model was then oriented relative to a high intensity light source representing the sun, to provide good approximations of the shadow conditions anticipated in the vicinity of the project site. Shadow patterns for the dates and times indicated in *Table 5*. were simulated and photographed. The times listed are Hawaiian Standard Time.

Table 5

Shadow Patterns

Date	Time
March 21* (HST)	8:00 am, 10:00 am, 12:00 (noon), 12:38 (solar noon), 2:00 pm, 4:00 pm, 6:00 pm
June 21* (HST)	8:00 am, 10 00 am, 12:00 (noon)*, 12:33 (solar noon)*, 2:00 pm*, 4:00 pm, 6:00 pm
September 21* (HST)**	8:00 am, 10:00 am, 12:00 (noon), 12:24 (solar noon), 2:00 pm, 4:00 pm, 5:00 pm
December 21* (HST)	8:00 am, 10:00 am, 12:00 (noon), 12:30 (solar noon), 2:00 pm, 4:00 pm

* The orientation and frame of these photographs differed from the rest of the times tested in order to compensate for the camera's influence on the photographs during these times.

** Times for September are approximately 15 minutes earlier than shown.

The off-site areas of prime interest in relationship to this sun/shade study include: the Ilikai Hotel; the public right-of-way; Ala Moana Boulevard sidewalks; Ala Wai Yacht Harbor;

and the Hilton lagoon beach. Areas of interest on the proposed Waikikian Hotel site are: the entrance to the new building; the recreation deck; the Tahitian Lanai; the swimming pool; the ocean terrace; and the sand beach at the Hilton lagoon. It should be noted that the off-site shadow effects are of interest for environmental impacts on the surroundings, whereas the on-site shadow effects are of interest for site-planning purposes.

Conclusions from the study are summarized as follows:

a. Generally, from early morning until noon on March 21 and September 21, the shadow impact of the proposed Waikikian Hotel was limited to the Ilikai Hotel's tennis courts, the east portion of the public right-of-way, and a nearby section of Ala Moana Boulevard. A similar impact was noted along the Boulevard and right-of-way from mid-morning until mid-afternoon for December 21, although the shadow cast by the proposed building was notably longer. The shadow impact on pedestrian-related areas in June was minimal.

b. Leisure areas on the west side of the proposed hotel (i.e swimming pool, Tahitian Lanai and ocean terrace) were primarily in shade during morning hours in

March, September and December. For the balance of the day and year, these areas were predominantly in direct sunlight, but will be partially shaded with landscaping. The proposed hotel's recreation deck received appreciable shade on the north side throughout the year. On an annual basis, the northeast portion of the recreation deck has the greatest exposure to direct sunlight, whereas the deck area directly north of the hotel tower has the least exposure.

In summary, off-site sun/shadow impacts are considered minimal, while on-site impacts are greatest on portions of the proposed recreation deck. Some solar screening measures and additional landscaping may be needed in this regard.

B. SOCIO-ECONOMIC CONDITIONS

1. Displacement

Displacement is not considered a significant impact of the proposed redevelopment, since the existing hotel operation will be re-established (and expanded) and the Tahitian Lanai restaurant and bar will also be retained on the site. The only potential displacement is for the small retail shops now located

on the site. It should be noted that the redevelopment will result in an increase in commercial space available for lease.

2. Employment

Long-term, permanent employment opportunity is regarded as a potential beneficial impact. The existing Waikikian Hotel employs about 30 people; an estimated 6 - 12 people are employed by the retail shops. It can be anticipated that because of the increase in commercial and restaurant space over that existing (12,000 square feet versus about 7,825 square feet), additional job opportunities will be created. It is also estimated that approximately 260 people would be needed to service the new hotel operation.

For the short-term, an estimated 1,766 direct and indirect jobs would result from construction activities on the site.

3. Demographics

The proposed project will result in an increase in the visitor population in the area (a net increase of 132 units). While this is a relatively insignificant increase, additional visitor accommodations are likely to result in some long-term impacts in the area, such as increased usage of recreational facilities, e.g. the

lagoon/beach area and nearby park and harbor. There will also be additional demands on other public facilities and services. (Refer to *Section C.* below, *Public Facilities and Services*, for a more complete discussion of these impacts and the adequacy of existing facilities and services.)

4. Other

It can be anticipated that the redevelopment will produce some beneficial economic impacts to the Waikiki District, other resort and visitor-oriented commercial uses in the immediate area, and to the State as a whole. These benefits would be in the form of the increased employment opportunities, short-term and long-term, as described in *Section 2.* above, and increased State and County revenues generated from gross income, personal income and real property taxes.

C. PUBLIC FACILITIES AND SERVICES

1. Transportation/Traffic

A Transportation/Traffic analysis was prepared for the proposed project by Wilbur Smith Associates and is included in its entirety as *Appendix H.* The analysis examines existing condi-

tions, 1993 conditions without the project, and 1993 conditions with the project. Findings are summarized below.

Existing Conditions

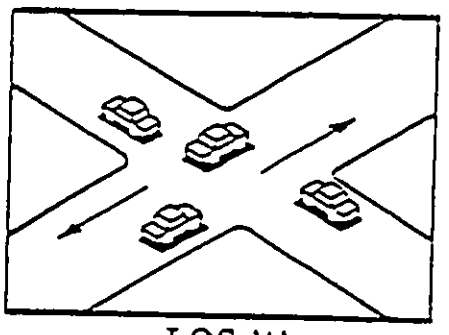
Ala Moana Boulevard, a six-lane divided arterial, is the principal roadway serving the project site. Access to and egress from the site is via a loop/pull-out road in front of the Waikikian Hotel. The loop provides access to the Waikikian parking lot, as well as the Ilikai Hotel, and the public right-of-way which forms the northern boundary of the site.

Kalia Road, located Diamond Head of the project site, is a signalized secondary street which intersects Ala Moana Boulevard. It is operated as a two-way street and provides three lanes for mauka-bound traffic. Ena Road is aligned opposite Kalia Road at Ala Moana Boulevard. Ena Road is operated as a two-way, two-lane street. Hobron Lane, located in the ewa direction from the project site, forms the second key intersection with Ala Moana Boulevard. Hobron Lane is a signalized secondary street which is operated as a two-lane, two-way street mauka of the intersection, and as a four-lane, two-way street makai of the intersection.

The intersections analyzed included Kalia and Ena Roads/Ala Moana Boulevard and Hobron Lane/Ala Moana Boulevard. Manual traffic counts were taken from 7:00 a.m. - 9:00 a.m. and 4:00 p.m. - 6:00 p.m. on May 2 - 4, 1990.

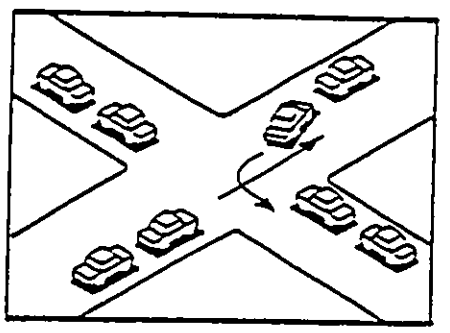
Table 6 illustrates the existing level of service for the morning and afternoon peak hours at the two signalized intersections surveyed. As shown, both of the intersections analyzed now operate at acceptable levels of service, except for the Kalia-Ena/Ala Moana Boulevard intersection during the afternoon peak hour (LOS E). (An explanation of levels of service (LOS) ratings is included as *Figure 15.*; the volume-to-capacity (V/C) ratio is determined by dividing the critical sum, which is the sum of volumes of conflicting movements on a per-lane basis, by the design capacity per lane, often 1,400 vehicles per hour.)

LEVEL OF SERVICE "A" - V/C = 0 TO 0.60
Describes operations with very low delay, i.e., less than 5 seconds per vehicle. This occurs when signal progression is extremely favorable. and most vehicles arrive during the green phase. Most vehicles do not stop at all.



LOS 'A'

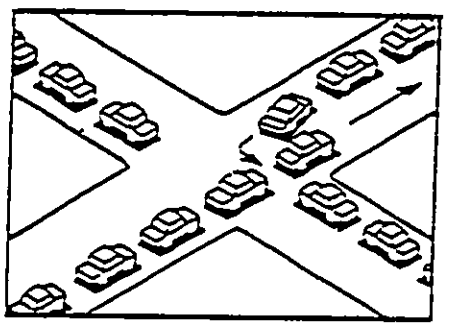
LEVEL OF SERVICE "B" - V/C = 0.61 TO 0.70
Describes operations with delays in the range of 5 to 15 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS "A", causing higher levels of average delay.



LOS 'C'

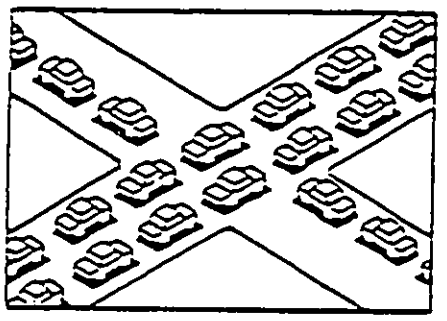
LEVEL OF SERVICE "C" - V/C = 0.71 TO 0.80
Describes operation with delay in the range of 15 to 25 seconds per vehicle. Occasionally vehicles may wait more than one red signal phase. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

LEVEL OF SERVICE "D" - V/C = 0.81 TO 0.90
Describes operations with delay in the range of 25 to 40 seconds per vehicle. At LOS "D", the influence of congestion becomes more noticeable. Many vehicles stop, and the proportion of vehicles not stopping declines. Noticeable numbers of vehicles fail to clear signal during the first green phase.



LOS 'D'

LEVEL OF SERVICE "E" - V/C = 0.91 TO 1.00
Describes operations with delay in the range of 40 to 60 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Vehicles frequently fail to clear the signal during the first green phase.



LOS 'F'

LEVEL OF SERVICE "F" - V/C GREATER THAN 1.00
Describes operations with delay in excess of 60 seconds per vehicle. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection.

SOURCE: Highway Capacity Manual, 1985.

WSA

LEVEL OF SERVICE CONCEPT

Waikikian Hotel EIS Traffic Study

FIGURE 15

Table 6

Existing Intersection Levels of Service

Signalized Intersection	AM Peak Hour		PM Peak Hour	
	V/C	LOS	V/C	LOS
Hobron Lane / Ala Moana Blvd.	0.54	C	0.71	D
Kalia-Ena Road / Ala Moana Blvd.	0.69	D	0.84	E

V/C = Volume-to-Capacity LOS = Level-of-Service

Wilbur Smith Associates; June, 1990.

The proposed redevelopment of the Waikikian is scheduled to begin in mid-1991, with completion in mid-1993; 1993 was used as the time point for forecasting future area traffic volumes and conditions with and without the project.

1993 Conditions Without the Project

Table 7. shows estimated traffic in the area without the project, but with other projects such as the Waikiki Landmark, a mixed use apartment/commercial development, and the expansion of Fort DeRussey hotel and parking facilities. The combined increase from general growth, estimated at approximately one percent per year from 1990 to 1993, plus the two nearby projects, result in an estimated traffic increase of just over 5 percent during

the morning and afternoon peak hours for the overall study area.

Table 7

Estimated 1993 Traffic Generated By Area Projects

Project	AM Peak Hour		PM Peak Hour	
	Hobron	Kalia-Ena	Hobron	Kalia-Ena
Fort DeRussy	52	72	60	83
Waikiki Landmark	21	17	22	18

Note: Increase in traffic volume at signalized intersections generated by the two projects noted above.

Wilbur Smith Associates; June, 1990.

Levels of service at both intersections during morning and afternoon peak period, are estimated to remain unchanged from those of existing conditions. Refer to *Table 8.*

Table 8

LOS and V/C Ratios 1993 Without Project

Signalized Intersection	AM Peak Hour		PM Peak Hour	
	V/C	LOS	V/C	LOS
Hobron Lane / Ala Moana Blvd.	0.57	C	0.75	D
Kalia-Ena Road / Ala Moana Blvd.	0.74	D	0.89	E

V/C = Volume-to-Capacity LOS = Level-of-Service

Wilbur Smith Associates; June, 1990.

Although the 1993 overall intersection traffic conditions without the project would continue to operate at an acceptable level, individual left-turning movements at Kalia-Ena Road/Ala Moana Boulevard would operate at LOS F during the afternoon peak hour. The left-turn movements estimated to operate at LOS F are:

- Left-turn movement from Kalia Road onto Ala Moana Boulevard;
- The Ala Moana ewa-direction left turn lane; and
- The Ala Moana Boulevard Diamond Head direction left-turn lane.

The overall intersection would continue to operate at LOS E, with a volume-to-capacity ratio of 0.89 and an average vehicle delay of 45.1 seconds.

1993 Conditions With the Project

The proposed project would increase traffic volumes by 34 and 56 new vehicles during the morning and afternoon peak hours, respectively. (Refer to page 8 of *Appendix H., Trip Generation*, and *Table 9.* which

follows.) As shown in *Table 10.*, project-generated traffic would have virtually no impact on intersection operations within the study area during the morning and afternoon peak hour.

Table 9

Estimated Weekday Peak Hour Vehicle Trips
Waikikian Hotel Project

Item	Unit	AM Peak Hour		PM Peak Hour	
		To Project	From Project	To Project	From Project
TRIP RATES					
Hotel	Rooms	0.12	0.06	0.08	0.11
Restaurant	1,000 GSF	0.82	0.09	4.97	2.23
VEHICLE TRIPS					
Hotel	264 Rooms	32	16	22	30
Restaurant	5,000 GSF	4	0	25	11
Total By Direction		36	16	47	41
Total Vehicle Trip Ends		52		88	

Table 10

Levels of Service and V/C Ratios
1993 With Project

Signalized Intersection	AM Peak Hour		PM Peak Hour	
	V/C	LOS	V/C	LOS
Hobron Lane / Ala Moana Blvd.	0.58	C	0.75	D
Kalia-Ena Road / Ala Moana Blvd.	0.74	D	0.89	E

V/C = Volume-to-Capacity LOS = Level-of-Service

Wilbur Smith Associates; June, 1990.

The principal findings from the traffic analysis of 1993 conditions, with the proposed project, are as follows:

- The intersection at Hobron Lane/Ala Moana would continue to operate at an acceptable level of service during the morning and afternoon peak hours. The low volume of project-generated traffic would not affect individual lane movements, or the overall operation of this intersection.

- The major operational problems would continue to exist at the Kalia-Ena Road/ Ala Moana Boulevard intersection. During morning peak hour traffic the Kalia-Ena Road/Ala Moana Boulevard intersection would operate at an overall LOS D. Traffic generated from the proposed project would have no measurable impact on this intersection during the morning peak hours.

- Project-generated traffic at the Kalia-Ena Road/Ala Moana Boulevard intersection is estimated to increase overall afternoon peak hour traffic by 35 vehicles, with minor effects on overall intersection operation during the afternoon peak hour. The inter-

section would continue to operate at LOS E, with an overall delay of 45.3 seconds per vehicle.

- As previously noted, problems occur with left-turn movements at this intersection. Project-generated traffic would add about 10 seconds delay to left-turn movements from Ala Moana Boulevard, Diamond Head direction, to Ena Road during the afternoon peak hour. It would have no effect on left-turns from Kalia Road to Ala Moana, or on the Ala Moana Boulevard, ewa direction, left-turn lane.

In summary, the proposed project would impact morning or afternoon peak hour traffic by less than one percent within the study area. The morning peak hour traffic conditions within the project vicinity are the less critical. Afternoon peak hour traffic at the Kalia-Ena Road/Ala Moana Boulevard intersection will experience operational problems, with or without the proposed project.

2. Water

The Honolulu Board of Water Supply (BWS) currently provides potable water for the existing Waikikian Hotel. The BWS dis-

tribution system includes an existing 3-inch meter and 12-inch water main under Ala Moana Boulevard.

The total water demand for the project site is estimated to be 92,400 gallons per day (gpd) (350 gpd/unit x 264 units). Consumption of water on the site is expected to increase by 46,200 gpd. Additional water consumed by irrigation of landscaping and maintenance was considered to be minimal.

The adequacy of the existing three-inch water meter to meet the increased demands for the proposed hotel is uncertain and the Board of Water Supply will make a determination when construction plans are submitted for review and approval.

According to the Board of Water Supply, there is an existing 12-inch water main on Ala Moana Boulevard which should be adequate to meet the anticipated demands of the project. However, the availability of additional water will be determined when the building permit is submitted to the Board for review and approval.

A private water system for the fire protection detector check meter, and all appurtenances, hydrant spacing and fire flow requirements will meet the BWS standards. In addition, a fire access road to within 150 feet of the first floor of the most remote structure will be provided.

Please also refer to *Appendix I., Impact on Utilities and Services*, prepared by Hida, Okamoto and Associates, Inc., Consulting Engineers.

3. Liquid/Solid Waste Disposal

Wastewater generated by the existing facilities of the Waikikian Hotel is discharged into an existing 5-inch lateral and then to an existing 12-inch sewer line under Ala Moana Boulevard running in the mauka direction. Near the intersection at Kalia Road, a 12-inch line is connected to an existing 18-inch main along Ala Moana Boulevard, which transmits sewerage to the Fort DeRussy Pump Station and the Sand Island Treatment Facility.

The average daily wastewater expected to be discharged by the proposed development is estimated to be approximately (300 gpd/hotel unit x 264 units) 72,900 gpd. This generation of sewage volume represents a 39,600 gpd increase from the existing volume of (300 gpd/hotel unit x 132 units) 39,600 gpd.

The Division of Wastewater Management, Department of Public Works, has indicated that the sections of the existing sewer system which service the project site will be inadequate

to accommodate any additional sewage flow for more than the existing 132 hotel rooms, and that the City has no plans to improve the inadequate sewer line. (Refer to *Chapter 11, Mitigation Measures Proposed to Minimize Impact* starting on page 137.)

Solid waste now generated at the Waikikian Hotel is collected and disposed of by a private refuse collection firm.

It is anticipated that the proposed development will generate a de facto population of 568 persons, who will each generate approximate 2.32 to 4 pounds of refuse each day, for a total of 0.56 tons of solid waste each day. Solid waste will continue to be collected by private collection companies and disposed of at public or private landfills.

The proposed redevelopment project will place additional demand on City waste disposal facilities. It is expected that State and City revenues derived from the completed hotel will be sufficient to finance the hotel's fair share of the cost for major capital improvements, such as solid waste disposal facilities, and to provide the same level of per-unit services. The City has future plans to construct a solid waste transfer station. Solid waste collected at this transfer station will be hauled either to a sanitary landfill site for disposal or to a proposed refuse-to-energy plant. Refer also to *Appendix I.*

4. Drainage

There are no unique topographical features on the project site and it is relatively level. The major part of the project site is now drained by means of sheet flow. Drainage toward the Ala Moana Boulevard frontage is through an existing catch basin and to the existing 8 feet x 7 feet box drain culvert. There is minor drainage toward the Hilton Lagoon.

The peak discharge for existing site conditions is estimated as 4.8 cfs. As a result of the proposed improvements, peak runoff generated on the site is expected to increase; estimated projected peak discharge is 5.7 cfs. Proposed grading works and area catch basins will insure that water is drained away from structures and prevent drainage water flow toward the Lagoon.

No change in the drainage patterns of the site is anticipated. The addition of landscaped areas to the site will decrease runoff from the site slightly. Catch basins to accommodate on-site drainage will be directly connected into the existing drainage system and then into the existing 8 feet by 7 feet box drain culvert along Ala Moana Boulevard.

Anticipated impacts include short-term construction-related impacts such as noise, dust, traffic disruption and air pollution due to use of diesel equipment. Long-term impacts should be

an improvement in the drainage throughout the project area, and a lessening of particulate matter discharged into the Ala Wai Canal or Hilton Lagoon during periods of stormwater runoff.

Drainage improvements will be developed to City standards to ensure that adequate and appropriate improvements are made. Short-term construction activities will comply with State Department of Health Noise requirements as well as the City's Grading Ordinance which will feature protective measures to mitigate dust and erosion.

Visual impacts of the proposed drainage improvements will be subject to the overall design criteria for the proposed hotel. These design criteria are expected to include landscaping requirements, setbacks, and material and texturing requirements which can be used to mitigate changes in visual impacts. Refer to *Appendix I.*

5. Parks

While the anticipated increase in visitors from the proposed redevelopment will likely result in some increase in usage of nearby recreational areas, such as the Hilton Lagoon and beach and the public park adjacent to the shoreline, a number of

recreational areas, amenities and facilities are planned on-site for hotel guests. These facilities, described more fully in *Section 3.D.*, should alleviate any significant impacts on parks and beaches in the area.

6. Schools

While the proposed project will result in an increase in visitor population, it will not increase resident population and will have no significant effects on schools in the area.

7. Electricity and Telephone Services

Power and telephone service to the site is currently supplied by an underground system along Ala Moana Boulevard. Power to these lines is supplied by the Waikiki Substation which has adequate capacity to serve the proposed development.

The existing electrical and telephone infrastructure has sufficient capacity. The assumed average daily power requirement is estimated to be approximately 750 KVA.

No major impacts are anticipated, since the electric company has indicated that adequate services can be provided. Contact

will be maintained with Hawaiian Telephone Company to ensure necessary service levels.

Refer to *Appendix I.*

8. Police and Fire Protection

Police and fire protection services are available and adequate for the proposed project. Refer also to *Chapter 14., Comments and Responses Made During Consultation* starting on page 156, for additional correspondence related to these services. As noted in *Section C. 2.* starting on page 87, a private water system and fire access road will be provided as recommended by the Honolulu Fire Department.

Chapter 6

Relationship Of The Proposed Action To Land Use Plans, Policies And Controls

6. RELATIONSHIP OF THE PROPOSED ACTION TO LAND USE PLANS, POLICIES AND CONTROLS

A. Federal

The Federal Flood Insurance Rate Map (FIRM) designates a small portion of the project site Zone A (Parcel 10), an area of 100-year flooding, where base elevations are not determined, and the remainder Zone AO (Parcels 2 and 3), areas of 100-year shallow flooding with depths between one to three feet. (Refer to *Figure 7.*)

Both federal FIRM designations are subject to the City's Land Use Ordinance (LUO), Section 7.10, Flood Hazard Districts. All development on the site will be in compliance with the applicable elevations and flood-proofing requirements of the LUO.

B. State

1. The Hawaii State Plan and Functional Plan

The Hawaii State Plan specifies the goals, objectives, policies, and priorities for the State (reference Chapter 226, Hawaii Revised Statues). Section 226-4, HRS, establishes certain broad,

generalized goals which can be summarized as: a strong viable economy; a desired physical environment; and physical, social and economic well-being for the community. Within the framework of these goals, certain objectives and policies are established for areas of state-wide concern. This Section weighs the consistency of the project against the broad goals, and describes how it meets the more specific objectives and policies of the Hawaii State Plan and Functional Plan for the economy in general and tourism in particular.

Section 226-8, HRS, directs economic planning toward the achievement of a visitor industry that constitutes a major component of steady growth for Hawaii's economy. To achieve this objective, the following policies are established:

Support and assist in the promotion of Hawaii's visitor attractions and facilities.

Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawaii's people.

Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.

Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaii's people.

Foster a recognition of the contribution of the visitor industry to Hawaii's economy and the need to perpetuate the aloha spirit.

Comment: Redevelopment of a well-established resort site in a primary visitor destination area of the State will serve and support the visitor industry as a whole. The upgrading and re-design of resort uses on the site, including hotel, restaurant and shops, will help promote and maintain Waikiki's strong principal role as a visitor attraction in the State.

The project will be developed to comply with all design objectives of the City's Waikiki Special District (refer to *Section C. 3.* which follows) and will be sensitive to neighboring resort-oriented uses and activities as well.

With the increase in resort-related commercial uses, retail and restaurant, additional job opportunities, in addition to those provided by the hotel operation, will be created, and the project will contribute to the State's economy in both direct and indirect tax revenues.

Section 226-18, HRS, establishes objectives relating to energy efficiency, and a policy to:

Promote the prudent use of power and fuel supplies through conservation measures including education and energy efficient practices and technologies.

Comment: The following proposals relating to energy-efficient electrical and mechanical systems will be integrated with site planning and design to the maximum extent feasible:

1. Lighting systems will utilize energy efficient lamps and ballasts. When incandescent lamps are considered necessary, because of function and design, their use will be minimized for conservation.

2. The selection of light-colored, highly-reflective finishes for back of the house areas will be coordinated with the design team, with the goal of increasing the coefficient of utilization for lighting calculations and an overall savings in energy.

3. Grounds security lighting can be reduced to a low minimum, but must also be balanced against guest safety and liability concerns.

4. Photo-electric cell controls will be provided for parking and area post-mounted lights, rather than the

use of time clocks which can sometimes cause day time energization of night lighting fixtures.

5. Power factor correction capacitors will be provided for the electrical system and coordination with specifiers of motors will be included to ensure that high power factor and high efficiency motors are generally to be provided.

6. An emergency generator will be provided for the project and the use a of diesel fuel is anticipated. Heat recovery from the engine is not planned, since the benefit to cost ratio is not good; the engine is only supporting the load for a low number of hours per year.

7. Individual separate tenant metering is favored, because of both the potential for energy conservation on the part of the individual tenants, as well as the elimination of hotel management responsibility for check metering of tenant utility charges.

8. The judicious use of renewable energy sources such as solar heat recovery and efficient fuels are all mandates that modern mechanical designs incorporate. For example, hot water usage is definitely an area

where heat pumps or heat recovery from air conditioners will be strongly considered.

9. Specialty systems, such as salt water cooling for air conditioners, are attractive, but the high cost of maintenance and restrictive clean water requirements generally discourage this alternative as a viable solution. Consideration will, however, be given to these systems in the hope that benefit can be found.

10. Only proven sanitary systems and components will be specified. The range of concerns from restricted flow shower heads, to flushing rates of water closets, to guidance for guests to conserve will be addressed. An analysis will be made to determine the appropriate use of hot water system heat tapes, recirculation systems, and booster pumping

11. Extreme care will be taken to select walls, roofs and their insulation, window and lanai openings, and ceiling types to ensure that proper "R" factor insulating materials are selected to provide maximum benefit. In addition, air conditioning systems will have to be selected to suit the application. Set back temperatures will also be considered for guest rooms, along with bedside controllers.

12. Energy management systems will be incorporated with emphasis on the control and proper cycling of large machinery, rather than excessive cycling of end use machinery such as air handlers and fan coil units.

13. Natural ventilation will be encouraged, especially for the parking structure.

State Functional Plans contain objectives, policies, and implementing actions within a specific field of statewide concern. This Section discusses the relationship of the project with the State Tourism Functional Plan.

The objectives of the plan address:

"Achievement of steady and balanced growth of the visitor industry;

Development and maintenance of a well-designed, high quality visitor product;

Respect for, and preservation and maintenance of the fragile resources which comprise Hawaii's natural environment and cultural heritage;

Support of Hawaii's diverse range of lifestyles;

Maintenance of a high consumer awareness of Hawaii as a visitor designation in desired markets; and

Maintenance of visitor markets to support desired levels of economic activity, and diversification of markets to provide a secure economic base."

Objectives and policies relevant to the proposed project relate to Growth and Physical Development, as follows:

Objective I.A.: Development, implementation and maintenance of policies and actions which support the steady and balanced growth of the visitor industry.

Policy I.A.2.: Ensure that visitor industry growth maximizes benefits to the residents of the State in general and revenues to State and County governments specifically.

Objective II.A.: Development and maintenance of well-designed visitor facilities and related developments which are sensitive to neighboring communities and activities, and which are adequately serviced by infrastructure and support services.

Policy II.A.1.: Maintain high standards of overall quality of existing visitor destination and attraction areas.

Policy II.A.2.: Enhance tourism product and encourage continued development of a diverse range of tourism products.

Policy II.A.8.: Encourage the development of hotels and related facilities within designated visitor destination areas with adequate infrastructure and support services before development of other possible visitor destinations.

Comment: While State projections for growth of the visitor industry remain highly positive, maintenance of the growth

will undoubtedly require the continual upgrading and maintenance of existing facilities, especially those already planned and zoned for resort development, appropriately situated to serve the visitor industry, and with basic infrastructure in place.

The project site meets these important criteria, is obviously underutilized at the present time, and is in need of physical improvements and redevelopment from a practical standpoint as well.

Redevelopment of the project site will produce both direct and indirect economic revenues to the State and City and will, by retaining the existing leisure attractions on the site, continue to benefit both resident and visitor alike.

The project will be designed under newer, more sensitive City regulations which take into account both the aesthetic values and infrastructure needs currently required to support the desired quality of Waikiki as a visitor-destination and attraction area competing with other local destinations and in the world-wide industry market.

In addition, the proposed project will be designed to incorporate the most recent energy efficient electrical and mechanical

technology available to carry out the purposes of the State Energy Functional Plan, which is to:

Guide the activities of agencies toward the implementation of State Plan energy goals, objectives and priorities;

Provide a basis for the allocation of resources to carry out various State energy activities, and to deliver energy services;

Identify major interrelationships among energy planning and other functional areas;

Assist in clarifying and coordinating the roles and responsibilities of State and County government and the private sector; and

Identify the potential impact of energy development, conservation, and management action, on energy consumption patterns and the ability of residents to actively participate in altering these patterns through individual initiative.

(Refer also to the discussion of the Hawaii State Plan, Section 226-18, HRS, proposals relating to energy efficiency, above.)

2. State Land Use District

The State Land Use District classification for the project site is Urban. All proposed uses are permitted within this District.

3. Coastal Zone Management (Section 205A, HRS)

The relationship of the proposal to State Coastal Zone Management is discussed in *Section C.4.*, which follows:

C. City and County of Honolulu

1. General Plan (GP)

The following is an assessment of how the project relates to the City and County of Honolulu General Plan policies:

a. Economic Activity:

Objective A: To promote employment opportunities that will enable all the people of Oahu to attain a decent standard of living.

Policy 1: Encourage the growth and diversification of Oahu's economic base.

Objective B: To maintain the viability of Oahu's visitor industry.

Policies 1, 2, and 3: Provide for the long-term viability of Waikiki as Oahu's primary resort area by giving the area priority in visitor industry related public expenditures; provide for a high quality and safe environment for visitors and residents in Waikiki; and, encourage private participation in improvements to facilities in Waikiki.

Comment: Because of the increase in units and total commercial square footage, there will be a resultant increase in the number and diversity of employment opportunities. For the hotel operation alone, jobs are estimated to increase by 12 percent. Other opportunities will be created as a result of approximately 30 percent more commercial space available for restaurant and other commercial uses.

It should be noted that the General Plan acknowledges Waikiki as Oahu's primary resort area, where quality development is to be provided and where private participation in improvements is to be encouraged. The proposed redevelopment would directly support these explicit policy statements.

2. Development Plan (DP) Common Provisions and Special Provisions

Section 32-1.10 of the DP Common Provisions discusses "The Social Impact of Development." The following factors are to be examined as they pertain to General Plan policies and objectives in this area:

a. Demographic

The proposed project will not increase or decrease the residential population; it will result in an increase in the visitor population, because of the expansion of the existing hotel operation by 132 units and more space devoted to supportive commercial uses (retail and restaurant). Since the existing use of the site and surrounding uses are resort and visitor-oriented, there should be no significant change in the fundamental character of the neighborhood. There will, however, be an increase in demands on nearby recreational amenities, public and private, and basic public services and facilities.

b. Economic

Redevelopment of the site will result in significant, direct and indirect economic benefits and public revenues,

supporting the maintenance of Waikiki as a primary visitor destination area. It will also result in an increase in the availability and diversity of jobs in the area.

c. Housing

The proposed project would not affect housing choices, or have any other adverse impact on the provision of housing, since the site is planned, zoned and now devoted to resort uses.

d. Public Services

As discussed in *Section 5.C.1.*, the project would have minimal overall effects on transportation facilities in the area. (Refer also to *Chapter 11., Mitigation Measures Proposed to Minimize Impact* starting on page 137.) Police and fire protection are available, and other public facilities are either adequate, or will be upgraded to support the project. The project would not significantly affect medical, educational or recreational facilities in the area.

c. Physical Environment

Specific impacts on the physical environment are discussed more fully in *Chapter 5., Environmental Setting/ Project Impacts* which starts on page 38. The project is designed to result in an improvement to the physical attractiveness of the area and will also provide some benefits in open space and improvements to the adjacent public right-of-way. There are no existing natural monuments or landmarks which would be adversely affected by the redevelopment proposal.

Section 32-2.2, Urban Design Principles and Controls for the Primary Urban Center, contains a section addressing Waikiki and provides policy guidelines to enhance the attractiveness and quality of this primary tourist destination area. A summary of the project's relationship to relevant guidelines follows:

"In general, resort and related commercial activities shall be concentrated in the areas makai of Kuhio Avenue and Ala Moana Boulevard. Resort facilities shall be developed to support a destination area of about 30,000 visitor units. Any additional high-density development shall be discouraged. The general height limits for the area shall be as provided in the Waikiki Special Design District. Existing views of the mountains, ocean and Diamond Head from streets, pedestrian corridors and major public places shall be preserved through more stringent development controls in terms of

height, bulk, siting, and setback. Such views shall be enhanced by appropriate landscaping requirements for private developments along view corridors and the appropriate landscaping of related streets." (Reference 32-2.2 (b) (2), paragraphs (A)-(E).)

Comment: The proposed redevelopment would result in a net increase of 132 units more than now existing on the site, and it will undoubtedly increase the de facto visitor population in the area. Within the broader context of both State and City policies for the visitor industry as a whole — and Waikiki particularly — the increase of 132 units is seen as relatively insignificant.

It is acknowledged that current City policy guidelines support a Waikiki destination area of "about 30,000" visitor units. Since a reliable count of existing units, including those recently approved, is not available, and since the original policy intent appears to be aimed at ensuring both design sensitivity and infrastructure needs are met in all new developments or redevelopments, the increase in units from this project is not regarded as a major conflict with policy guidelines. If there is a conflict, it appears to be in the relationship between the State and City policy support for increasing the attractiveness of Waikiki as a major visitor-designation center and the limiting factor of "30,000 units" on future upgrading of facilities.

With regard to the basic, apparent policy intent, infrastructure is discussed in full detail in other sections of this Statement. As noted previously, the project is subject to and will comply with the "more stringent development controls" referenced above. These are now in place under the Waikiki Special District regulations of Article 7., Land Use Ordinance.

3. Zoning: Land Use Ordinance (LUO)

The project will be designed to conform to the purpose of the Waikiki Special District and specific standards applicable to Resort Hotel Precincts, as follows:

LUO Section 7.80 describes the purposes of the Waikiki Special District; the proposed project is in keeping with and supportive of the following specific statements of purpose:

"A. To guide the development of Waikiki with due consideration to optimum community benefits.

B. To promote health, safety, social and economic well-being for the community as a whole.

C. To protect, by means of proper planning and control, the value of private and public investment within the District and its surrounding communities.

D. To encourage development that would improve and complement the public facilities and utilities in Waikiki and the physical and visual aspects of the urban environment in the area.

K. To encourage the development of a variety of land uses which are compatible with and will enhance the unique character of the district."

LUO Section 7.80-5 establishes specific development and urban design standards for the Resort Hotel Precinct.

The project will be designed to comply with all regulatory requirements and urban design concerns, with particular regard to the major requirements described below:

- Landscaped front yard (average 30 feet).

- Front, side and rear height setbacks (1 foot for each 10 feet in height) for any portion of a structure above 40 feet in height.

- Density (approximately 284,000 allowed; approximately 283,000 proposed).

- A minimum 50 percent of the zoning lot in open space.

4. Special Management Area Guidelines (Section 33-3.2, ROH)/Coastal Zone Management Polices

Access to Public Beaches, Recreational Areas and Natural Reserves

The existing paved public right-of-the way will be improved, on the project boundary side, with more attractive landscaping and screening treatment. The nearest recreational areas are the Ala Wai Yacht Harbor and the lagoon and sandy beach at the west end of the site. Access to the beach, lagoon, and Harbor will not be affected.

Location of Public Recreation Areas and Preserves

The nearest public recreation area is a public park beyond the lagoon and adjacent to the shoreline. There will probably be increased use of these areas, but the availability and variety of recreational/leisure amenities on-site will off-set this impact; there are no wildlife preserves in the vicinity of the project site.

Provisions for Liquid and Solid Waste Disposition

Since sections of the existing sewer system which service the project site will be inadequate to accommodate any additional

sewage flow for more than the existing 132 hotel rooms, sewer relief lines will be required along Ala Moana Boulevard for a distance of approximately 1,400 linear feet. Solid waste collection will be by a private firm. Refer to *Chapter 5., Section C.*, for a detailed discussion of these impacts.

Alterations to Existing Land Forms, Vegetation, Effects on Water Resources, Scenic and Recreational Amenities, Flood Danger, Landslides and Erosion

There will be no dredging. Expected grading work will require approximately 3,000 cubic yards (cu. yd.) of excavation and 3,800 cu. yd. of embankment. Dewatering will be approximately 240 cu. yd.

As with nearly all other high-rise buildings in Waikiki, the use of sixteen-and-one-half-inch octagonal precast prestressed concrete piles with a design capacity of eighty to one-hundred-and-twenty tons is anticipated. The exact capacity will be determined by foundation investigation, conducted after demolition of the existing building when site access for drilling exploratory borings will be available.

Adjacent buildings are pile-supported, so that it is anticipated that little or no damage will occur to adjacent properties dur-

ing the pile driving, foundation construction of the hotel and dewatering operation.

Unlike other high rise buildings in the Waikiki area, the current schematic design calls for all floor levels in the new hotel structure to be approximately six inches above the existing site grade which is approximately six feet above mean sea level. Excavation will only be required at pile caps and grade beams with the deepest excavation required to be approximately six feet below existing grade for the elevator pit located near the center of the building. It is anticipated that pile caps can be excavated with sheeting required only at property line conditions. Dewatering will be local and required only for the construction of the elevator pit and some of the deeper pile caps required for the main sheer wall elements of the building. It is anticipated that dewatering will be accomplished by conventional construction techniques utilizing on-site settling basins. Little or no disposal of on-site water into storm drainage systems will be required. The disposal of dewater will comply with Federal and State regulations pertaining to the environment, including water pollution.

Since portions of the site are now heavily landscaped and mature trees on the site provide a habitat for birds, vegetation and the habitats it provides will be affected. This impact is expected to be short-term. Potential effects on lagoon waters

during construction activities may also be adverse, but these are also considered short-term and will be monitored and alleviated as appropriate. The project will have some effect visually on the surrounding environment; these impacts are fully explored in*Chapter 5., Section A* which starts on page 39. There will be an increased demand on nearby recreational amenities. All required flood hazard requirements will be met, and there are no known landslide or erosion hazards.

Adverse Environmental or Ecological Effects and Elimination of Planning Options

While the project site is properly designated and zoned for the proposed use and no planning options would be eliminated, some environmental effects are anticipated. These are identified and evaluated, and appropriate mitigative measures are proposed as a part of this EIS.

Consistency With the General Plan and Zoning

As noted above, both the existing and proposed uses are considered consistent with adopted land use policies and zoning for the project site.

Dredging, Filling and Other Alterations

No dredging or fill is proposed, and grading will be minimal.

Reduction of Beaches or Other Recreation Areas

The proposal would not result in the reduction of any beaches or the previously identified recreation facilities in the surrounding area.

Access to Tidal and Submerged Lands

No access to tidal or submerged lands would be affected by the proposal.

Line of Sight Toward the Sea from the Coast Highway

There are no coastal highway views available now; a more detailed examination of views resulting from the proposed project is contained in *Chapter 5., Section A.* (which starts on page 39) of this Statement. Mitigation measures are proposed in *Chapter 11* which starts on page 137.

Effects on Water Quality, Fishing Grounds, Wildlife Habitat and Agricultural Lands

There are no fishing grounds, wildlife habitats or agricultural lands directly affected by the proposal; effects on water quality are not expected to be long-term or significant. There may be some short-term degradation during site preparation and construction activities.

Chapter 7

Statement Of Probable Impacts

7. STATEMENT OF PROBABLE IMPACTS

The following is a discussion of probable impacts from the proposed redevelopment of the Waikikian Hotel and supporting uses, both beneficial and adverse. Those of a temporary, short-term nature are identified, as well as those impacts which are long-term and permanent.

It should be noted that a distinction is made between on-site impacts, which will guide future, detailed site-planning at further stages during the development process, and off-site impacts which relate more directly to the quality of the environment in the surrounding area.

For context, reviewers are referred to *Chapter 10., Probable Adverse Effects Which Cannot Be Avoided* (page 133), and *Chapter 11., Mitigation Measures Proposed to Minimize Impact* (page 137).

A. Physical Environment

1. Wetlands/Water Quality

No significant, long-term impacts are anticipated, however, there is likely to be short-term localized degradation in water quality as a result of earth-moving activities associated with construction of the new hotel.

2. Flora and Fauna

While the intent is to maintain the lush, tropical "garden" ambiance of the project site and to replace or relocate mature trees to the extent possible, it is anticipated that, because of the number of trees on the site, especially coconut, significant tree removal will be necessary, and that not all of these trees can be replaced. It should also be noted that on some areas of the site, the redevelopment will result in additional and improved landscaping treatment as well, e.g. along the adjacent public right-of-way and other entry points to the site.

It is also anticipated that because of construction activities, numerous avifauna will be temporary displaced from their habitats, although this is expected to be a short-term impact.

3. Archaeological

The archeological record indicates that the entire Waikiki area is prehistorically sensitive. Preservation of prehistoric artifacts and features, and otherwise generally decomposable artifactual materials is high, because of the inundated nature of the project area. Frequent discovery of prehistoric burials during development in adjacent areas suggests the likelihood of encountering burials during construction. Aquacultural and

agricultural deposition in the form of faunal and botanical remains indicating specific prehistoric and early historic activities are also considered to be potentially preserved depositions. The remains of cultural features, stone causeways, pond areas, and habitation sites are other archaeological resources that may be present and exposed during construction-related excavation activities.

4. Air Quality

No major adverse or long-term impacts on air quality are expected, but during site preparation and construction, it can be anticipated that fugitive dust will be generated and construction vehicle activity will increase automotive pollutant concentrations in the vicinity of the project site itself.

5. Noise

Long-term noise impacts from traffic are possible at the proposed hotel units in the project tower, and particularly at those end units which face Ala Moana Boulevard.

Audible construction noise will probably be unavoidable during the entire project construction period. It is anticipated that the actual work will be moving from one location on the pro-

ject site to another during that period. Actual length of exposure to construction noise at any receptor location will probably be less than the total construction period for the entire project. The residential and hotel units within the neighboring buildings north and south of the project site will probably experience the highest noise levels during construction activities, due to their close proximity to the construction site.

Adverse impacts from construction noise are not expected to be in the "public health and welfare" category, due to the temporary nature of the work, the prevalent use of air-conditioning within the adjoining buildings, and the administrative controls available for regulation of construction noise. Instead, these impacts will probably be limited to the temporary degradation of the acoustic environment in the immediate vicinity of the project site.

6. Views

A view impact from the Ala Moana roadway corridor is unavoidable. However, it should be noted that no vehicular or pedestrian coastal views are impacted. None are now available, due to the high-rise profile already established in the area makai of Ala Moana. Visual impact is confined to the basic change proposed (from low-rise to high-rise) and the fact that

the proposed structure will be highly visible from the roadway corridor.

The height of the proposed tower will also visually affect the adjacent public right-of-way, but, again, this view is already established by the heights and placement of adjacent structures. Ground-level pedestrian views can be improved with both landscaping and structural changes.

Plans for the low-rise "Ocean Terrace" structure, housing eight units, will impact on views of the manmade lagoon and harbor facilities.

7. Wind Impacts

Wind conditions as a result of the project will either remain similar to what now exists, or will slightly improve. The net result in terms of the surrounding environment is considered a positive impact.

In terms of on-site conditions, the proposed recreation deck would be most adversely affected in terms of the wind environment (e.g. wind-exposed and potentially uncomfortable for the leisure activities proposed).

8. Sun/Shadow Impact

The sun/shadow impacts on the surrounding environment will be minimal as a result of the project. On-site, the northeast portion of the proposed recreation deck will experience the greatest exposure to direct sunlight.

B. Socio-Economic

1. Economic

The project will result in positive regional and state-wide economic benefits, in support of both City and State economic policies and objectives for the visitor industry. Specifically, it will result in increased employment opportunities within the industry, enhance the attractiveness of Waikiki as a primary visitor-designation center, and produce increased tax benefits and indirect revenues for both the private and public sectors.

2. Demographic

Redevelopment will result in an increase in the visitor population in the area and some additional demands on nearby recreational uses and on-site public facilities and services. Refer to *Section 7.C.* which follows.

C. Public Facilities and Services

1. Transportation/Traffic

The proposed project would impact morning or afternoon peak hour traffic by less than one percent within the area. The morning peak hour traffic conditions within the project vicinity are the less critical. Afternoon peak hour traffic at the Kalia-Ena Road/Ala Moana Boulevard will experience operational problems, with or without the project.

2. Water

Consumption of water on the site is expected to increase by 46,200 gpd. Additional water consumed by irrigation of landscaping and maintenance was considered to be minimal.

3. Liquid/Solid Waste Disposal

The average daily wastewater expected to be discharged by the proposed development is estimated to be approximately 72,900 gpd, or a 39,600 gpd increase from the existing volume. The project will also place additional demand on City solid waste disposal facilities.

4. Drainage

Anticipated impacts include short-term construction-related impacts such as noise, dust, traffic disruption and air pollution due to use of diesel equipment. Long-term impacts should be an improvement in the drainage throughout the project area, and a lessening of particulate matter discharged into the Ala Wai Canal or Hilton Lagoon during periods of stormwater runoff.

5. Parks

Because of the increase in units (132 more than existing), the visitor population in the area will increase and there is likely to be increased use of public parks and other recreational facilities within proximity of the site.

Chapter 8

Relationship Between Short Term Uses Of The Environment And Maintenance And Enhancement Of Long-Term Productivity

8. RELATIONSHIP BETWEEN SHORT TERM USES OF THE ENVIRONMENT AND MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

Long-term productivity of the site should be enhanced by the proposed redevelopment. The site is underutilized now and there are existing health and safety concerns, with major repairs needed on the aging structures and facilities.

Because the project proposes no actual change in use but a redevelopment of the existing hotel and commercial uses, which are considered appropriate for the site, no reasonable land use options are foreclosed by the proposal.

The maintenance and enhancement of Waikiki as a primary visitor-destination area is also considered to be a long-term benefit in terms of contributions to State and City policies and objectives for the visitor industry as a whole.

Chapter 9

Irreversible And Irretrievable Commitments Of Resources

9. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The proposed project will result in an irreversible and irretrievable commitment of capital, labor and energy for design and development. Construction materials and human resources (labor) will be committed and land, when redeveloped, will be committed to the resort and commercial uses proposed for the long-term.

It would not curtail potential uses of the land, since the uses proposed are existing now and considered the most appropriate for the site. No natural resources on the site will be committed and the social-cultural resources, such as the Tahitian Lanai and surrounding environs, would be retained.

Chapter 10

Probable Adverse Effects Which Cannot Be Avoided

10. PROBABLE ADVERSE EFFECTS WHICH CANNOT BE AVOIDED

1. Wetlands/Water Quality

There may be short-term, localized, degradation in water quality during site preparation and construction activities.

2. Flora and Fauna

Some mature trees on the site, especially coconut, will have to be removed. A short-term disruption of avifauna will also likely occur during construction activities on the site.

3. Air Quality

It can be anticipated that, for the short-term, air quality in the immediate vicinity of the project site will be affected by dust and automotive pollutants during construction.

4. Noise Impacts

There will be unavoidable noise impact on neighboring buildings north and south of the project site during the construction period,

although these impacts are not expected to be in the "public health and welfare" category, but rather limited to the temporary degradation of the acoustic environment in the immediate vicinity of the construction activity.

5. Views

A change in the visual landscape from the Ala Moana roadway corridor will be unavoidable because of the height of the structure. While no coastal views are impacted, the change in height from existing structures to those proposed will produce a visual change.

The proposed tower will also visually affect the existing impact of high-rise buildings on the adjacent public right-of-way. While this view impact is already established and of low quality, the addition of the new Waikikian Hotel tower will be offset somewhat by improved pedestrian-level views created by more sensitive landscape and structural improvements to the property line abutting this right-of-way.

6. Public Facilities and Services

For the long-term, an increase in visitor population will probably result in increased use of nearby park and recreation facilities; however, this will be offset somewhat by the recreation and

leisure amenities offered on-site in the new development. There will also be some increased demand on solid waste disposal facilities and a short-term, unavoidable impact (noise, dust, traffic disruption, and air pollution) during the construction of drainage improvements.

Proposed mitigation measures to minimize these and other, avoidable impacts are described in *Chapter 11*, which follows.

Chapter 11

Mitigation Measures Proposed To Minimize Impact

11. MITIGATION MEASURES PROPOSED TO MINIMIZE IMPACT

A. Wetlands/Water Quality

It is expected that most of the short-term construction-related impacts on water quality will be ameliorated through the use of berms and swales to retain runoff generated during periods of heavy rains.

B. Flora and Fauna

The loss of mature trees on the site will be unavoidable, but minimized to the extent possible by adhering to the basic landscape concept, which is to retain the existing tropical lushness of the project site and to replace and relocate mature trees, especially coconuts, whenever possible. Refer to *Figure 8.*

Tree loss will also be offset somewhat by additional landscaping both within the interior of the site and on the perimeters, e.g. the Diamond Head and Ewa boundaries for the purpose of screening and sound attenuation. As noted previously, the major tree type will continue to be the Coconut, with further emphasis given to flowering and exotic tropical species, shrub and groundcover. The

site property line running parallel to the public right-of-way will also be improved with landscaping.

Existing trees will be re-located or removed and replaced only if:

a. They are in direct conflict with new construction;

b. Pose or may pose a potential hazard to the public; or

c. Have caused or may cause extraordinary long-term maintenance and safety problems.

Existing trees and palms falling into the above categories which will be relocated include Coconut (Cocoa nucifera) and Hala (pandahua odoratissimus).

Where possible, trees to be relocated will be moved once to their permanent location. However, if this is not possible, then they will be stored on-site and maintained for future re-use.

Existing trees which may be removed and replaced include the Ficus (Banyan) trees. Their sheer size may preclude relocation. In addition, long-term maintenance may pose operational and safety problems.

If feasible, the existing Ficus trees could be donated to the City for use in nearby parks or other open space areas.

Should they be replaced, possible replacement species include: Monkeypod (Samanea saman), Fiddleleaf Fig (Ficus lyrata) or False Kamani (Terminalia catappa).

It is further expected that refinements will be made to the overall landscape plan as the project progresses through the design review and development processes required for all government permit approvals.

C. Archaeological

In conjunction with construction redevelopment, several phases of archaeological monitoring and testing are necessary to protect potential archaeological data and resources. Proposed preliminary archaeological data recovery during the earlier phases to assist in determining testing areas and procedures are:

1. Monitoring of core sample borings during the construction design stage to recover data on depths of fill, stratigraphic sequences, and context.

2. Additional monitoring of the surface removal of existing structures and pavement. Existing subsurface foundations, piers, and utility service pipes will be left in situ until after archaeological testing and determinations to avoid further disturbance of archaeological resources.

3. Backhoe-assisted archaeological excavation testing will be recommended following retrieval of core analysis and determined in conjunction with known feature locations.

A complete data recovery plan will be formulated contingent upon the results of this initial testing phase.

D. Air Quality

Some degradation of air quality within the immediate vicinity of the project site is expected during construction activities. These effects will be monitored on-site and all appropriate governmental requirements regarding control of fugitive dust and other pollutants will be met.

E. Noise Impact

Because impacts from traffic noise are possible at the proposed hotel units in the project tower, and particularly at those end units which face Ala Moana Boulevard, the use of total closure and air-conditioning is proposed. Minimum exterior-to-interior noise reductions of approximately 25 dB are required to achieve an interior noise level of 45 Ldn, which is the maximum recommended level of interior noise to minimize risk of adverse health and welfare effects.

This level of exterior-interior noise reduction is not difficult to obtain with standard construction materials and methods. However, because of the relatively high levels of exterior noise associated with Ala Moana Boulevard, it is proposed that glazing and exterior wall components with minimum STC 35 rating be used for the units to minimize risks. The glazing is normally the weak acoustical link, but attainment of the STC 35 rating is possible through the use of minimum 9/32" thick, laminated, glass on the building's exterior.

As noted previously, audible construction noise will likely be unavoidable during the construction period. Mitigation of construction noise to inaudible levels will not be practical in all cases, due to the intensity of construction noise sources (80 to 90+ dB at 50 feet distance), and due to the exterior nature of the work (pile

driving, grading and earth moving, trenching, concrete pouring, hammering, etc.) The use of properly-muffled construction equipment will be required on the job site.

The incorporation of State Department of Health (DOH) construction noise limits and curfew times applicable on Oahu are other standard noise mitigation measures which will be applied to construction activities. Noisy construction activities would not be allowed on holidays, Saturdays, Sundays, during the early morning, and during the late evening periods under DOH permit procedures.

F. Views

The low building height (40 feet) will reduce the visual impact of the proposed Ocean Terrace located at the makai portion of the site. Visual impact may also be reduced through architectural methods, such as terracing the floors and the use of appropriate colors, materials, and landscaping to include screening and planting to visually reduce the buildings scale.

G. Wind Impacts

The only known potentially adverse wind impacts are on-site and will affect the proposed recreation deck. The wind environment in

this area will be further tested to develop a landscape plan affording suitable wind shelter.

H. Sun/Shadow Impact

On-site solar impacts may adversely affect a portion of the proposed recreation deck. Landscaping refinements and a trellis are proposed to provide additional shade during those period of exposure to direct sunlight.

I. Public Facilities and Services

1. Transportation/Traffic

The existing left-turn storage lane on Ala Moana Boulevard, Diamond Head direction, is 175 feet long. This is not considered sufficient to accommodate afternoon peak hour volumes. This left-turn lane should be extended from the existing 175 feet to 250 feet in length.

2. Liquid/Solid Waste Disposal

As noted previously, sections of the existing sewer system will be inadequate to accommodate increased demands of the project. To remedy this situation, it is proposed to construct a

relief sewer line along Ala Moana Boulevard from the intersection of the Boulevard and Kalia Road to the existing Fort DeRussy Wastewater Pumping Station for a distance of approximately 1,400 lineal feet. The relief sewer line is intended to intercept the sewage from the makai area of Ala Moana Boulevard and by-pass the inadequate sewer lines along the Boulevard. No sewer connection for the project will be permitted until the relief lines are accepted by the City.

The redevelopment will also place additional demand on City solid waste disposal facilities. It is expected that State and City revenues derived from the new hotel and commercial uses will be sufficient to finance the project's fair share of the cost for major capital improvements such as solid waste disposal facilities and to provide the same level of per-unit services now available. The City has future plans to construct a solid waste transfer station. Solid waste collected at this transfer station will be hauled either to a sanitary landfill site for disposal or to a proposed refuse-to-energy plant.

3. Drainage

Drainage improvements will be developed to City standards to ensure that adequate and appropriate improvements are made. Short-term construction activities will comply with State

Department of Health noise requirements and the City's grading ordinance which require protective measures to mitigate dust and erosion.

4. Parks

An anticipated increase in visitor use of nearby parks and recreation facilities will be offset somewhat by a number of on-site amenities, such as the proposed recreation deck, which will provide areas for shuffleboard, a putting green and sitting and sunning areas. A swimming pool will also be provided at ground level. There is also a planned health and exercise facility to be located at the recreation deck level.

Chapter 12

Unresolved Issues

12. UNRESOLVED ISSUES

A. Archaeological

To the extent that potential findings are possible, but unknown at this time, this may be considered an unresolved issue; however, a complete on-site monitoring and data recovery program will resolve issues in this area as they occur.

B. Design Alternatives

It is anticipated that site-planning and design refinements will take place during the development process. These may include refinements to landscaping as well. These refinements will be directed at further mitigating identified on-site and off-site impacts resulting from the proposed development. Examples are the wind and solar effects on the proposed recreational deck and planned passive recreational opportunities for the site.

C. Development Plan (DP) Amendment

Chapters 1 and *6* discuss the fact that the proposed project would result in a net increase of 132 visitor units on the Waikikian Hotel

site. It is also noted that DP Section 32-2.2 (b) (2) (B) sets forth a policy guideline of "about 30,000" visitor units for Waikiki.

The following aspects to this issue, including those already discussed should be considered:

a. The proposed project represents a modest increase of less than one percent to Waikiki's hotel unit inventory.

b. It conforms to both State and City expressed policy intent to support and improve prime visitor destinations, Waikiki specifically.

c. Infrastructure is either adequate now, or will be made adequate, to service and support the additional 132 units proposed.

d. Requiring a DP amendment to exceed the policy guideline of "about 30,000" visitor units for a one-percent increase in units on this site is neither consistent, in terms of past approvals for new hotel units, nor supportive of other long-term policy objectives, such as upgrading visitor industry facilities.

e. If the policy concern in this regard is infrastructure, a valid concern throughout Waikiki, then that concern can

and will be met. If design is the concern, all requirements of the City's Waikiki Special District will be met as well.

In summary, a DP amendment should not be required for this redevelopment project because interpreting the 30,000 figure as an absolute in this case is inconsistent, especially in view of the numerous figures given and definitions developed for "visitor units" in Waikiki, and in view of past approvals, and because this interpretation is contrary to other long-term State and City policy objectives and plans.

However, since the Department of General Planning has indicated that an amendment will be required, this matter has been included within this Chapter as an unresolved issue.

Chapter 13

Consulted Parties And Participants In The DEIS Preparation Process

13. CONSULTED PARTIES AND PARTICIPANTS IN THE DEIS PREPARATION PROCESS

1. Consulted Parties

The Environmental Impact Statement Preparation Notice (EISPN) for the proposed Waikikian Hotel was published in the OEQC Bulletin of July 8, 1990. The thirty-day review period, announced in the OEQC Bulletin, ended on August 8, 1990. The EISPN together with the Environmental Assessment report were mailed directly to the agencies and organizations listed below. The list contains parties believed to have an interest in the project or who requested consulted party status.

Federal

U.S. Department of Housing and Urban Development

U.S. Army Corps of Engineers

State

Housing Finance and Development Corporation

Office of State Planning

Department of Business and Economic Development

Department of Land and Natural Resources

Department of Health

Department of Transportation

Department of Education

Office of Environmental Quality Control

U.H. Environmental Center

City and County of Honolulu

Department of General Planning

Department of Land Utilization

Department of Transportation Services

Department of Public Works

Building Department

Board of Water Supply

Fire Department

Police Department

Office of Human Resources

Department of Parks and Recreation

Department of Finance

Department of Housing and Community Development

Individuals and Organizations

Hawaiian Electric Company

Outdoor Circle

Waikiki NB#9

Waikiki Improvement Association

Waikiki Residents Association

2. Participants in the DEIS Preparation Process

Name	Position	Highest Degree	Area of Expertise
Terry Brothers	Associate Wilbur Smith & Associates	M.S. Traffic Engineering	Traffic Engineering
Michael Chu	Principal Michael Chu Landscape Architect	B.S. Landscape Architecture	View Analysis
Paul Cleghorn	Director of Applied Research Bishop Museum	Ph.D. Anthropology	Hawaiian Archaeology
Anton E. Davies	Principal RWDI Inc.	Ph.D. Mechanical Engineering	Air Quality and Microclimate Consultant
Yoichi Ebisu	President Y. Ebisu & Associates	M.S. Electrical Engineering	Acoustical Consulting
Harvey Hida	President Hida, Okamoto & Associates, Inc.	B.S. Civil Engineering	Civil / Environmental Engineering
Henry Inui	Vice President KOP Hawaii, Inc.	B.A. Architecture	Architecture
Allen Kajioka	Chairman KOP Hawaii, Inc.	B.A. Architecture	Architecture
Tyrone Kusao	President Tyrone T. Kusao, Inc.	M.S. City & Regional Planning	Planning and Zoning Consultant
Mike Miyabara	Principal Miyabara Associates	B.S. Landscape Architecture	Landscape Architecture
Barabara Moon	Staff Assistant to Tyrone Kusao	B.J. Journalism	Land Use Consultant
Mark D. Vanderheyden	Project Coordinator RWDI Inc.	M.S. Engineering - Engineering Physics	Air Quality Consultant
Bill F. Waechter	Senior Project Coordinator	Diploma of Construction Engineering Technology	Microclimate Consultant Pedestrian Winds, Snowdrift and Sun/Shade

Chapter 14

Comments During The Consultation Period

14. COMMENTS DURING THE CONSULTATION PERIOD

The following pages contain (1) a copy of DLU's determination letter requiring a EIS, (2) a copy of the Environmental Assessment Report, (3) the project notice in the OEQC Bulletin of July 8, 1990 and (4) comments received and follow-up responses.

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU HAWAII 96813 • PHONE 523-4432

FRANK F. FASI
MAYOR

DONALD A. CLEGG
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

90/SMA-47(BWM)

June 28, 1990

Tyrone T. Kusao
1188 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Kusao:

ENVIRONMENTAL ASSESSMENT/DETERMINATION
CHAPTER 343, HRS

Recorded Landowner/Applicant	:	JAMI Corporation
Agent	:	Tyrone T. Kusao, Inc.
Location	:	1811 Ala Moana Boulevard, Waikiki
Tax Map Key	:	2-6-09: 02, 03, 10
Request	:	Demolish Waikikian Hotel and construct a new 264-room hotel, 350 feet in height
Determination	:	Environmental Impact Statement (EIS) Required

We have reviewed the Environmental Assessment (EA) you prepared for the proposed project to satisfy the requirements of Chapter 343, HRS. We have determined that an EIS is required, and have filed the attached Preparation Notice with the Office of Environmental Quality Control. Please send copies of the EA and the EIS Preparation Notice to relevant agencies and community groups. Attached is a basic list of parties to be consulted, to which you may add.

If you have any questions, please contact Mr. Bennett Mark of our staff at 523-4077.

Very truly yours,

Donald Clegg

DONALD A. CLEGG
Director of Land Utilization

DAC:sl
0261N/11

DEPARTMENT OF LAND UTILIZATION
90/SMA-57(BWM)

CHAPTER 343, HRS
ENVIRONMENTAL ASSESSMENT/DETERMINATION

Recorded Landowner/Applicant	:	JAMI Corporation
Agent	:	Tyrone T. Kusao, Inc.
Location	:	1811 Ala Moana Boulevard, Waikiki
Tax Map Key	:	2-6-09: 02, 03, 10
Request	:	Demolish Waikikian Hotel and construct a new 264-room hotel, 350 feet in height
Determination	:	Environmental Impact Statement (EIS) Required

Attached and incorporated by reference is the environmental assessment prepared by the applicant for the project.

On the basis of the environmental assessment, we have determined that an Environmental Impact Statement is required.

Dated at Honolulu, Hawaii, this 28th day of June, 1990.

APPROVED Donald Clegg
DONALD A. CLEGG
Director of Land Utilization
City & County of Honolulu
State of Hawaii

DAC:sl
0261N/10

PARTIES TO BE CONSULTED IN THE PREPARATION OF THE
DRAFT ENVIRONMENTAL IMPACT STATEMENT

Federal

U.S. Department of Housing and Urban Development
U.S. Army Corps of Engineers

State

Housing Finance and Development Corporation
Office of State Planning
Department of Business and Economic Development
Department of Land and Natural Resources
Department of Health
Department of Transportation
Department of Education
Office of Environmental Quality Control
U.H. Environmental Center

City and County of Honolulu

Department of General Planning
Department of Land Utilization
Department of Transportation Services
Department of Public Works
Building Department
Board of Water Supply
Fire Department
Police Department
Office of Human Resources
Department of Parks and Recreation
Department of Finance
Department of Housing and Community Development

Individuals and Organizations

Hawaiian Electric Company
Outdoor Circle
Waikiki NB#9
Waikiki Improvement Association
Waikiki Residents Association

0261N/12

ENVIRONMENTAL ASSESSMENT

WAIKIKIAN HOTEL
WAIKIKI, OAHU, HAWAII

SUBMITTED BY JAMI CORPORATION

AGENT: TYRONE T. KUSAO, INC.

MAY 1990

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
[illegible]

May 15, 1990

Mr. Donald A. Clegg
Director
Department of Land Utilization
City and County of Honolulu
650 S. King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Subject: Environmental Assessment, Waikikian Hotel,
Tax Map Key: 2-6-9: 2, 3, 10.

I am submitting on behalf of my client, JAMI Corporation, an Environmental Assessment for a new hotel and commercial uses on the site of the existing Waikikian Hotel. In consulting with your staff on this proposal, I was advised that an Environmental Impact Statement (EIS) will most likely be required; the Assessment was prepared with that in mind.

After meeting Chapter 343, HRS, requirements for the EIS, the project will also require a Special Management Area Permit and a Waikiki Special District Permit (Major). Additional information required for processing those permits will be submitted at a later date, under separate cover.

In the meantime, if you should have questions or wish additional information, please feel free to contact me.

Very truly yours,

Tyrone T. Kusao

TTK:afk
Enc.
cc: MGS Hawaii Corporation
KOP Hawaii Inc.

ENVIRONMENTAL ASSESSMENT

WAIKIKIAN HOTEL
WAIKIKI, OAHU, HAWAII

SUBMITTED BY JAMI CORPORATION

AGENT: TYRONE T. KUSAO, INC.

MAY 1990

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APPENDIX A.- SITE PHOTOGRAPHS

ENVIRONMENTAL ASSESSMENT

WAIKIKIAN HOTEL
TAX MAP KEY 2-6-9: 02, 03 & 10

1. GENERAL INFORMATION

APPLICANT:

JAMI Corporation
Pacific Tower, Suite 1810
1001 Bishop Street
Honolulu, Hawaii 96813
(808) 528-2666

RECORDED FEE OWNER:

Same as above

AGENT:

Tyrone T. Kusao, Inc.
1188 Bishop Street
Suite 2507
Honolulu, Hawaii 96813
(808) 538-6652

PROPERTY PROFILE:

Location:	Waikiki, Oahu
Tax Map Key:	2-6-9: 02, 03 & 10
Land Area:	82,559 square feet (1.9 acres)
State Land Use District:	Urban
Development Plan Map:	Resort
Public Facilities Map:	NA
Existing Zoning:	Resort Hotel Precinct
Height Limit:	350 feet
Special District:	Waikiki
Special Management Area:	Yes
Flood Zone:	AO (02 & 03); A (10)

AGENCIES CONSULTED:

For the purpose of this assessment, the City Department of Land Utilization was consulted. It was determined during consultation that potential impacts of the proposal (described in Section 2.2) would likely result in a determination that an Environmental Impact Statement (EIS) will be required. This assessment reflects that determination and anticipates that an EIS will be required. Appropriate agencies will be further consulted during the processing of the EIS.

2. GENERAL DESCRIPTION

2.1 Existing Use

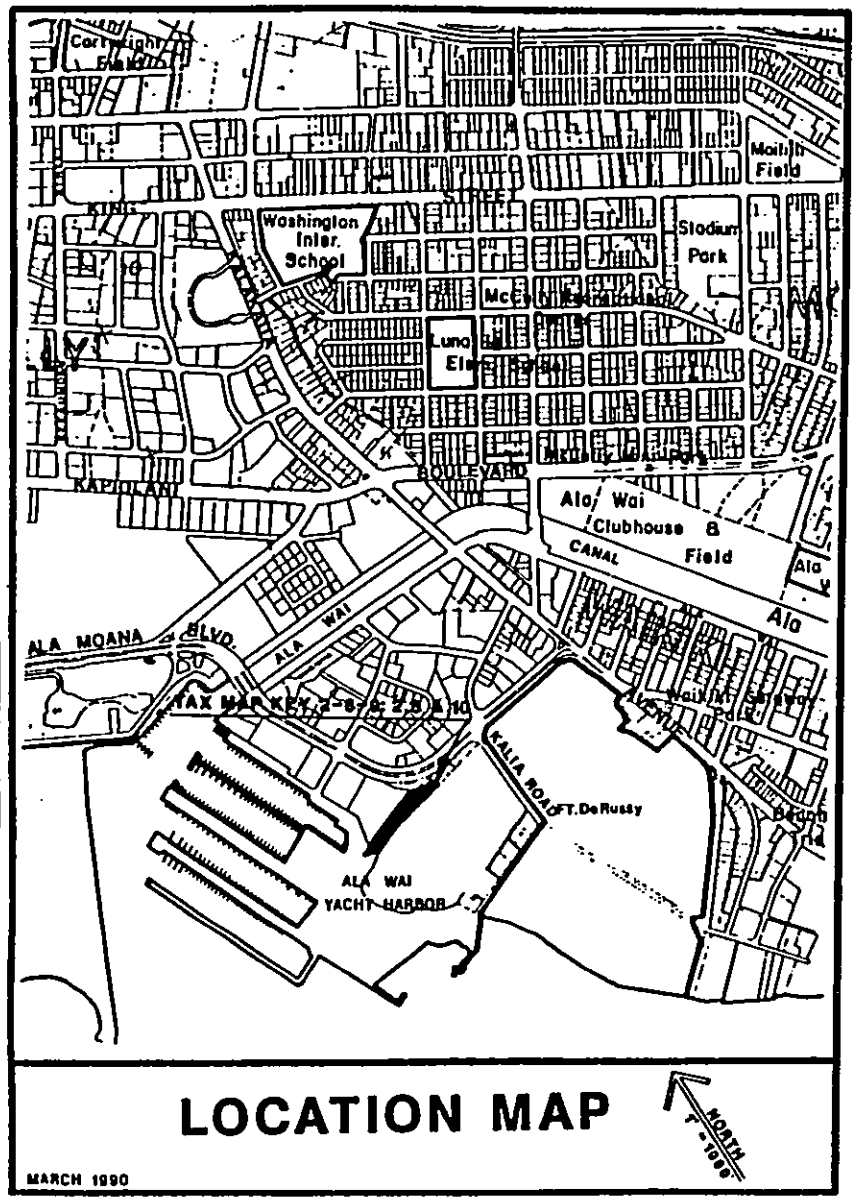
The 1.9-acre site fronts Ala Moana Boulevard in Waikiki and contains the existing 132-room Waikiian Hotel, a restaurant (the Tahitian Lanai), and several small retail stores. At the east end of the site is a seven-story structure with 44 guest rooms; the retail uses, primarily gift shops and convenience stores, occupy the ground floor of this structure. At the west end of the site is the Tahitian Lanai and two wooden, two-story structures containing 88 cabana-type guest accommodations.

The existing Waikikian Hotel occupies approximately 87,281 square feet of the site, with the Tahitian Lanai accounting for about 6,425 square feet and the retail uses occupying the remaining 1,400 square feet. The combined existing uses on the project site total approximately 95,106 square feet of floor area.

About 28 on-site parking spaces are provided just off the Ala Moana Boulevard frontage. Parking for the Tahitian Lanai is located on land leased from the State adjacent to the Ala Wai Yacht Harbor. A Location Map is included as Figure 1., and Appendix A. contains Site Photographs showing existing conditions on the site.

2.2 Proposed Use

The applicant is proposing to demolish the Waikikian Hotel and rebuild a new hotel on the site with approximately 264 units (totalling 236,330 square feet), 20,000 square feet of commercial and administrative office space, and parking for 180 automobiles.



-3-

FIGURE 1.

There will be three parking levels, starting at grade, and a tower containing 256 of the guest rooms to a total height of 350 feet. A separate, four-story structure will contain eight additional "Ocean Terrace" guest rooms. Please refer to Figure 2., Site Drawings.

Of the total 20,000 square feet of commercial/office space, approximately 8,000 will be occupied by office and administrative functions, 7,000 will be set aside for shops, and 5,000 square feet will house the Tahitian Lanai, which will continue its restaurant on the project site.

3. TECHNICAL CHARACTERISTICS

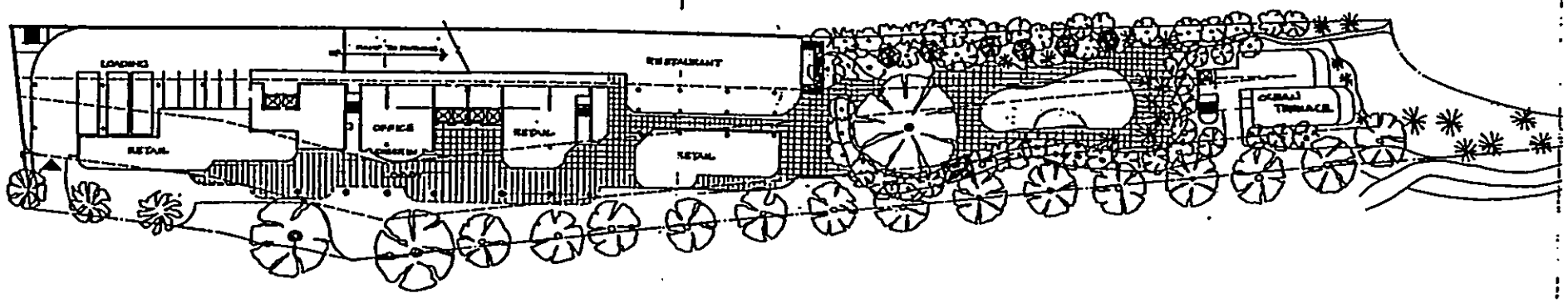
3.1 Use Characteristics

The project site is in the Resort Hotel Precinct of the Waikiki Special District. Both the existing and proposed uses are principal permitted uses in the Precinct, however, because demolition and major new construction are proposed, and the site is also within the Special Management Area, a Special Management Area Permit and Waikiki Special District (Major) Permit are required.

3.2 Physical Characteristics

The parcels to be redeveloped are level, but relatively narrow and irregularly shaped. Only a portion of the site fronts Ala Moana Boulevard, with one property line running parallel to a paved public right-of-way to the Ala Wai Yacht Harbor and another adjoining the Hawaiian Hilton Village complex. At the western end of the site, the property line abuts a sandy beach and the Hawaiian Hilton Lagoon. The interior of the site is heavily landscaped with tropical plants and mature native trees in the area of the restaurant and guest rooms.

-4-



PROJECT DATA

- Allowable Floor Area:
  FAR = (82,539 x .000014) + 1.54 = 2,693
  STREET BONUS = 22,820 (Approximate)
  (82,539 + 22,820) x 2,693 = 284,000 SF

- FLOOR AREA:

Guest Room	236,330
B.O.H/Public Space	
Mechanical	34,670
Commercial	12,000
TOTAL	283,000

- NOS. OF GUEST ROOM:
  256 Units (Hotel Tower)
  8 Units (Ocean Terrace)
  264 Units Total

- CARPARK:
  180 Car Park Stalls

- LOADING:
  5 Space Allowed

site plan

FIGURE 2.A.

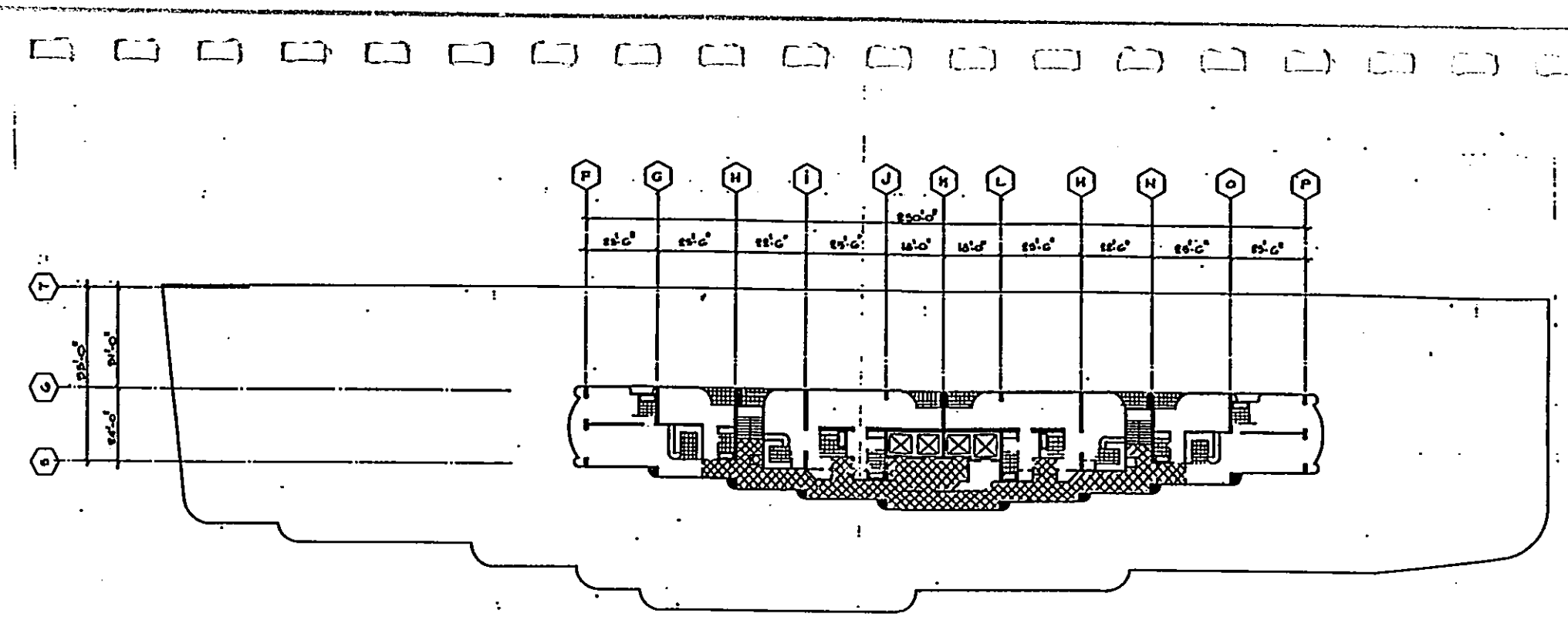
KOP HAWAII

THE WAIKIKIAN HOTEL

Honolulu, Hawaii

7 May 1990

RECEIVED AS FOLLOWS



typical tower plan

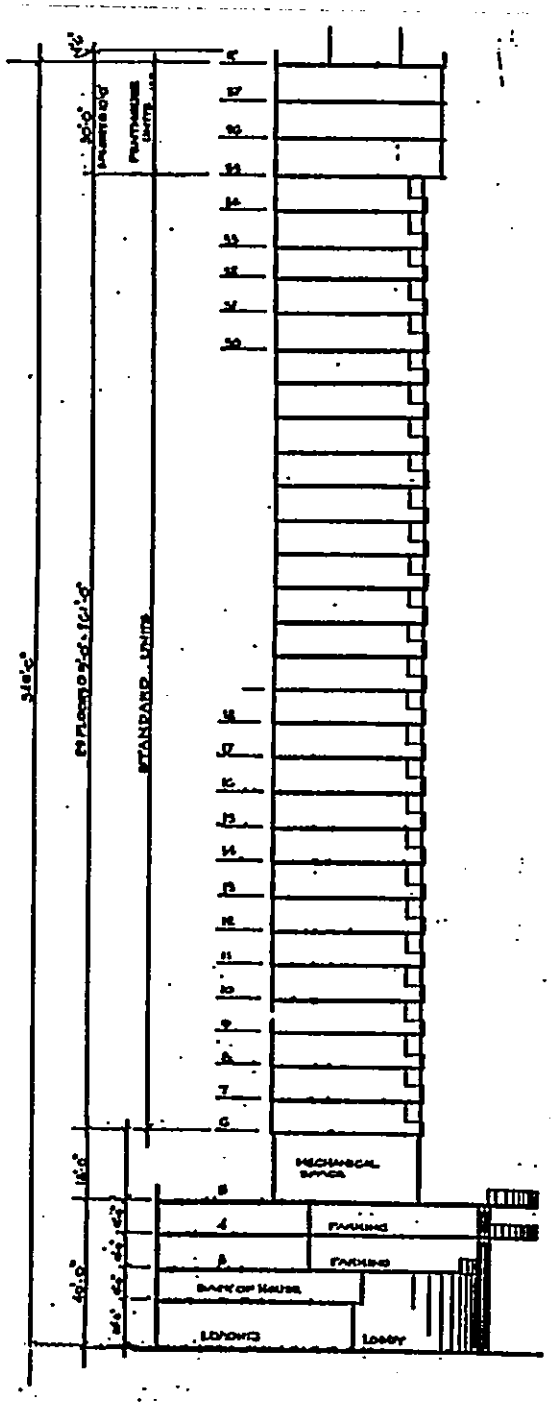
FIGURE 2.B.

KOP HAWAII

THE WAIKIKIAN HOTEL

Honolulu, Hawaii

7 May 1990



building section

FIGURE 2.C.

KOP HAWAII

THE WAIKIKIAN HOTEL

Honolulu, Hawaii

7 May 1990

3.3 Construction Characteristics

All existing structures on the project site will be demolished. Other construction activities will include clearing, but minimal grading, since the site is relatively level. All new construction work will be done at grade, and no major alteration of land forms is proposed.

3.4 Utilities and Services

Public utilities are now available for the existing uses and are expected to be adequate to serve the proposed new hotel. Electrical and telephone services are also available. Any additional deaands on public services or utilities will be more fully studied and discussed as a part of the EIS.

3.5 Access and Parking

As previously noted, 180 parking stalls will be provided in three levels with the entrance/exit off Ala Moana Boulevard. Loading spaces will also be provided (Refer to Figure 2.).

4. ECONOMIC AND SOCIAL CHARACTERISTICS

4.1 Development Costs/Phasing

Construction costs are estimated at $70 million. A start date in mid-1991 is planned, with completion in mid-1993.

4.2 Employment

The existing Waikikian Hotel operation employs about 30 people; the Tahitian Lanai and small retail uses account for some additional employment. While future employment is not known at this time, it can be anticipated that because of the increase in restaurant/retail square footage over that existing (12,000 square feet versus about 7,825 square feet) additional opportunities for employment will be created. It is also likely that additional jobs will be created by the new hotel operation as well.

5. ENVIRONMENTAL CHARACTERISTICS

5.1 Soils/Topography

The United States Department of Agriculture Soil Conservation Survey identifies soils on the project site as Jaucas sand (JaC), 0 - 15 percent slopes. In a representative profile, the soil is further described as being single grain, pale brown to very pale brown, sandy, and more than 60 inches deep. Permeability is described as rapid, and runoff very slow to slow. The hazard of water erosion is said to be slight, but wind erosion is described as a severe hazard where vegetation has been removed.

There are no unique topographical features on the site and it is relatively level. A Topographical Survey will be submitted as a part of the EIS.

5.2 Drainage

Since the site has been developed for hotel and commercial uses since 1956, an existing drainage infrastructure is already in place and will be used. Drainage toward the Ala Moana Boulevard frontage is through an existing culvert and there is some drainage toward the

ocean from the property. Impacts and possible improvements needed either for the short-term (during construction), or long -term, will be discussed in more detail during the EIS process and in consultation with the appropriate public agencies.

5.3 Flood Zone

Parcels 2 and 3 are located within the Federal Flood Insurance Rate Map (FIRM) Zone AO, designating areas of 100-year shallow flooding where depths are between one to three feet. Parcel 10 is within an A zone, areas of 100-year flooding with base flood elevations not determined. Figure 3, is a Flood Elevation Map showing designations and elevations, where determined, for the project site.

5.4 Shoreline Survey

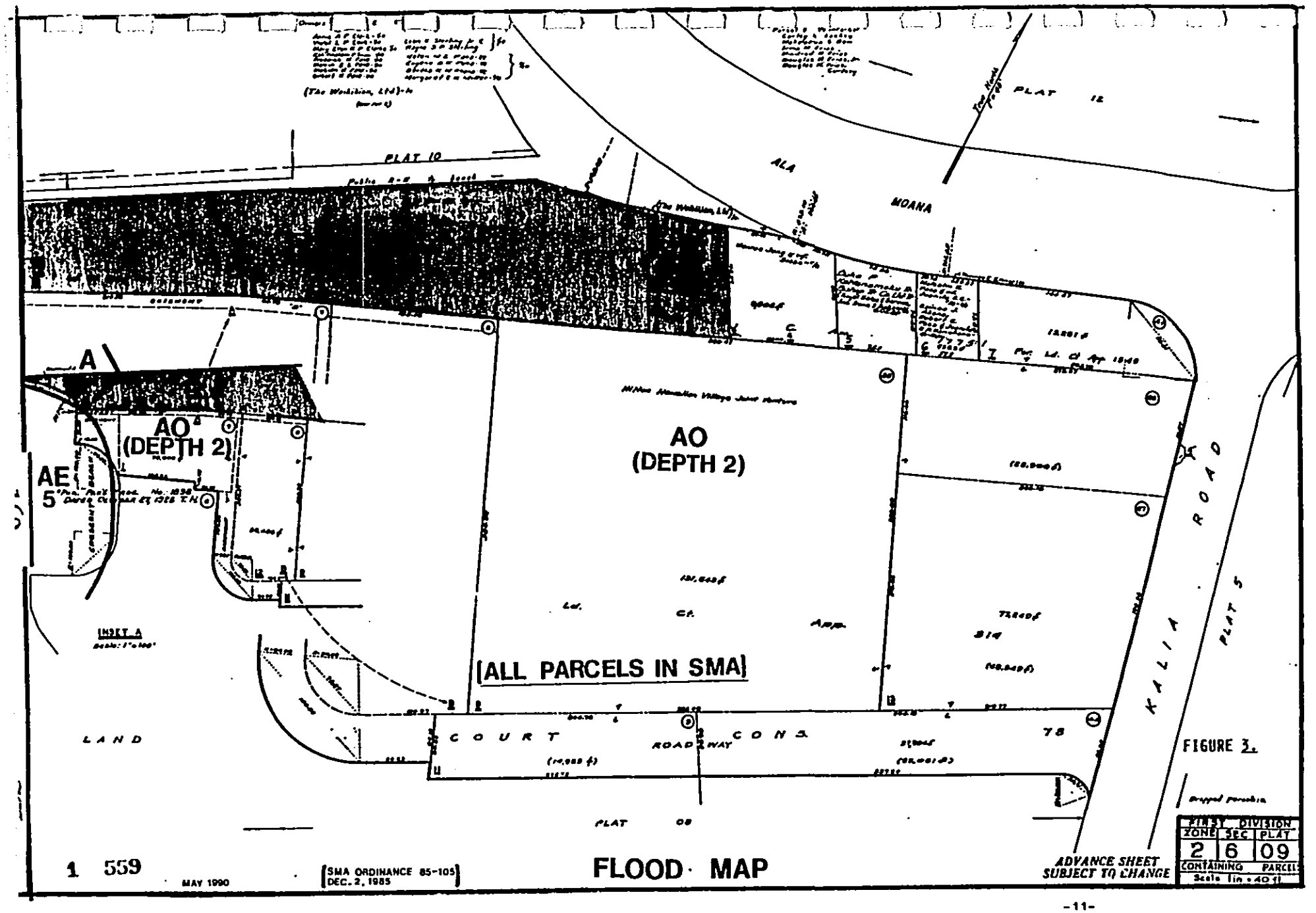
While the site is entirely within the Special Management Area and its western and borders the man-made Hilton lagoon, it is not adjacent to the shoreline and a shoreline certification is not required.

6. AFFECTED ENVIRONMENT

6.1 Relationship to Surrounding Area

To the north of the project site, across the paved public right-of-way, is the Ilikai Hotel. As noted previously, one length of the project site runs in a westerly direction parallel to this right-of-way. To the east are four parcels fronting Ala Moana Boulevard to the intersection at Kalia Road, which contain Waikiki Mini Shops, a car rental service, and the Kobe Restaurant. Immediately abutting a portion of the project site to the

RECEIVED AS FOLLOWS



south is the Hilton Hawaiian Village (Hilton Parking Garage and Rainbow Tower).

The surrounding area is a typical mixture of hotels and commercial uses which either directly serve or indirectly support the principal visitor-oriented function of the Waikiki Resort Precinct. Both the existing uses on the site and those proposed are compatible with uses and zoning in the surrounding area.

To the west, as previously noted, is the Hilton Lagoon, the Ala Wai Yacht Harbor and beyond, adjacent to the shoreline, is a public park.

6.2 Relationship to Public Use Areas and Natural Resources

The existing public right-of-way to Ala Wai Yacht Harbor and beyond will not be affected by the proposed demolition and new construction. Since a popular sandy beach and the lagoon abut the project site at its west end, both short-term impacts during construction and longer-term impacts on this area will be evaluated fully during the EIS process. No other public use areas or natural resources would be impacted by the project.

6.3 Relationship to Historic, Cultural and Archaeological Resources

There are no known eligible or registered historic sites on the parcels proposed for redevelopment, nor are there any known archaeological resources of value. The site has been graded and fully developed for a hotel and accessory uses since 1956 and there have been no surface indications of archaeological resources.

Findings and recommendations resulting from work performed by an archaeological consultant will be included in the EIS and mitigative measures will be taken as appropriate.

6.4 Scenic Views

No ocean views are available from the Ala Moana Boulevard frontage. A view of the lagoon and ocean is available at the westerly end of the site, near the restaurant and hotel swimming pool. Ocean views are available to guests and residents of nearby high-rises. The latter may be affected, because of the proposed height of the new hotel structure; however, the narrowness of the site and design of the thin tower proposed may open up views not now available. This potential impact on views will be more fully evaluated in the EIS.

6.5 Air Quality

It can be anticipated that there will be an impact on the existing and future ambient air quality for the short-term, during construction activity, and possibly in the long term as a result of vehicular activity. Traffic is expected to be the major long-term source of pollutants in this regard. A Traffic Impact Analysis and Air Quality Study will be made a part of the EIS.

6.6 Water Quality

A full discussion of any potential effects on the water quality will be provided in the EIS.

6.7 Noise

Noise will be generated during proposed demolition and

construction on the site and mitigative measures will be required. Other potential noise generators will be traffic and the customary noise related to the operation of a hotel and commercial uses on the site, e.g. cooling equipment, deliveries, automobile noise from the parking levels, etc.) Recommendations of an acoustical consultant will be provided during EIS processing.

6.8 Flora and Fauna

As noted earlier, the interior of the site, in the area of the two-story structures with guest rooms and the restaurant, is heavily landscaped with a variety of tropical vegetation. There are also a number of mature native trees in this area, including palms, banyan, rubber, lauhala, and shower, which provide shade, visual interest, and a habitat for birds. Demolition and new construction will impact on the existing vegetation, and the proposed site design and new landscaping will most likely affect on-site birds, at least in the short term. It should be noted that there are no known rare or endangered species of either plants or birds on the site.

6.9 Other

Consultation with the Department of Land Utilization indicated concern about potential impacts from wind and shadows as a result of the new hotel 350-foot tower. While the extent of these possible impacts is unknown at this time, they will be addressed in studies included as a part of the EIS.

7. PUBLIC POLICIES

7.1 State

The project site is within a State-designated Urban District and the proposed uses are permitted within the District. The relationship to State Coastal Zone Management policies is discussed below.

7.2 City and County General Plan, Development Plan and Zoning

a. General Plan.

The proposed project would support two major General Plan objectives as follows:

Economic Activity, Objective B.: "To maintain the viability of Oahu's visitor industry," and Physical Development and Design, Objective A.: "To coordinate changes in the physical environment of Oahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located."

The project's relationship to these and all other relevant policies and objectives will be fully discussed in the EIS.

b. Development Plan.

Section 32-2.2, Urban Design Principles and Controls for the Primary Urban Center, contains a section addressing Waikiki and provides policy guidelines to enhance the attractiveness and quality of this primary tourist destination area. The project will be designed in such a ways as to take into account paragraphs (A) through (K) of this section, as applicable. A full discussion of the project's relationship to the relevant guidelines will be included in the EIS.

c. Land Use Ordinance (LUO).

The project will be designed to conform to the purpose of the Waikiki Special District (LUO Section 7.80, A. through L.), as well as all general development standards for the District (Section 7.80-3) and specific standards for Resort Hotel Precincts (Section 7.80-5). These will include landscaping and front yard requirements for the District (30 feet); front, side and rear height setbacks; density (284,000 square feet permitted, 283,000 square feet proposed); and a 50 percent open space requirement on the project site.

8. RELATIONSHIP TO SECTION 205A-2, HRS, COASTAL ZONE MANAGEMENT AND SECTION 33-3.2, ROH, SPECIAL MANAGEMENT AREA GUIDELINES

Access to Public Beaches, Recreational Areas and Natural Reserves

The existing paved public right-of-the way will not be affected by the proposed project. The nearest recreational areas are the Ala Wai Yacht Harbor and the lagoon and sandy beach at the west end of the site. Access to the beach, lagoon, and Harbor will not be affected.

Location of Public Recreation Areas and Preserves

The nearest public recreation area is a public park beyond the lagoon and adjacent to the shoreline. There will be no impact on the park; there are no wildlife preserves in the vicinity of the project site.

Provisions for Liquid and Solid Waste Disposition

Liquid waste will be disposed of by a public sewer system; solid waste collection will be by a private firm.

Alterations to Existing Land Forms, Vegetation, Effects on Water Resources, Scenic and Recreational Amenities, Flood Danger, Landslides and Erosion

There will be no major dredging or grading, since the site is level, and all structures will be built at grade. Since portions of the site are now heavily landscaped and mature trees on the site provide a habitat for birds, vegetation and the habitats it provides will be affected. This impact will be more fully discussed in the EIS and mitigative measures proposed. Potential effects on lagoon waters during construction activities will also be evaluated. The project will have some effect visually on the surrounding environment; existing and future views will be analyzed during the EIS processing. There are no anticipated adverse effects on nearby recreational amenities, all required flood hazard requirements will be met, and there are no known landslide or erosion hazards.

Adverse Environmental or Ecological Effects and Elimination of Planning Options

While the project site is properly designated and zoned for the proposed use and no planning options would be eliminated, some environmental effects are anticipated. These will be identified and evaluated, and appropriate mitigative measures will be proposed as a part of the EIS.

Consistency With the General Plan and Zoning

As noted above, both the existing and proposed uses are consistent with adopted land use policies and zoning for the project site.

Dredging, Filling and Other Alterations

No dredging or fill is proposed and grading will be minimal.

Reduction of Beaches or Other Recreation Areas

The proposal would not result in the reduction of any beaches or the identified recreation facilities in the surrounding area.

Access to Tidal and Submerged Lands

No access to tidal or submerged lands would be affected by the proposal.

Line of Sight Toward the Sea from the Coast Highway

There are no coastal highway views available now; a more detailed examination of views resulting from the proposed project will be included in the EIS.

Effects on Water Quality, Fishing Grounds, Wildlife Habitat and Agricultural Lands

There are no fishing grounds, wildlife habitats or agricultural lands directly affected by the proposal; effects on water quality will be further evaluated during the EIS process.

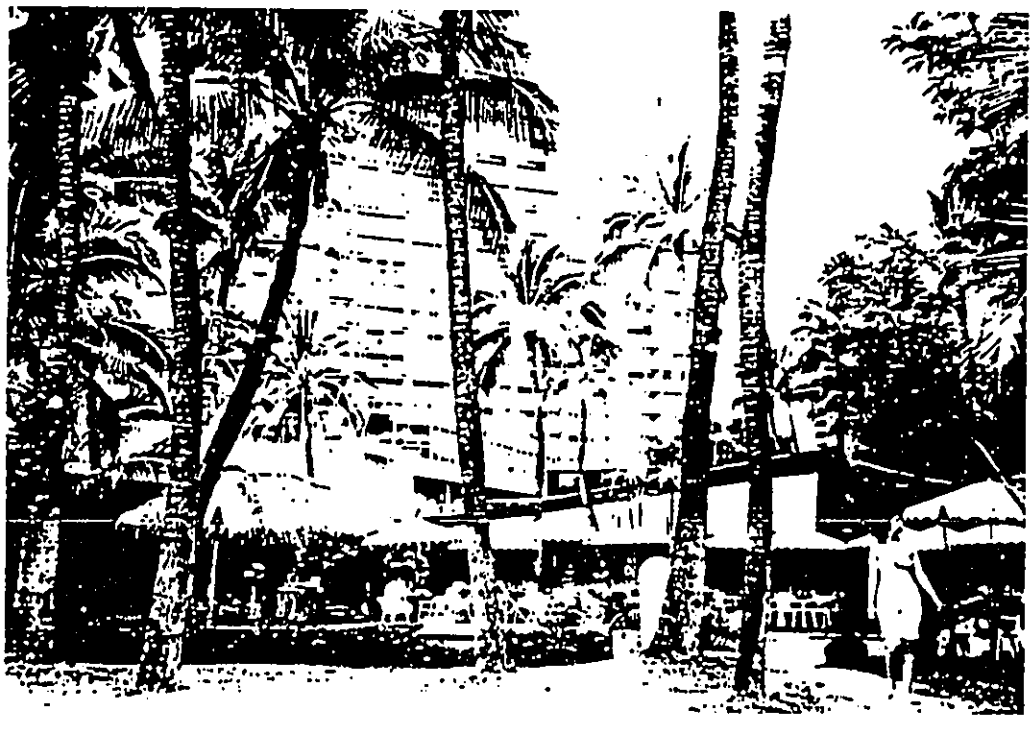
9. IDENTIFICATION OF MAJOR IMPACTS AND PROPOSED MITIGATION MEASURES

Anticipated major impacts of the new Waikikian Hotel relate to traffic, noise, air quality, and possible wind and shadow effects. The extent of other potential impacts is

not determined at this time. The EIS will identify further impacts, if any, and propose mitigative measures to minimize all those identified.

APPENDIX A. - SITE PHOTOGRAPHS

HOTEL ENTRANCE AS SEEN FROM THE ALA MOANA BLVD. FRONTAGE; AN 8-STORY STRUCTURE TO THE LEFT CONTAINS 44 GUEST ROOMS



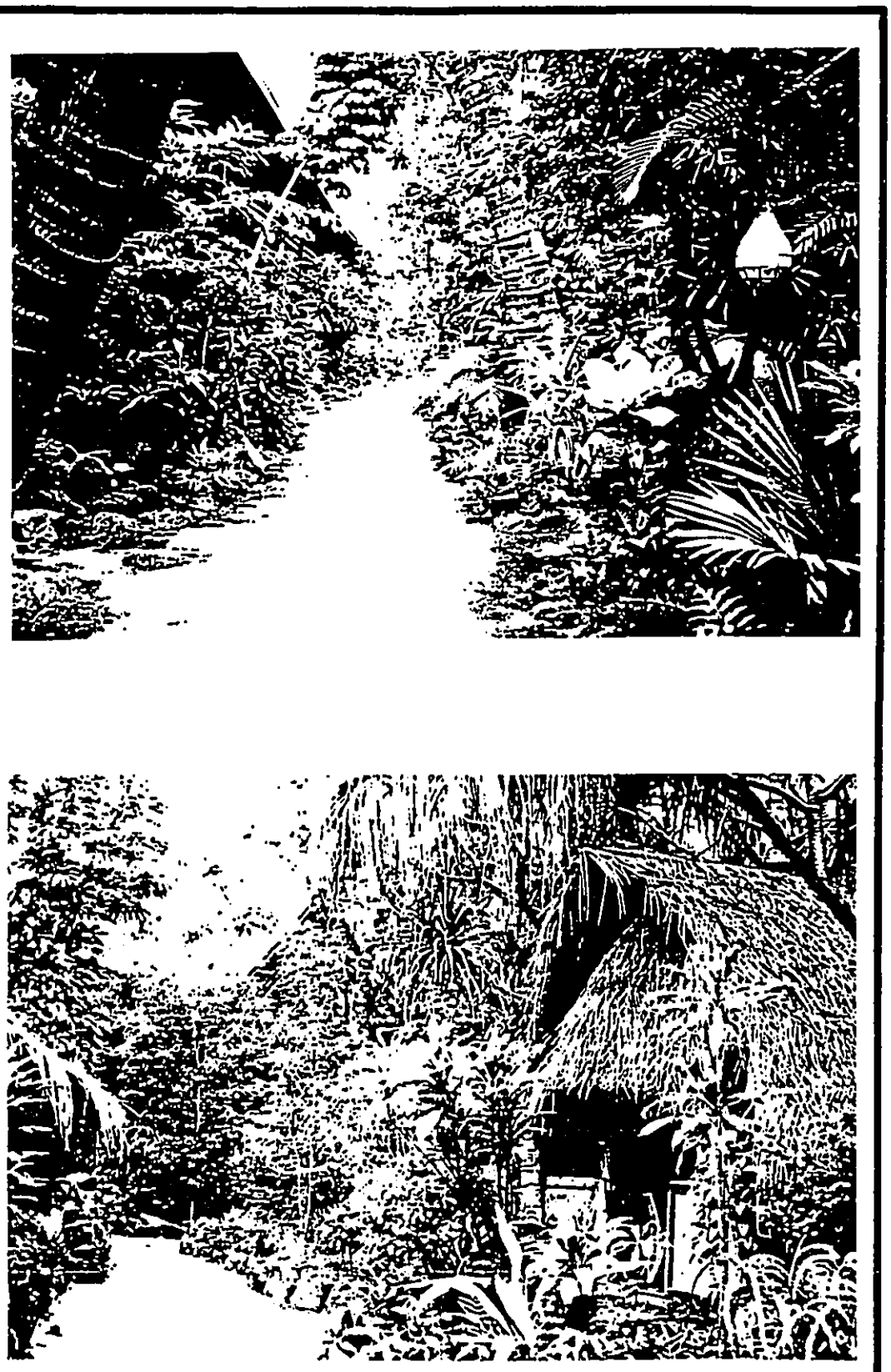
VIEW OF THE HOTEL POOL AND RESTAURANT AREA AS SEEN FROM THE WEST END OF THE PROJECT SITE

APPENDIX A.
SITE PHOTOGRAPHS

PUBLIC RIGHT-OF-WAY RUNNING PARALLEL TO THE SITE, LOOKING TOWARD ALA MOANA; TAHITIAN LANAI IS ON THE RIGHT

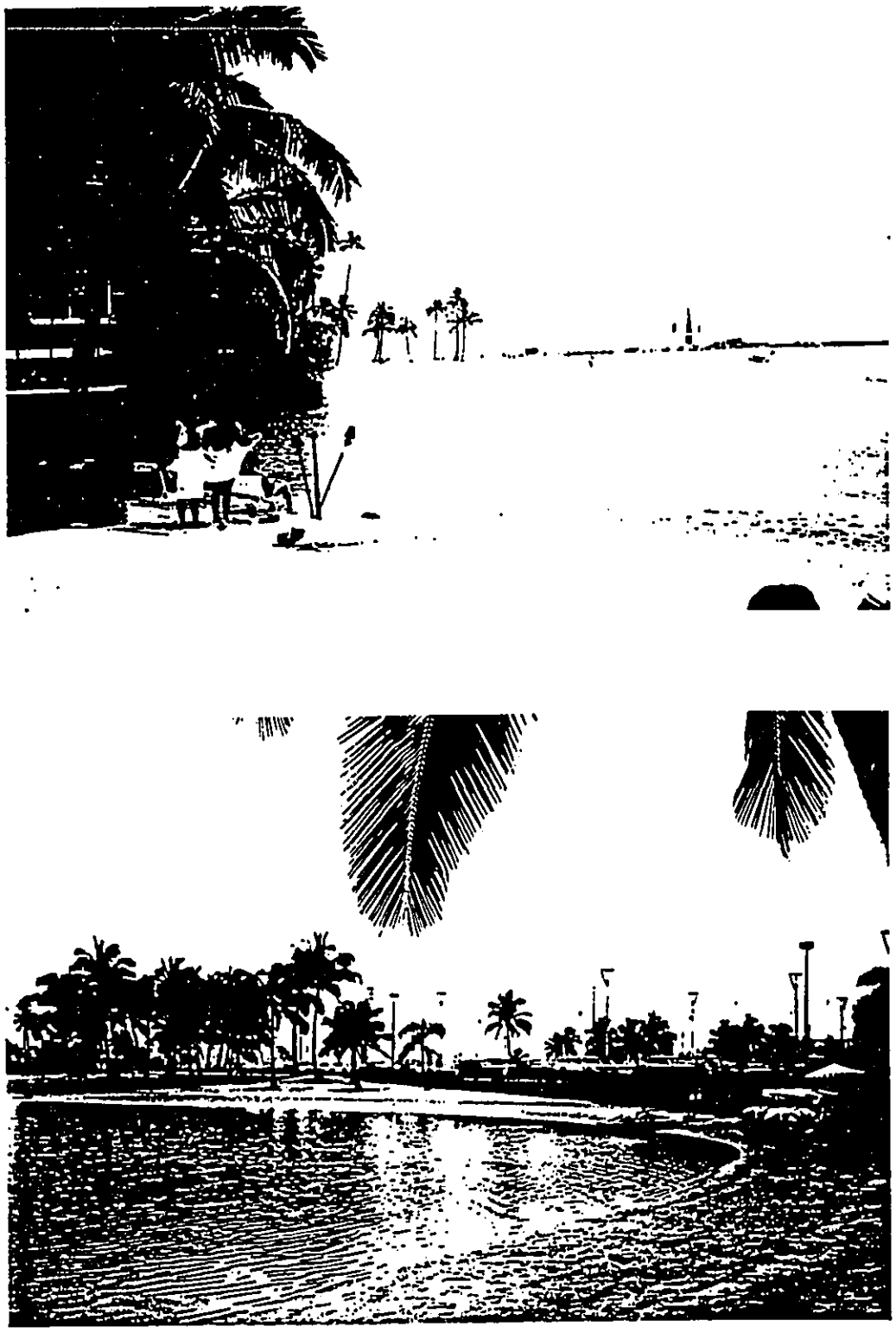
RIGHT-OF-WAY TO THE ALA WAI YACHT HARBOR AS VIEWED FROM ALA MOANA; THE ILIKAI IS ON THE RIGHT

APPENDIX A.
SITE PHOTOGRAPHS



VIEW OF THE INTERIOR OF THE SITE WITH PAVED WALKWAYS AND TROPICAL LANDSCAPING

APPENDIX A.
SITE PHOTOGRAPHS



MAKAI VIEWS OF THE LAGOON AND HARBOR FROM
THE WEST END OF THE PROJECT SITE

APPENDIX A.
SITE PHOTOGRAPHS

RECEIVED AS FOLLOWS

OEQC BULLETIN

JOHN WAIHEE
GOVERNOR

OFFICE OF ENVIRONMENTAL QUALITY CONTROL

MARVIN T. MIURA, Ph.D.
DIRECTOR

VOLUME VII | JULY 8, 1990 | NO. 13

REGISTER OF CHAPTER 343, HRS DOCUMENTS

The OEQC Bulletin is a semi-monthly publication. The publication dates of the bulletin are the eighth and twenty-third of each month. Applicants should deliver an appropriate number of Draft and Final EISs to the accepting authority before submitting copies to OEQC for distribution and publication. Environmental Assessments should be submitted to the accepting authority directly. Based on the assessment, the accepting authority will submit to OEQC a determination of a Negative Declaration or a Preparation Notice for publication in the bulletin. Draft and Final Environmental Impact Statements must be received by the fifth and twentieth days of the month for publication in the respective issue. Negative Declarations and Preparation Notices must be received at least five working days prior to the publication date. All documents submitted for publication in the OEQC Bulletin should be delivered to the Office of Environmental Quality Control, 465 South King Street, Room 104, Honolulu, Hawaii 96813. To ensure proper processing of documents, please attach OEQC Bulletin Publication Form with all submittals. These forms can be obtained by calling OEQC at 548-6915.

WAIKIKIAN HOTEL
Location: Waikiki, Oahu
TMK: 2-6-09:02, 03, 10

Accepting Authority: City and County of Honolulu
Department of Land Utilization

Applicant: JAMI Corporation

Please send your comments to:

Consultant: Tyrone Kusao
Tyrone T. Kusao, Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Deadline: August 8, 1990

The applicant is proposing to demolish the Waikikian Hotel and rebuild a new hotel on the site with approximately 264 units (totalling 234,330 square feet), 20,000 square feet of commercial and administrative office space, and parking for 180 automobiles.

There will be three parking levels, starting at grade, and a tower containing 256 of the guest rooms to a total height of 350 feet. A separate, four-story structure fill contain eight additional "Ocean Terrace" guest rooms. Of the total 20,000 square feet of commercial/office space, approximately 8,000 will be occupied by office and administrative functions, 7,000 will be set aside for shops, and 5,000 square feet will house the Tahitian Lanai, which will conduct its restaurant on the project site.

RECEIVED AS FOLLOWS

DEPARTMENT OF TRANSPORTATION SERVICES

CITY AND COUNTY OF HONOLULU

HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU HAWAII 96813

FRANK F. FASI
MAYOR

ALFRED J. THIEDE
DIRECTOR

JOSEPH M. MAGALDI JR.
DEPUTY DIRECTOR

TR-3860
PL90.1.221

August 14, 1990

Mr. Tyrone T. Kusao
Tyrone T. Kusao Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao

Subject: Waikikian Hotel Project
Environmental Impact Statement
TMK: 2-6-09: 02, 03, and 10

This is in response to your letter of July 5, 1990 requesting our comments on the Draft EIS for the subject project.

Based on our review of this project, we have no comments to offer at this time. We understand that the access to the new hotel will be from Ala Moana Boulevard. This roadway facility is under the jurisdiction of the State Department of Transportation. They should, therefore, be the primary agency to comment on the associated impacts to traffic generated by this project.

Should you have any questions, please contact Mel Hirayama of my staff at 523-4119.

Very truly yours,

ALFRED J. THIEDE
Director

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1100 BISHOP STREET, SUITE 2507
HONOLULU HAWAII 96813
BUS (808) 530 0852
RES (808) 395-1138
FAX (808) 521-4252

August 28, 1990

Mr. Alfred J. Thiede
Director
Department of Transportation Services
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Dear Mr. Thiede:

Subject: Environmental Impact Statement of the
Waikikian Hotel

This is to acknowledge receipt of your letter of August 14, 1990 concerning the project's EISPN.

We appreciate your review of our submittal and your comments thereon.

Very truly yours,

Tyrone T. Kusao

TTK:afk

U.S. [illegible]
Honolulu Office, Region IX
300 Ala Moana Blvd., Room 3318, Box 50007
Honolulu, Hawaii 96850-4991

90-237

Tyrone T. Kusao Inc.
1188 Bishop St., Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

SUBJECT: Environmental Impact Statement (EIS) for the
Waikikian Hotel Project

This responds to your request for comments for consideration in preparing a Draft Environmental Impact Statement for the Waikikian Hotel project. We understand that the proposed action will provide for a 264 room hotel with commercial and administrative office space on a 1.9 acre site in Waikiki.

We do not have any additional substantive issues that were discussed in the environmental assessment that should be addressed in the Draft EIS.

If you have any questions, please call Frank Johnson at 541-1327.

Very sincerely yours,

Frank Johnson
Calvin Lew
Director
Community Planning and
Development Division

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 538-6852
RES (808) 395-1338
FAX (808) 521-4292

July 31, 1990

Mr. Calvin Lew
Director
Community Planning and Development Division
U.S. Dept. of Housing and Urban Development
300 Ala Moana Blvd., Room 3318, Box 50007
Honolulu, Hawaii 96850-4991

Dear Mr. Lew:

Subject: Environmental Impact Statement for the
Waikikian Hotel

Thank you for your letter and your review of the Environmental Assessment on the above project. We appreciate your comments concerning the Environmental Assessment report.

Very truly yours,

Tyrone T. Kusao

TTK:afk

U.S. Department of Housing and Urban Development
Honolulu Office, Region IX
300 Ala Moana Blvd., Room 3318, Box 50007
Honolulu, Hawaii 96850-4991

90-237

Tyrone T. Kusao Inc.
1188 Bishop St., Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

SUBJECT: Environmental Impact Statement (EIS) for the
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We do not have any additional substantive issues that were discussed in the environmental assessment that should be addressed in the Draft EIS.

If you have any questions, please call Frank Johnson at 541-1327.

Very sincerely yours,

Frank Johnson

for Calvin Lew
Director
Community Planning and
Development Division

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6852
RES (808) 305-1338
FAX (808) 521-4252

July 31, 1990

Mr. Calvin Lew
Director
Community Planning and Development Division
U.S. Dept. of Housing and Urban Development
300 Ala Moana Blvd., Room 3318, Box 50007
Honolulu, Hawaii 96850-4991

Dear Mr. Lew:

Subject: Environmental Impact Statement for the
Waikikian Hotel

Thank you for your letter and your review of the Environmental Assessment on the above project. We appreciate your comments concerning the Environmental Assessment report.

Very truly yours,

Tyrone T. Kusao

Tyrone T. Kusao

TTK:afk

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF:

Operations Division

24 JUL 1990

Mr. Tyrone T. Kusao
Tyrone T. Kusao Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

This is in response to your July 5, 1990 request for comments on the proposed demolition of the Waikikian Hotel and construction of a new hotel at 1811 Ala Moana Boulevard, Waikiki, Oahu, TMK: 2-6-09: 02, 03, 10. My staff has discussed the project with Ms. Barbara Moon and was advised that the project does not involve any work in the shorewaters of Waikiki.

Based on this understanding, a Department of the Army permit is not required for this project. If you have any questions on this determination, please contact Ms. Ruby Mizue at 438-9258.

Sincerely,

Stanley T. Arakaki
Chief, Operations Division

-182-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 538-8852
RES (808) 395-1338
FAX (808) 521-4292

August 6, 1990

Mr. Stanley T. Arakaki
Chief, Operations Division
Department of the Army
U.S. Army Engineer District, Honolulu
Building 230
Ft, Shafter,Hawaii 96858-5440

Dear Mr. Arakaki:

Subject: Environmental Impact Statement for the Waikikian Hotel

Thank you for your letter of July 24, 1990 and your review of the Environmental Assessment on the above project.

As you discussed with Ms. Barbara Moon of our office, this project does not involve any work in the shorewaters of Waikiki. We appreciate the time you took to review the Environmental Assessment and your comments thereon.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

TTK:afk

DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, CORPS OF ENGINEERS
BLDG 230
FT SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF

July 27, 1990

Planning Division

Mr. Tyrone T. Kusao
Tyrone T. Kusao, Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Thank you for the opportunity to review the Environmental Impact Statement Preparation Notice for the proposed Waikikian Hotel, Waikiki, Oahu. The following comments are offered:

a. The project will not require a Department of the Army permit.

b. According to the latest Flood Insurance Rate Map dated September 4, 1987 (Panel 120), all of the project parcels are in Zone AO (special flood hazard areas inundated by 100-year flood) with average depth of inundation 2 feet, except for a small portion of parcel 10 which is in Zone A (areas of 100-year flood, with no base flood elevations determined). The flood evaluation in section 5.3 of the Environmental Assessment should be modified to indicate that only a small portion of parcel 10 is in Zone A.

Sincerely,

Kisuk Cheung
Director of Engineering

-183-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6652
RES (808) 395-1338
FAX (808) 521-4202

August 7, 1990

Mr. Kisuk Cheung
Director of Engineering
Department of the Army
Pacific Ocean Division, Corps of Engineers
Building 230
Ft. Shafter, Hawaii 96858-5440

Dear Mr. Cheung:

Subject: Environmental Impact Statement for the Waikikian Hotel

Thank you for your letter dated July 27, 1990 and your review of the Environmental Assessment for the above project.

We appreciate you informing us that a Department of the Army permit will not be required for our project. We have also taken note of your comment regarding parcel 10, and will make the appropriate changes.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

JOHN WAIHEE
GOVERNOR

JOSEPH K. CONANT
EXECUTIVE DIRECTOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
SEVEN WATERFRONT PLAZA, SUITE 380
500 ALA MOANA BOULEVARD
HONOLULU, HAWAII 96813
FAX (808) 543-8041

IN REPLY REFER TO:

90:PLNG/3462 jt

July 24, 1990

Mr. Tyrone T. Kusao
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Re: Environmental Assessment for the Waikikian Hotel Project

Thank you for the opportunity to review the material for the proposed Waikikian Hotel project. We have no housing-related comments to offer.

Sincerely,

JOSEPH K. CONANT
Executive Director

JKT:eks

- 184 -

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 536-6652
RES (808) 395-1338
FAX (808) 521-4292

July 31, 1990

Mr. Joseph K. Conant
Executive Director
Housing Finance and Development Corp.,
State of Hawaii
500 Ala Moana Blvd., Suite 300
Honolulu, Hawaii 96813

Dear Mr. Conant:

Subject: Environmental Impact Statement for the Waikikian Hotel

This is to acknowledge receipt of your July 24, 1990 letter concerning the project's EISPN. We appreciate your review of our submittal and your comments thereon.

Very truly yours,

Tyrone T. Kusao

TTK:afk

OFFICE OF STATE PLANNING
Office of the Governor
STATE CAPITOL, HONOLULU, HAWAII 96813 TELEPHONE (808) 548-3023

August 7, 1990

Mr. Tyrone T. Kusao
Tyrone T. Kusao Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

SUBJECT: Environmental Assessment for the Waikikian Hotel Project, TMK: 2-6-09: 02,03,10 Waikiki, Oahu

The Environmental Assessment, Waikikian Hotel, Waikiki, Oahu, Hawaii is serving as an EIS Preparation Notice for the project. The JAMI Corporation proposes to demolish the existing Waikikian Hotel and construct a new 350 foot hotel with 264 guest rooms, 20,000 square feet of commercial and office space, and 180 parking spaces.

We have reviewed the assessment and do not have any comments to offer at this time.

Thank you for the opportunity to review and comment.

Sincerely,

Harold S. Masumoto
Director

cc: Hon. Donald A. Clegg, DLU
OEQC

-185-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 538-6652
RES (808) 395-1338
FAX (808) 521-4202

August 13, 1990

Mr. Harold S. Masumoto, Director
Office of State Planning
State of Hawaii
State Capitol
Honolulu, Hawaii 96813

Dear Mr. Masumoto:

Subject: Environmental Impact Statement for the Waikikian Hotel

This is to acknowledge receipt of your August 7, 1990 letter concerning the project's EISPN. We appreciate your review of our submittal and your comments thereon.

Very truly yours,

Tyrone T. Kusao

TTK:afk

DEPARTMENT OF BUSINESS
AND ECONOMIC DEVELOPMENT

KAMAMALU BUILDING 250 SOUTH KING ST., HONOLULU HAWAII
MAILING ADDRESS P.O. BOX 2359 HONOLULU HAWAII 96804 TELEX 7439256 HDPLD

ROGER A. ULVELING
DIRECTOR
BARBARA KIM STANTON
DEPUTY DIRECTOR
LESLIE S. MATSUBARA
DEPUTY DIRECTOR

July 31, 1990

Mr. Tyrone T. Kusao
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Thank you for the opportunity to comment on the Waikikian Hotel project.

As the State agency charged with the overall development of tourism in Hawaii, the Department of Business, Economic Development, & Tourism is responsible for the preparation of the State Tourism Functional Plan (STFP). The plan is currently being updated, and a draft of the revised plan is enclosed for your information.

The Environmental Assessment for the Waikikian site which was transmitted for our review omits any reference to the STFP in the discussion of "Public Policies - State" (Section 7.1). The information provided in this assessment makes it difficult for us to determine the degree to which the redevelopment of the Waikikian Hotel conforms to the STFP. Accordingly, we suggest that the Environmental Impact Statement for the project include a review of the project's relationship to the relevant objectives, policies, and actions of the STFP.

The Waikikian Hotel is one of the oldest properties in Waikiki having opened in 1956, and houses the Tahitian Lanai restaurant, a long-time favorite of residents and visitors. We are hopeful that the redevelopment of the site will be mindful of these factors, and will reflect the flavor and history of the existing Waikikian Hotel and Tahitian Lanai.

Very truly yours,

for Roger A. Ulveling

RAU:MAA:cat

Effective July 1, 1990 the department name has been changed to the Department of Business, Economic Development & Tourism

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 538-6852
RES (808) 395-1338
FAX (808) 521-4292

August 13, 1990

Mr. Roger A. Ulveling
Director
Department of Business and Economic Development
State of Hawaii
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Ulveling:

Subject: Environmental Impact Statement for the Waikikian Hotel

Thank you for your letter of July 31, 1990 and review of the above project.

We have forwarded a copy of your letter to our project architect, KOP, Hawaii, Inc. We appreciate you taking the time to forward a copy of your draft State Tourism Functional Plan to us. Your comments and concerns will be addressed in our Draft Environmental Impact Statement.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
KEITH W. AHUE
MANABU TAGOMORI
RUSSELL N. FUKUMOTO

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

REF:OCEA:JN

AUG 29 1990

File No.: 91-18
Doc. No.: 9006E

Mr. Tyrone T. Kusao
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Subject: Environmental Impact Statement for the Waikikian Hotel
Project TMK 2-6-9: 2, 3 & 5

Thank you for giving our Department the opportunity to comment on this matter. We have reviewed the materials you submitted and have the following comments.

We have reviewed the "Environmental Assessment" for the Waikikian Hotel. We understand that this is part of the EIS preparation.

The Bishop Museum did a historical literature and document search for this project. We concur with their recommendations:

1. Monitoring of core sample borings during the construction design stage to recover data;

2. Monitoring of the surface removal of existing structures and pavements;

3. Backhoe assisted archaeological excavation testing;

4. Data recovery plan to be formulated contingent upon results of the above; and

5. Strict security measures of the entire site during above activites.

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Thank you again for your cooperation in this matter. Please feel free to call Jay Lembeck at our Office of Conservation and Environmental Affairs, at 548-7837, if you have any questions.

Very truly yours,

William W. Paty

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS. (808) 530-6652
RES. (808) 395-1330
FAX (808) 521-4292

August 30, 1990

Mr. William W. Paty
Chairperson
Board of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

Subject: Environmental Impact Statement for the Waikikian Hotel

Thank you for your letter dated August 29, 1990 on the above project. We appreciate your review of our EISPN and your comments thereon. As soon as the Draft EIS is prepared, a copy will be sent to your office.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

JOHN WAIHEE

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

EDWARD Y. HIRATA

IN REPLY REFER TO
HWY-PS
2.2720

July 18, 1990

Mr. Tyrone T. Kusao
Tyrone T. Kusao, Inc.
1188 Bishop Street
Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Environmental Assessment - Waikikian
Hotel Project, TMK: 2-6-09: 02, 03, 10

Thank you for your letter of July 5, 1990, requesting our review of the subject Environmental Assessment.

We have the following comments:

1. We will require the developer to submit a Traffic Impact Analysis Report (TIAR) defining the roadway requirements, potential traffic problems and mitigation measures to solve/minimize any facility deficiencies. The project's access onto Ala Moana Boulevard should be analyzed and included in the report.

2. We will also require the developer to submit plans for required improvements to our State facilities or any construction work within our highway rights-of-way for our review and approval. All costs incurred for the construction of required improvements shall be borne by the developer.

Very truly yours,

Edward Y. Hirata
Director of Transportation

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 536-6652
RES (808) 395-1336
FAX (808) 521-4292

July 31, 1990

Mr. Edward Y. Hirata
Director of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Hirata:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter of July 18, 1990 and your review of the Environmental Assessment on the above project.

I have transmitted your comments to our traffic engineer, Wilbur Smith and Associates for their review. Your comments and concerns will be considered in the Draft Environmental Impact Statement, a copy of which will be forwarded to you.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

TTK:afk

CHARLES T. TOGUCHI
Superintendent

STATE OF HAWAII
DEPARTMENT OF EDUCATION
P. O. BOX 2360
HONOLULU, HAWAII 96804

OFFICE OF THE SUPERINTENDENT

July 13, 1990

Mr. Tyrone T. Kusao
Planning & Zoning Consultant
Tyrone T. Kusao, Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

SUBJECT: Environmental Impact Statement
Waikikian Hotel Project

Our review of the subject EIS indicates the project will have negligible effect on the public schools.

Thank you for the opportunity to comment.

Sincerely,

Charles T. Toguchi

Charles T. Toguchi
Superintendent

CTT:jl

cc: E. Imai
J. Kim

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AN AFFIRMATIVE ACTION AND EQUAL OPPORTUNITY EMPLOYER

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 538-6652
RES (808) 395-1338
FAX (808) 521-4292

July 31, 1990

Mr. Charles T. Toguchi
Superintendent
Department of Education
State of Hawaii
P.O. Box 2360
Honolulu, Hawaii 96804

Dear Mr. Toguchi:

Subject: Environmental Impact Statement
for the Waikikian Hotel

This is to acknowledge receipt of your July 13, 1990 letter concerning the project's EISPN. We appreciate your review of our submittal and your comments thereon.

Very truly yours,

Tyrone T. Kusao

TTK:afk

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
465 SOUTH KING STREET, ROOM 104
HONOLULU, HAWAII 96813

TELEPHONE NO.
548-6915

July 17, 1990

Tyrone T. Kusao, Inc.
Attention: Barbara Moon
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Ms. Moon:

We have reviewed the Environmental Assessment for the Waikikian Hotel project and suggest that a detailed analysis of the impacts of the demolition and construction activities of the project be included in the Environmental Impact Statement (EIS). The impact of the construction activities on air, water, and noise quality should be addressed. The EIS should also address the impact of the demolition and construction on public use areas and traffic. In addition, measures to mitigate adverse impacts should be identified in the EIS.

The EIS should also address the project's impact on public services and utilities.

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Thank you for the opportunity to comment on the Environmental Assessment. If you should have any questions, please contact me at 548-6915.

Sincerely,

Abdul Salau

Abdul Salau
Planner IV

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 536-6652
RES (808) 395-1338
FAX (808) 521-4292

July 31, 1990

Mr. Abdul Salau
Office of Environmental Quality Control
State of Hawaii
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Mr. Salau:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter of July 17, 1990 and your review of the Environmental Assessment on the above project.

We have forwarded your comments to our consulting engineers and your concerns will be addressed in the Draft EIS.

Very truly yours,

Tyrone T. Kusao

TTK:afk

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

BENJAMIN B. LEE
CHIEF PLANNING OFFICER

ROLAND D. LIBBY, JR.
DEPUTY CHIEF PLANNING OFFICER

KK 7/90-1889

August 13, 1990

Mr. Tyrone T. Kusao
Tyrone T. Kusao, Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Environmental Impact Statement (EIS) Preparation Notice
for the Waikikian Hotel Project

We have reviewed the EIS Preparation Notice and the following concerns should be discussed in the Draft EIS:

1. The proposed hotel use for the site is consistent with the Resort designation on the DP Land Use Map. We will review the project in more detail during the EIS process and determine whether an amendment to the Development Plan Special Provision Section 32-2.2(b)(2)(B) would be required.

2. Our department is currently developing master plan concepts and urban design guidelines for Waikiki. The EIS should discuss how the project is consistent with preliminary concepts proposed (see attached).

3. An overall site plan showing the tower footprint and parking base in relation to existing structures of the surrounding area should be provided. Building elevations should also indicate the relationship to adjacent existing structures.

4. Pedestrian circulation and amenities, and landscaping proposed should be discussed; in particular, the ground level treatment along the service road adjacent to the Ilikai Hotel.

5. We have concerns over the bulk created by the length of the tower and recommend alternative designs for two towers or terracing similar to the Halekulani Hotel be considered.

6. The foundation type and dewatering operations should be addressed. The Hilton Hawaiian Village and the Ilikai should be consulted on impact(s) of foundation construction (piles and dewatering).

7. The proposed bus circulation and the impacts the bus traffic will have on the right-of-way, Ala Moana Boulevard and the Ala Wai Yacht Harbor should be discussed.

8. Section 5.2 indicates that drainage will flow toward the ocean. The impact that this will have on the lagoon should be discussed in this section and also in Section 6.6, Water Quality.

9. Improvements to the existing vehicular and pedestrian right-of-way between the Ilikai and the proposed project should be discussed in the EIS.

10. Alternatives considered and selected to retain or transplant mature trees on the site should be discussed.

If you have any questions, contact Keith Kurahashi at 527-6051.

Sincerely,

BENJAMIN B. LEE
Chief Planning Officer

BBL:js

cc: DLU

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
TELE: (808) 521-6052
RES: (808) 595-1330
FAX (808) 521-4252

August 23, 1990

Mr. Benjamin B. Lee
Chief Planning Officer
Department of General Planning
650 S. King Street, 8th Floor
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: EIS For Waikikian Hotel

Thank you for your comments on our EISPN as stated in your letter dated August 13, 1990 (Ref. KK 7/90-1889). Our meeting with you on August 22, 1990 was most helpful in clarifying some of your comments. Please be assured that your concerns will be discussed in the Draft EIS document, a copy of which will be sent to your office.

Very truly yours,

Tyrone T. Kusao

TK:efk

DEPARTMENT OF PUBLIC WORKS

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C. MICHAEL STREET
DEPUTY DIRECTOR

In reply refer to:
ENV 90-171(449)

July 24, 1990

Mr. Tyrone T. Kusao
Tyrone T. Kusao, Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Subject: Environmental Impact Statement Preparation Notice (EISPN), The Waikikian Hotel Project (Tax Map Key: 2-6-9: 2, 3 and 10)

We have reviewed the subject EISPN and have the following comments:

1. The EIS should state that the sewer adequacy was approved on a one for one replacement basis, and any increase in the number of rooms over the existing 132 rooms will result in inadequate sewer capacity.

2. The City has no plans to relieve the inadequate sewer lines at this time; therefore, if the developer wants to pursue the project, the relief lines will have to be constructed at his cost.

3. We do not have drainage comments at this time.

Very truly yours,

C. Michael Street

SAM CALLEJO
Director and Chief Engineer

cc: DLU
OEQC
JAMI Corp.

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6652
RES (808) 395-1336
FAX (808) 521-4282

August 7, 1990

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Subject: Environmental Impact Statement for the Waikikian Hotel

Thank you for your letter of July 24, 1990 and your review of the Environmental Assessment on the above project.

We have forwarded a copy of your letter to our project engineer, Hida, Okamoto and Associates for their review. Your comments and concerns will be addressed in the Draft Environmental Impact Statement, a copy of which will be forwarded to you.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

TTK:afk

BUILDING DEPARTMENT

CITY AND COUNTY OF HONOLULU

PB 90-560

July 12, 1990

Mr. Tyrone T. Kusao
Tyrone T. Kusao, Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Subject: Environmental Impact Statement Preparation Notice (EISPN) for The Waikikian Hotel

This is in response to your letter dated July 5, 1990.

We have reviewed the subject EISPN and have no comments to offer.

Thank you for the opportunity to review the EISPN.

Very truly yours,

HERBERT K. MURAOKA
Director and Building Superintendent

cc: J. Harada

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TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6852
RES (808) 395-1330
FAX (808) 521-4282

July 31, 1990

Mr. Herbert K. Muraoka
Director and Building Superintendent
Building Department
City and County of Honolulu
650 S. King Street, 2nd Floor
Honolulu, Hawaii 96813

Dear Mr. Muraoka:

Subject: Environmental Impact Statement for the Waikikian Hotel

This is to acknowledge receipt of your July 12, 1990 letter concerning the project's EISPN. We appreciate your review of our submittal and your comments thereon.

Very truly yours,

Tyrone T. Kusao

TTK:afk

BOARD OF WATER SUPPLY

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

August 16, 1990

Mr. Tyrone Kusao
Tyrone T. Kusao Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Subject: Your Letter of July 5, 1990 Regarding the Environmental Impact Statement (EIS) for the Waikikian Hotel Project

Thank you for giving us the opportunity to comment, as an EIS consulted party, on the proposed Waikikian Hotel Project.

We have the following comments on the project:

1. There is a 3-inch meter serving the existing Waikikian Hotel. If a larger meter is required, construction plans should be submitted for our review and approval.

2. The availability of additional water will be determined when the building permit application is submitted for our review and approval.

3. If additional water is made available, the developer will be required to pay the applicable water meter and water system facilities charges. To receive proper water system facilities charges credit, an inventory of the following is required prior to demolition:

   1) Number of hotel rooms.

   2) Fixture unit count of all commercially used water fixtures.

   3) Irrigation demand in gallons per minute, if existing irrigation is being done during peak hours.

If you have any questions, please contact Bert Kuioka at 527-5235 or 527-6138.

Very truly yours,

KAZU HAYASHIDA
Manager and Chief Engineer

Water, man's greatest need – use it wisely

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 538-6652
RES (808) 395-1338
FAX (808) 521-4292

August 28, 1990

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 S. Beretania St.,
Honolulu, Hawaii 96843

Dear Mr. Hayashida:

Subject: Environmental Impact Statement for the Waikikian Hotel

Thank you for your letter of August 16, 1990 and your review of the Environmental Assessment on the above project.

We have forwarded a copy of your letter to our project engineer, Hida, Okamoto and Associates for their review. Your comments and concerns will be addressed in the Draft Environmental Impact Statement document, a copy of which will be sent to you.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

TTK:afk

FIRE DEPARTMENT

CITY AND COUNTY OF HONOLULU

1455 SOUTH BERETANIA STREET, ROOM 305
HONOLULU, HAWAII 96814

FRANK F. FASI
MAYOR

LIONEL E. CAMARA
FIRE CHIEF

DONALD S. H. CHANG
DEPUTY FIRE CHIEF

July 26, 1990

Tyrone T. Kusao, Inc.
1188 Bishop Street
Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Subject: Environmental Impact Statement
For the Waikikian Hotel Project

We have reviewed the application for the above subject request and have no objections to the proposal providing the following are complied with:

1. Provide a private water system where all appurtenances, hydrant spacing and fire flow requirements meet Board of Water Supply standards.

2. Provide a fire access road to within 150 feet of the first floor of the most remote structure. Such access shall have a minimum vertical clearance of 13 feet 6 inches, be constructed of an all-weather driving surface of not less than 20 feet in unobstructed width shoulder to shoulder capable of supporting the minimum 60,000 pound weight of our fire apparatus and with a gradient not to exceed 20%. All dead-end fire apparatus access roads in excess of 150 feet in length shall be provided with an approved turnaround having a diameter of not less than 35 feet. For additional specifics, see Article 10 of the Uniform Fire Code.

3. Submit construction plans to the building and fire departments for permit review and approval prior to commencement of the project.

Should additional information or assistance be required, you may contact Captain August K. F. Range or Fire Inspector Michael Aki of our Fire Prevention Bureau at 523-4186.

Sincerely,

DONALD S. H. CHANG
Fire Deputy Chief

AKFR:mc

- 197 -

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6652
RES (808) 395-1330
FAX (808) 521-4292

August 7, 1990

Mr. Donald S. H. Chang
Fire Deputy Chief
Fire Department
City and County of Honolulu
1455 South Beretania St.,
Room 305
Honolulu, Hawaii 96814

Dear Deputy Chief Chang:

Subject: Environmental Impact Statement for the
Waikikian Hotel

Thank you for your letter of July 24, 1990 and your review of the Environmental Assessment on the above project.

A copy of your letter has been forwarded to our project engineer Hida Okamoto and Assocaties for their review. Your comments and concerns will be addressed in the Draft EIS, a copy of which will be forwarded to you.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

FRANK F. FASI
MAYOR

HANAIE KAWASAKI
CHIEF

IN REFERENCE MS-LK

July 26, 1990

Mr. Tyrone T. Kusao
Tyrone T. Kusao, Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Subject: Waikikian Hotel Project

We have reviewed the information and maps provided regarding the proposed hotel, commercial and office space, and parking complex to be constructed at the site of the existing Waikikian Hotel.

Our primary concern is that of increased traffic congestion in and around the site, both during construction and after completion. Ala Moana Boulevard is presently very congested in this area, and the situation will be exacerbated by the planned developments at Fort DeRussy. Any further adverse impacts on traffic must be avoided if possible.

We have received many noise complaints from this vicinity, and mitigation measures will be necessary. It is hoped that recommendations of the acoustical consultant will be implemented.

In the interest of safety for the development's occupants, we urge that security measures (e.g., card keys rather than ordinary keys, deadbolts, window locks, adequate lighting, etc.) be considered when the project is designed.

Sincerely,

HAROLD KAWASAKI
Chief of Police

By
JOSEPH AVEIRO
Assistant Chief of Police
Support Services Bureau

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 538-6652
RES (808) 395-1339
FAX (808) 521-4292

August 7, 1990

Chief Joseph Aveiro
Assistant Chief of Police
Support Services Bureau
City and County of Honolulu
1455 S. Beretania St.,
Honolulu, Hawaii 96814

Dear Chief Aveiro:

Subject: Environmental Impact Statement for the Waikikian Hotel

Thank you for your letter of July 26, 1990 and your review of the Environmental Assessment on the above project.

I have transmitted your comments to our Traffic Engineer, Wilbur Smith and Associates and our Acoustical consultant, Yoichi Ebisu and Associates for their review. A copy of your comments has also been sent to our Architect, KOP, Hawaii, Inc. Your comments and concerns will be considered in the Draft Environmental Impact Statement, a copy of which will be forwarded to you.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

OFFICE OF HUMAN RESOURCES
CITY AND COUNTY OF HONOLULU
HONOLULU MUNICIPAL BUILDING, 6TH FLOOR
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 527-5311

FRANK F. FASI
MAYOR

MARIA VICTORIA R. BUNYE
DIRECTOR

VICTOR D. GUILLERMO, JR.
DEPUTY DIRECTOR

July 20, 1990

Mr. Tyrone T. Kusao
Tyrone T. Kusao Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao,

The Office of Human Resources has reviewed your environmental assessment for the Waikikian Hotel project (TMK: 2-6-09: 02, 03, 10) and offers the following recommendations:

(1) That a fair number of hotel rooms (5%) be designated and designed in accordance with Uniform Federal Accessibility Standards (UFAS) to allow equal access for persons with disabilities.

(2) That an accessible route be provided within the total project that will allow a disabled person to freely travel to all facilities open to the general public within the total hotel complex.

(3) That parking stalls solely for persons with disabilities be provided in all lots.

If we could be of assistance to you on these matters please feel free to call Ernie Martin at 527-5860.

Very truly yours,

MARIA VICTORIA R. BUNYE, Director
Office of Human Resources

- 199 -

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6652
RES (808) 395-1336
FAX (808) 521-4292

August 4, 1990

Ms. Maria Victoria R. Bunye, Director
Office of Human Resources
City and County of Honolulu
650 S. King Street, 6th Floor
Honolulu, Hawaii 96813

Dear Ms. Bunye:

Subject: Environmental Impact Statement for the Waikikian Hotel

Thank you for your letter of July 20, 1990 and your review of the Environmental Assessment on the above project.

I have transmitted your comments to our architect, KOP Hawaii, Inc. for their review. Your comments and concerns will be considered in the Draft Environmental Impact Statement, a copy of which will be forwarded to you.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

TTK:afk

PART OF PAGE IS RE ON

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

WALTER M. OZAWA
DIRECTOR

HIROAKI MORITA
DEPUTY DIRECTOR

July 24, 1990

Mr. Tyrone T. Kusao
1188 Bishop Street
Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao: Tyrone

Subject: Environmental Impact Statement (EIS)
Waikikian Hotel Project
Tax Map Key: 2-6-09: 02, 3 & 10

We have reviewed the EIS for the proposed Waikikian Hotel Project and make the following comments.

The information submitted is not sufficient to adequately assess the recreational facilities planned for the hotel project. The project is located in a high-density apartment and hotel district which should have more open space and recreational facilities. The increase of eighty-eight more units in the rebuilding of the new hotel will impact on the beaches in this area.

-200-

Therefore, recreation areas, facilities and activities should be included in the design of the complex to serve the hotel residents.

Thank you for the opportunity to review the Waikikian Hotel project.

Sincerely

WALTER M. OZAWA, Director

WMO:sl

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6652
RES (808) 395-1338
FAX (808) 521-4282

August 7, 1990

Mr. Walter M. Ozawa
Director
Department of Parks and Recreation
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Dear Mr. Ozawa:

Subject: Environmental Impact Statement for the
Waikikian Hotel

Thank you for your letter of July 24, 1990 and your review of the Environmental Assessment on the above project.

Your letter has been forwarded to our project architect to address your concerns. We hope to have a more definitive description of recreation area and facilities for the hotel in the Draft EIS, a copy of which will be forwarded to you.

If you have further questions, please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao
TTK:afk

William A. Bonnet
Manager
Environmental Department

ENV 2-1
JA/G

August 27, 1990

Tyrone T. Kusao, Inc.
Planning & Zoning Consultant
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

We have reviewed the subject EIS and have no comments at this time on the proposed project. HECO shall reserve comment pertaining to the protection of existing power lines within the project area until construction plans are finalized.

Sincerely,

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS [808] 536-6652
RES [808] 395-1338
FAX [808] 521-4282

August 28, 1990

Mr. William A. Bonnet
Manager
Environmental Department
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

Subject: Environmental Impact Statement for the Waikikian Hotel

Dear Mr. Bonnet:

This is to acknowledge receipt of your August 27th 1990 letter concerning the project's EISPN. We appreciate your review of our submittal and your comments thereon.

Very truly yours,

Tyrone T. Kusao

TTK:afk

THE OUTDOOR CIRCLE
Established 1912
A Non-profit Organization
1110 University Avenue, Suite 205
Honolulu, Hawaii 96826
(808) 943-9658

July 16, 1990

Tyrone T. Kusao, Inc.
1188 Bishop St., Suite 2507
Honolulu, Hawai'i 96813

SUBJECT: EIS For The Waikikian Hotel Project

Dear Mr. Kusao:

This is to acknowledge and thank you for sending us the Environmental Assessment report for the Waikikian Hotel Project.

We are pleased to note that the project will meet the guidelines and conform to the guidelines of the Waikiki Special District Regulations.

The Outdoor Circle is aware of the tropical planting within the hotel ground area and trust that the replacement landscaping will include a maximum of mature trees.

Thank you for this opportunity to express our views.

Sincerely,

Susan Fristoe

Susan Fristoe, Chair
Landscape & Planting

Betty Crocker

Betty Crocker
President

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS. (808) 536-6652
RES. (808) 395-1338
FAX (808) 521-4292

July 31, 1990

Ms. Betty Crocker
President
The Outdoor Circle
1110 University Ave., Suite 205
Honolulu, Hawaii 96826

Attention: Susan Fristoe, Chair, Landscape and Planting

Dear Ms. Crocker:

Subject: Environmental Impact Statement for the Waikikian Hotel

Thank you for your letter of July 16, 1990 and your review of the Environmental Assessment on the above project.

We have taken note of your comments and have forwarded a copy of your letter to our landscape architect, Miyabara Associates. Your concerns will be addressed in the Draft EIS document.

Very truly yours,

Tyrone T. Kusao

TTK:afk

WAIKIKI NEIGHBORHOOD BOARD NO. 9

c/o NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 400 • HONOLULU, HAWAII 96813

August 27, 1990

Tyrone Kusao
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao,

The Waikiki Neighborhood Board No. 9 looks forward to your September 4, 1990 presentation to our community on current plans for the Waikikian Hotel Project.

The Board's preliminary concerns involve the proposal of JAMI Corporation to construct a new hotel with 264 hotel rooms and 180 parking spaces which would intensify density and traffic congestion in the area.

Furthermore, the Waikiki Neighborhood Board No. 9 unanimously supports the formulation of a Master Plan for Waikiki which would lead to revised guidelines for the use of lands in the Waikiki Special District.

Sincerely,

Anita Benfatti

Anita Benfatti
Chair, Waikiki Neighborhood Board

Oahu's Neighborhood Board System-Established 1973

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU HAWAII 96813

BUS (808) 538-0652
RES (808) 395-1330
FAX (808) 521-4292

August 29, 1990

Ms. Anita Benfatti
Chair, Waikiki Neighborhood Board #9
C/O Neighborhood Commission
City Hall, Room 400
Honolulu, Hawaii 96813

Dear Ms. Benfatti:

Subject: Environmental Impact Statement for the Waikikian Hotel

Thank you for your comments on our EISPN as stated in your letter dated August 27, 1990. Please be advised that your concerns will be addressed in the Draft EIS document, a copy of which will be sent to your Board.

On behalf of our EIS team I also want to thank you for the opportunity to address the Waikiki Neighborhood Board #9 on the evening of September 4th 1990.

If you have further questions please do not hesitate to contact me.

Very truly yours,

Tyrone T. Kusao

TTK:afk

Chapter 15

Comments And Reponses During the Preparation of the Final EIS

15. COMMENTS AND RESPONSES DURING PREPARATION OF THE EIS

Sixty (60) copies of the Draft Waikikian Hotel Environmental Impact Statement (DEIS) were received by the Office of Environmental Quality Control on September 5, 1990. Notice of the DEIS was published in the September 8, 1990 OEQC Bulletin and sixty copies of the report were distributed to interested public agencies, organizations, and individuals. Additionally, five copies of the DEIS were delivered to the accepting agency, the Department of Land Utilization, City and County of Honolulu. A total of 25 comments were received in response to the Draft EIS. All comments were responded to with both comments and responses reprinted on the following pages.

Agencies and organizations submitting comments to the Draft EIS are a follows:

CITY AGENCIES:

Board of Water Supply
Building Department
Fire Department
Department of General Planning
Department of Housing and Community Development
Department of Land Utilization
Department of Parks & Recreation
Police Department
Department of Public Works

STATE AGENCIES

Department of Accounting and General Services,
Public Works Division
Department of Business and Economic Development
Department of Defense, State of Hawaii
Department of Health
Department of Land and Natural Resources
Department of Land and Natural Resources,
Conservation and Environmental Offices
Housing Finance and Development Corp.
Department of Transportation
Office of State Planning
University of Hawaii, Environmental Center

FEDERAL

U.S. Department of Agriculture, Soil Conservation Service
U.S. Army Corps of Engineers
U.S. Fish and Wildlife Service
U.S. Navy

INDIVIDUALS AND ORGANIZATIONS

Hawaiian Electric Company
Waikiki Convention Center Authority

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET SUITE 2507
HONOLULU HAWAII 96813

BUS (808) 538-6653
RES (808) 395-1338
FAX (808) 521-4292

September 5, 1990

Dr. Bruce S. Anderson
Acting Director
Office of Environmental Quality Control
465 S. King Street
Kekuanaoa Building, Room 104
Honolulu, Hawaii 96813

Dear Dr. Anderson:

Subject: Waikikian Hotel Draft Environmental Impact Statement, Waikiki, Oahu, THK 2-6-9:2, 3 and 10.

Enclosed herein are 60 copies of the subject Draft EIS for publication in your September 8, 1990 Bulletin and distribution by your agency.

Please be advised that we have also forwarded the original draft document plus five copies to the City Department of Land Utilization, the accepting authority.

Your assistance in processing the Draft EIS is greatly appreciated and should there be questions please contact Anne or myself at this office.

Very truly yours,

Tyrone T. Kusao

TTK:afk
cc: Department of Land Utilization

TYRONE T. KUSAO, INC
Planning and Zoning Consultant

September 6, 1990

Mr. Donald A. Clegg
Director
Department of Land Utilization
City and County of Honolulu
650 S. King Street, 7th Floor
Honolulu, Hawaii 96813

Attention: Environmental Affairs Branch

Dear Mr. Clegg:

Subject: Waikikian Hotel Draft EIS - 90/SMA-47(BWM)

In compliance with Section 11-200-20 of the EIS Rules and your agency's requirement, enclosed herein are 6 copies of the subject Draft EIS. Please be advised that we have submitted 60 copies of this document to the State Office of Environmental Quality Control on September 4, 1990 for publication in their September 8, 1990 bulletin.

Your assistance in this matter is sincerely appreciated and should there be questions, please contact me.

Very truly yours,

Tyrone T. Kusao

TTK:afk

RECEIVED AS FOLLOWS

465 SOUTH KING STREET KEKUANAOA BUILDING, #104 - HONOLULU, HAWAII 96813 TELEPHONE (808) 548-6915

OEQC BULLETIN

OFFICE OF ENVIRONMENTAL QUALITY CONTROL

JOHN WAIHEE
GOVERNOR

BRUCE S. ANDERSON, Ph.D.
ACTING DIRECTOR

VOLUME VII SEPTEMBER 8, 1990 NO. 17

REGISTER OF CHAPTER 343, HRS DOCUMENTS

The OEQC Bulletin is a semi-monthly publication. The publication dates of the bulletin are the eighth and twenty-third of each month. Applicants should deliver an appropriate number of Draft and Final EISs to the accepting authority before submitting copies to OEQC for distribution and publication. Environmental Assessments should be submitted to the accepting authority directly. Based on the assessment, the accepting authority will submit to OEQC a determination of a Negative Declaration or a Preparation Notice for publication in the bulletin. Draft and Final Environmental Impact Statements must be received by the fifth and twentieth days of the month for publication in the respective issue. Negative Declarations and Preparation Notices must be received at least five working days prior to the publication date. All documents submitted for publication in the OEQC Bulletin should be delivered to the Office of Environmental Quality Control, 465 South King Street, Room 104, Honolulu, Hawaii 96813. To ensure proper processing of documents, please attach OEQC Bulletin Publication Form with all submittals. These forms can be obtained by calling OEQC at 548-6915.

DRAFT ENVIRONMENTAL IMPACT STATEMENTS

A 45 day review period commences with the initial publication of these projects in the bulletin (see deadline dates). EIS's listed in this section are available for review at the following repositories:

- Office of Environmental Quality Control
- Legislative Reference Bureau
- Municipal Reference and Records Center (Oahu EISs)
- University of Hawaii Hamilton Library
- State Main Library (Housed at Kapiolani Community College)
- Kaimuki Regional Library
- Kaneohe Regional Library
- Pearl City Regional Library
- Hilo Regional Library
- Wailuku Regional Library
- Lihue Regional Library
- Branch library in closest proximity to the project

Please send your comments to the accepting authority with a copy to the applicant or proposing agency (see listed contacts). OEQC would also appreciate a copy of your comments.

WAIKIKIAN HOTEL

Location: Waikiki, Oahu
TMK: 2-6-09 02, 03, 10

Please send your comments to:

Accepting Authority: City and County of Honolulu, Department of Land Utilization

with a copy of your comments to:

Applicant: JAMI Corporation
c/o Tyrone Kusao
Tyrone T. Kusao, Inc
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

and a copy to OEQC

Deadline: October 23, 1990

The applicant is proposing to demolish the Waikikian Hotel and rebuild a new hotel on the site with approximately 264 units (totalling 236,330 square feet), 20,000 square feet of commercial and administrative office space, and parking for 180 automobiles.

There will be three parking levels, starting at grade, and a tower containing 256 of the guest rooms to a total height of 350 feet. A separate, four-story structure will contain eight additional "Ocean Terrace" guest rooms. Of the total 20,000 square feet of commercial/office space, approximately 8,000 will be occupied by office and administrative functions, 7,000 will be set aside for shops, and 5,000 square feet will house the Tahitian Lanai, which will continue its restaurant on the project site.

The project site is in the Resort Hotel Precinct of the Waikiki Special District. All existing structures on the project site will be demolished. Other construction activities will include clearing, but minimal grading, since the site is relatively level. All new construction work will be done at grade, and no major alteration of land forms is proposed.

( ) E.A.
( ) APPLICANT ACTION
( ) AGENCY ACTION

( ) EIS
( ) APPLICANT ACTION
( ) AGENCY ACTION

Title: Waikikian Hotel

Location: Waikiki, Oahu

Proposing Agency/Applicant: JAMI Corporation c/o Tyrone Kusao, Inc 1188 Bishop St., #250 Honolulu, Hawaii 96813

Accepting Authority/Approving Agency: The Governor, State of Hawaii c/o OEQC, 465 S. King St., #104, Honolulu, Hawaii 96813

Deadline for Comments: October 23,1990

Date Sent/By: Sept. 10,1990

STATE AGENCIES	NO. COPIES	REMARKS
OEQC Director	1	
Dept. of Agriculture	1	
Dept. of Accounting and General Services	1	
Dept. of Defense	1	
Dept. of Education (a)*		
Dept. of Hawaiian Home Lands (a)*		
Dept. of Health	1	
Dept. of Land and Natural Resources	3	
DLNR State Historic Preservation Officer	1	
Dept. of Business and Economic Development	1	
DBED Library	1	
Housing Finance & Development Corporation	1	
Dept. of Transportation	3	
State Archives	1	
State Energy Office	1	
Office of State Planning	1	
UNIVERSITY OF HAWAII		
Environmental Center	4	
Marine Programs (a)*		
Water Resources Research Center	1	
FEDERAL		
Regional Dev. USEPA Region IX	1	
Army-DAFE (Facilities Eng.-USASCH)	1	
Environmental Protection Agency (a)*		
Navy	1	
Soil Conservation Service	1	
U.S. Army Corps of Engineers	1	
U.S. Coast Guard	1	
U.S. Fish and Wildlife Service	1	
U.S. Geological Survey (a)*		

Library Copy: 1
Total Received: 60
Total Distributed: 57
File Copy: 1

Copy of Distribution List Sent to: Tyrone T. Kusao, Inc
Date: Sept. 10,1990
1188 Bishop St., #2507
Honolulu, Hawaii 96813

(a)* Copy desired only if project involves the agency's responsibilities.

RECEIVED AS FOLLOWS

LIBRARIES	NO. COPIES	REMARKS
State Main Library	2	
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Kalmuki Regional Library	1	
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Aiea Library		
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Holualoa Library		
Honokaa Library		
Kailua-Kona Library		
Keaau Community-School Library		
Kealakekua Library		
Laupahoehoe Community-School Library		
Mountain View Community-School Library		
Pahala Community-School Library		
Pahoa Community-School Library		
Thelma Parker Memorial Library/Waimea Area Library		
MAUI		
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Lahaina Library		
Makawao Library		
MOLOKAI		
Molokai Library		
LANAI		
Lanai Community-School Library		
KAUAI		
Hanapepe Library		
Kapaa Library		
Koloa Community-School Library		
Waimea Library		

Honolulu Star-Bulletin	1	
Honolulu Advertiser	1	
Sun Press	1	
Hawaii Tribune Herald (b)**		
West Hawaii Today - Kona (b)**		
The Garden Island Newspaper - Kauai (b)**		
Maui News (b)**		
Ka Molokai (b)**		
CITY AND COUNTY OF HONOLULU (b)**		
Board of Water Supply	1	
Building Dept.	1	
Dept. of Housing and Community Development	1	
Dept. of General Planning	1	
Dept. of Land Utilization	1	
Dept. of Parks and Recreation	1	
Dept. of Public Works	1	
Dept. of Transportation Services	1	
Fire Dept.	1	
Municipal Reference and Records Center (Oahu only)	1	
Police Dept.	1	
COUNTY OF HAWAII (b)**		
Planning Dept.		
Dept. of Parks and Recreation		
Dept. of Public Works		
Dept. of Research and Development		
Dept. of Water Supply		
University of Hawaii - Hilo Campus Library		
COUNTY OF MAUI (b)**		
Planning Dept.		
Dept. of Parks and Recreation		
Dept. of Public Works		
Dept. of Water Supply		
Economic Development Agency		
Maui Community College Library		
COUNTY OF KAUAI (b)**		
Planning Dept.		
Dept. of Public Works		
Dept. of Water Supply		
Kauai Community College Library		
NON-GOVERNMENTAL AGENCIES		
American Lung Association	1	
Hawaiian Electric Company	1	
Office of Hawaiian Affairs	1	
LIBRARIES		
U.H. Hamilton Library, Hawaiian Collection	1	
Legislative Reference Bureau	1	

(b)** Copy desired only if project is in respective county.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

COPY

2. An approved reduced pressure principle backflow prevention device should be installed immediately after each domestic water meter and after any meter for a fire system using chemicals.

If you have any questions, please contact Bert Kuioka at 527-5235.

Very truly yours,

KAZU HAYASHIDA
Manager and Chief Engineer

cc: JAMI Corporation
Tyrone T. Kusao, Inc.

BOARD OF WATER SUPPLY
CITY AND COUNTY OF HONOLULU

COPY

October 5, 1990

The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Attention: Dr. Bruce Anderson

Dear Governor Waihee:

Subject: The Draft Environmental Impact Statement (DEIS) for the Waikikian Hotel

Thank you for sending us a copy of the DEIS for the Waikikian Hotel for our review.

addition to our letter of August 16, 1990, which is included in Chapter 14 of the DEIS, we have the following comments on the project:

1. The third paragraph on page 87 of Chapter 5 is incorrect and should be amended. The adequacy of the existing three-inch water meter to meet the increased demands for the proposed hotel is uncertain and a determination will be made when construction plans are submitted for our review and approval.

   There is an existing 12-inch water main on Ala Moana Boulevard that should be adequate to meet the anticipated demands of the project; however, the availability of additional water, if required, will be determined when the building permit is submitted for our review and approval.

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 538-6652
RES (808) 395-1338
FAX (808) 521-4232

November 16, 1990

Mr. Kazu Hayashida
Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 S. Beretania St.
Honolulu, Hawaii 96843

Attention: Mr. Bert Kuioka

Dear Mr. Hayashida:

Subject: DEIS For Waikikian Hotel

-211-

Thank you for your letter of October 5, 1990 containing comments on the subject document.

We will make appropriate wording changes in the Final EIS to reflect your statement concerning the existing three-inch water meter to service the proposed development. Further, your comment concerning the backflow prevention device is noted.

Your review and comments on the DEIS is sincerely appreciated.

Very truly yours,

Tyrone T. Kusao

TTK:afk

PB 90-786

September 17, 1990

The Governor, State of Hawaii
c/o OEQC
465 South King Street, #104
Honolulu, Hawaii 96813

Attn: Dr. Bruce Anderson

Dear Sir:

Subject: Environmental Impact Statement (EIS)
for the Waikikian Hotel

This is in response to your letter transmitting the subject EIS.

We have reviewed the document and have no comments to offer. Thank you for the opportunity to review the EIS.

Very truly yours,

HERBERT K. MURAOKA
Director and Building Superintendent

JH:jo
cc: J. Harada
JAMI Corporation
Tyrone T. Kusao, Inc.

-212-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6652
RES (808) 395-1336
FAX (808) 521-4292

October 31, 1990

Mr. Herbert K. Muraoka
Director and Building Superintendent
Building Department
City and County of Honolulu
650 S. King Street, 2nd Floor
Honolulu, Hawaii 96813

Dear Mr. Muraoka:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated September 17, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
1455 SOUTH BERETANIA STREET ROOM 306
HONOLULU, HAWAII 96814

FRANCIS F. KASI
MAYOR

LIONEL E. CAMARA
FIRE CHIEF

DONALD B.M. CHANG
DEPUTY FIRE CHIEF

September 18, 1990

The Governor
State of Hawaii
c/o Office of Environmental
Quality Control
465 South King Street, #104
Honolulu, Hawaii 96813

ATTENTION: Dr. Brice Anderson

Dear Sir:

We have reviewed the subject material provided and have no additional comments.

Very truly yours,

Lionel E. Camara

LIONEL E. CAMARA
Fire Chief

LEC/AKL:lm

cc: JAMI Corporation
Tyrone T. Kusao, Inc.
Office of Environmental Quality Control (OEQC)

-213-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 538-6852
RES (808) 395-1338
FAX (808) 521-4282

October 31, 1990

Fire Chief Lionel E. Camara
Honolulu Fire Department
City and County of Honolulu
1455 S. Beretania Street
Honolulu, Hawaii 96814

Dear Chief Camara:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated September 18, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

BENJAMIN B. LEE
CHIEF PLANNING OFFICER

ROLAND D. LIBBY, JR.
DEPUTY CHIEF PLANNING OFFICER

VW 9/90-2562

October 17, 1990

Mr. Tyrone T. Kusao
Tyrone T. Kusao, Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Draft Environmental Impact Statement (DEIS)
for the Waikikian Hotel Project
Waikiki, Oahu--JAMI Corporation

We have reviewed the DEIS with specific reference to the adequacy of response to our concerns expressed in our letter on the Environmental Impact Statement Preparation Notice (EISPN). Our comments on the DEIS are directed to each of the ten concerns that we discussed in our letter of August 13, 1990.

-214-

Item 1

The DEIS states your intent to demolish the Waikikian Hotel and rebuild a new hotel with approximately 264 units--an increase of 132 visitor units in Waikiki. Calculations by the Department of General Planning (DGP) indicate that there now are approximately 31,800 visitor units in Waikiki. This already exceeds the 30,000 visitor unit limit set under the Development Plan (DP) Special Provisions, Section 32-2.2.(b)(2)(B). We note that the DEIS does not state the need to amend the DP Special Provisions for the Primary Urban Center to allow for the additional visitor units planned for this project, as we stated in our comments on the EISPN. This requirement should be stated in the Final EIS (FEIS) in:

Chapter 1. Summary--Sections G & H; and
Chapter 6. Relationship of the Proposed Action to Land Use Plans, Policies and Controls--Section C.

The FEIS should also state the General Plan Policy:

"Prohibit further growth in the permitted number of hotel and resort condominium units in Waikiki." (Economic Activity--Objective B, Policy 5)

Item 2

We find no analysis in the DEIS of the consistency of the proposed project with the list of Waikiki Master Plan concepts and urban design guidelines that we attached to our comments on the EISPN.

Item 3

Figure 13 (a reduction of Figure 3, Appendix F), Location of Wind Speed Sensors shows what appears to be the footprint of the upper recreation deck relative to adjacent structures in the Ilikai and Hilton Hawaiian Village. A similar map depicting the parking base in relationship to existing structures should be included in the FEIS.

Item 4

Discussion of pedestrian circulation, pedestrian amenities and landscaping--especially the landscaping of the ground level along the service road adjacent to the Ilikai Hotel should be more fully defined in the FEIS.

Item 5

We note that a two-tower design concept was considered and rejected for reasons which you state on page 35, DEIS. We disagree, however, that "nothing beneficial" would result from this alternative. We remain of the opinion that breaking up the bulk and mass of the 230-foot long building would be a preferrable urban design solution. Consideration of this alternative including financial feasibility should be analyzed further.

Item 6

The Final EIS should include information concerning the foundation type and proposed dewatering operation; your section on drainage (Chapter 7, C.4) provides no evidence of addressing this concern. We repeat our recommendation that you consult with the Ilikai and the Hilton Hawaiian Village concerning impacts of foundation construction involving piles and need for dewatering; this information should be provided in the FEIS.

Item 7

The DEIS contains no discussion of the proposed bus circulation and impacts that bus traffic will have upon the right-of-way as we requested in the EISPN. These concerns should be adequately addressed in the FEIS.

Item 8

The DEIS (Appendix I) states that "(t)he major part of the project site, currently is drained by means of sheet flow. Drainage toward the Ala Moana Boulevard frontage is through an existing catch basin and to the existing 8'x7' box drain culvert. There is minor drainage toward the Hilton Lagoon." Does this statement imply that most of the drainage is toward Ala Moana Boulevard? The EISPN (Section 5.2) indicated that drainage flow would be toward the ocean. Drainage flow patterns should be clarified in the FEIS, perhaps with sketches. Any impacts of the drainage upon the Hilton Hawaiian Village Lagoon should also be determined in the FEIS.

Item 9

Discussion of proposed improvements to the existing vehicular and pedestrian right-of-way (the alley) between the Ilikai and the project should be included in the FEIS.

Item 10

The landscape plan (Figure 8, p. 43) indicates extensive replacement or relocation of trees existing on the Waikikian site. Similarly, the DEIS does not discuss alternatives evaluated regarding the preservation of trees on the Waikikian site, nor any information on the alternative selected for preserving or transplanting mature trees. This information should be included in the FEIS.

If you have any questions, please call Verne Winquist at 527-6044.

Sincerely,

BENJAMIN B. LEE
Chief Planning Officer

BBL:gy

cc: DLU

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 536-6852
RES (808) 395-1330
FAX (808) 521-4292

November 16, 1990

Mr. Benjamin B. Lee
Chief Planning Officer
Department of General Planning
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Dear Mr. Lee:

Subject: Draft Environmental Impact Statement for the Waikikian Hotel

Thank you for your comments on the Draft Environmental Impact Statement (DEIS) as provided in your letter dated October 17, 1990. For your convenience, we are responding to your comments in the order in which they are presented, as follows:

Item 1. Need for Development Plan (DP) Amendment.

The following statement in your October 17th letter does not accurately reflect prior communication with you: "We note that the DEIS does not state the need to amend the DP Special Provisions for the Primary Urban Center to allow for the additional visitor units planned for this project, as we stated in your comments on the EISPN."

Your comments on the EISPN, dated August 13, 1990 were as follows: "The proposed hotel use for the site is consistent with the Resort designation on the DP Land Use Map. We will review the project in more detail during the EIS process and determine whether an amendment to the Development Plan Special Provisions Section 32-2.2 (b) (2) (B) would be required."

Chapters 1. and 6. of the DEIS disclose and fully discuss the fact that the proposed project would result in a net increase of 132 visitor units on the Waikikian Hotel site. It is also noted in the DEIS that DP Section 32-2.2 (b) (2) (B) sets forth a policy guideline of "about 30,000" visitor units for Waikiki.

The following aspects to this issue, including those already discussed in the DEIS, should be considered:

a. The proposed project represents a modest increase, less than one percent, to Waikiki's hotel unit inventory.

b. It conforms to both State and City expressed policy intent to support and improve prime visitor destinations, Waikiki specifically.

c. Infrastructure is either adequate now or will be made adequate to service and support the additional 132 units proposed (See also responses below.).

d. Requiring a DP amendment to exceed the policy guideline of "about 30,000" visitor units for a one-percent increase in units on this site is neither consistent, in terms of past approvals for new hotel units, nor supportive of other long-term policy objectives, such as upgrading visitor industry facilities.

e. If the policy concern in this regard is infrastructure, a valid concern throughout Waikiki, then that concern can and will be met. If design is the concern, all requirements of the City's Waikiki Special District will be met as well.

In summary, our position is that a DP amendment should not be required for this redevelopment project; that interpreting the 30,000 figure as an absolute in this case is inconsistent, specially in view of the numerous figures given and definitions developed for "visitor units" in Waikiki, and in view of past approvals; and that this interpretation is contrary to other long-term State and City policy objectives and plans. We feel that this matter was adequately discussed in chapter 6. of the DEIS; however, we will add it to Chapter 12., Unresolved Issues, in the Final EIS.

Item 2. Waikiki Master Plan Concepts.

Please refer to Chapter 4., page 35, of the DEIS. It is our understanding that there are several master planning efforts underway at the present time for Waikiki. While we saw no direct relevancy to those concepts provided to us at the time the DEIS was in process, we will continue to consider these and others in the design process as they re more fully developed.

Item 3. Parking Base

The parking base footprint is the same as the footprint of the upper recreation deck as shown in Figure 13. in the DEIS and Appendix F. This figure also shows the relationship of the parking base to existing structures.

Item 4. Service Road Amenities.

Please refer to Chapter 3., page 31, of the DEIS. Additional details on our proposal in this specific regard are as follows:

The pedestrian circulation for the proposed project is planned to accommodate the free-flow of movement by hotel guests and employees. Essentially, there will be a continuous pathway from the lobby area to the lagoon area at the makai end of the project. Varying in width, the paved pathway extends from a relatively wide lobby space, through a retail area, continuing to the pool deck/outdoor dining area and onto the sand lagoon edge.

The anticipated pavement material is intended to be of a stone material, such as quartzite or slate and/or specially-finished concrete.

All areas will be handicapped accessible.

There is currently a "Service driveway" paralleling the Ewa boundary of the property between the project and the Ilikai Hotel. There is no pedestrian accommodation at the present time, with pedestrians sharing the same driveway pavement as vehicles.

The project proposes a new pedestrian paved walkway along the service drive that will provide safer pedestrian movement. The new walkway will be curb height and meet the requirements of standard sidewalks. The new walkway will extend the entire length of the property.

A wall and fence system is planned between the service driveway and the landscaped areas within the project. There will be several locations along this walkway that will provide public access to the property. The wall and fence system is primarily intended for security and privacy; however, there will be visual access in certain locations.

Trees, consisting of shade trees and Coconuts, are proposed along the driveway to provide relief and interest.

Item 5. Design Concept.

Please refer to attached drawing for alternative design schemes considered. Design alternatives are discussed in Chapter 4., pages 35-36, of the DEIS. The choice between a one-tower or two-tower design is subjective in some respects, of course, but we have noted that the visual change in the surrounding areas would actually be more dramatic than that anticipated from the current design.

In addition, a twin tower on a common pedestal on this particular site is not economically feasible. The increase in circulation, such as elevator space, corridors, exit stairways, etc., creates a reduction of approximately 19 percent in the hotel unit F.A.R., which interpolates to a loss of 48 units.

However, further analysis indicates that there is a possibility of reducing the tower mass significantly (approximately 33 percent) by reducing the total length of the tower and adding units to the proposed Ocean Terrace. The length of the tower will be reduced from 230 to 153 feet, and correspondingly, the Ocean Terrace will be increased from 4 to 19 floors. The footprint for the Ocean Terrace is not expected to increase. This scheme (Scheme 3 on the attached) shows promise and will be pursued in greater detail at the time of design development of this project.

Item 6. Dewatering.

The following additional information is provided on this issue:

As with nearly all other high-rise buildings in Waikiki, the use of sixteen-and-one-half-inch octagonal precast prestressed concrete piles with a design capacity of eighty to one-hundred-and twenty tons is anticipated. The exact capacity will be determined by foundation investigations conducted after demolition of the existing buildings when site access for drilling exploratory borings will be available.

Adjacent buildings are pile-supported, so that it is anticipated that little or no damage will occur to adjacent

properties during the pile driving, foundation construction of the hotel and dewatering operation.

Unlike other high rise buildings in the Waikiki area, the current schematic design calls for all floor levels in the new hotel structure to be approximately six inches above the existing site grade which is approximately six feet above mean sea level. Excavation will only be required at pile caps and grade beams with the deepest excavation required to be approximately six feet below existing grade for the elevator pit located near the center of the building. It is anticipated that pile caps can be excavated with sheeting required only at property line conditions. Dewatering will be local and required only for the construction of the elevator pit and some of the deeper pile caps required for the main sheer wall elements of the building. It is anticipated that dewatering will be accomplished by conventional construction techniques utilizing on-site settling basins. Little or no disposal of on-site water into storm drainage systems will be required. The disposal of dewater will comply with Federal and State regulations pertaining to the environment, including water pollution.

Item 7. Bus Traffic Impacts.

The site plan proposes the location of a curbside bus pullout along the loop roadway near the hotel lobby entrance to accommodate passenger loading/unloading from buses and other vehicles. This pullout could be 70 to 80 feet long, which will be sufficient to accommodate one large bus and one shorter vehicle, or two minibuses, or three to four vans and passenger cars. With this location, bus circulation should be limited to the loop roadway in front of the hotel. Buses would not need to use the right-of-way between the Waikikian and Ilikai Hotels. The present City "TheBus" stop in front of the hotel should be eliminated to permit construction of the passenger loading area for the hotel. This bus stop primarily serves the Waikikian Hotel, since there is another bus stop located less than 300 feet Ewa which serves the Ilikai Hotel and Hobron Lane passengers.

Item 8. Drainage Flow Patterns.

Supplemental information on existing and future drainage patterns will be provided in the Final EIS as follows:

The peak discharge for existing site conditions is estimated as 4.8cfs. As a result of the proposed improvements, peak

runoff generated on the site is expected to increase; estimated projected peak discharge is 5.7 cfs. Proposed grading works and area catch basins will insure that water is drained away from structures and prevent drainage water flow toward the Hilton Hawaiian Villate Lagoon. As noted in the DEIS, long-term impact should be an improvement in the drainage throughout the project area and a lessening of particulate matter discharged into the Lagoon during periods of stormwater runoff. The addition of landscaped areas to the site should also decrease runoff slightly.

Item 9. (Refer to Item 4.) Existing Right-of-Way.

This appears to be essentially the same question as posed in Item 4. The "service road" (used principally by the Ilikai) is an existing public right-of-way, as discussed in the DEIS. As noted above and in the DEIS, extensive pedestrian improvements will be made to the right-of-way on the project boundary. No vehicular improvements are proposed.

Item 10. Landscape Plan.

Supplemental information, in addition to that contained in Chapter 5., pages 40-44, of the DEIS on tree relocation and/or replacement is as follows:

The proposed landscape for the project includes the preservation of all mature existing trees where-ever possible. Existing trees will be re-located or removed and replaced only if:

a. They are in direct conflict with new construction;

b. Pose or may pose a potential hazard to the public; or

c. Have caused or may cause extraordinary long-term maintenance and safety problems.

Existing trees and palms falling into the above categories which will be relocated include Coconut (Cocos nucifera) and Hala (Pandanus odoratissimus).

Where possible, trees to be relocated will be moved once to their permanent location. However, if this is not possible, then they will be stored on-site and maintained for future re-use.

Existing trees which may be removed and replaced include the Ficus (Banyan) trees. Their sheer size may preclude relocation. In addition, long-term maintenance may pose operational and safety problems.

If feasible, the existing Ficus trees could be donated to the City for use in nearby parks or other open space areas.

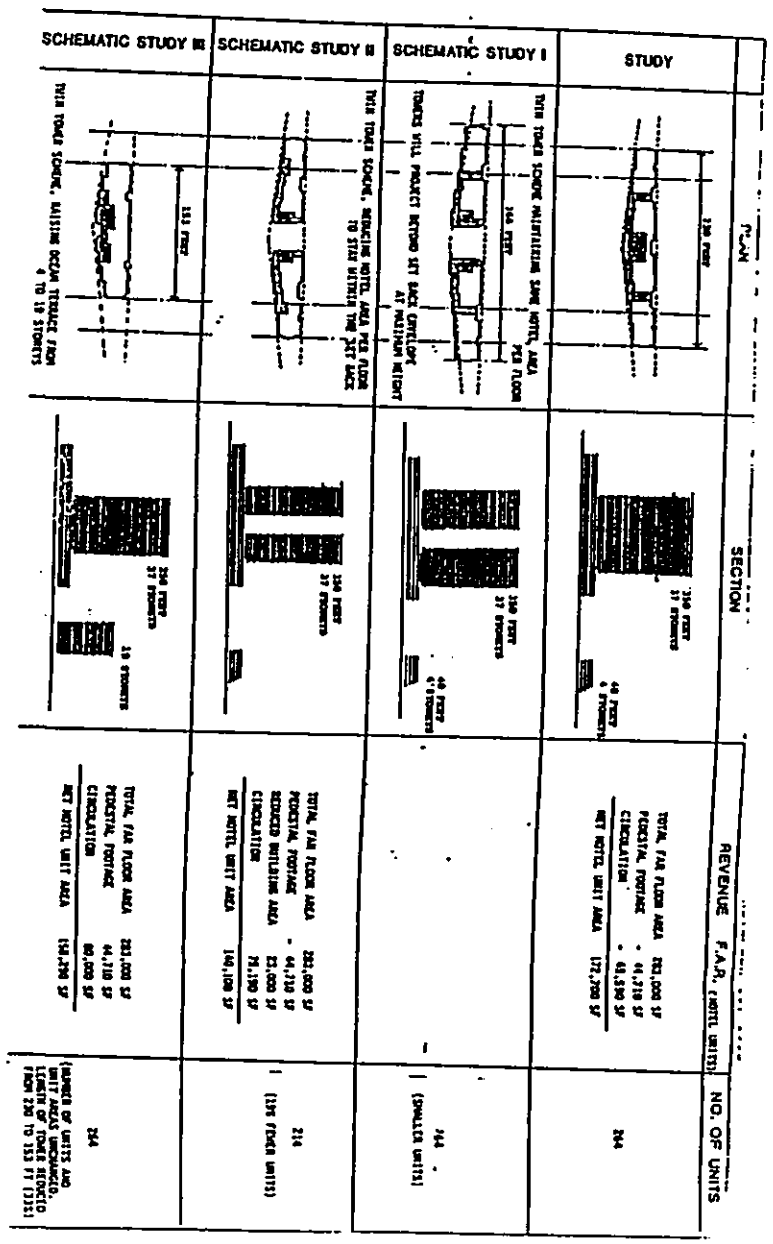
Should they be replaced possible replacement species include: Monkeypod (Samanea saman), Fiddleleaf Fig (Ficus lyrata) or False Kamani (Terminalia catappa).

Additional information on these and other issues will be included within the Final EIS as appropriate. If you should have questions or wish further information, please feel free to contact me.

Very truly yours,

Tyrone T. Kusao

TTK:afk
Encl.



DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET 5TH FLOOR
HONOLULU HAWAII 96813
PHONE 523 4427 • FAX 527 5698

FRANK F. FASI
MAYOR

MICHAEL N. SCARFONE
DIRECTOR

Gail M. Kaito
DEPUTY DIRECTOR

October 23, 1990

Honorable John Waihee, Governor
State of Hawaii
c/o Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Attention: Dr. Bruce Anderson

Dear Governor Waihee:

Subject: Draft Environmental Impact Statement
Waikikian Hotel
Tax Map Key: 2-6-9: 2, 3 and 10

We appreciate the opportunity to review the subject Draft Environmental Impact Statement. The Department has no comments to offer at this time.

Thank you for the opportunity to comment.

Sincerely,

Gail Kaito
for MICHAEL N. SCARFONE
Director

cc: Tyrone T. Kusao, Inc.

- 220 -

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
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RES (808) 305-1330
FAX (808) 521-4292

October 26, 1990

Mr. Michael N. Scarfone
Director
Department of Housing and Community Development
City and County of Honolulu
650 S. King Street, 5th Floor
Honolulu, Hawaii 96813

Subject: Draft Environmental Impact Statement for the
Waikikian Hotel.

Dear Mr. Scarfone:

Thank you for your letter dated October 23, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

FRANK F. FASI
MAYOR

DONALD A. CLEGG
DIRECTOR

LORETTA K. C. CHEE
DEPUTY DIRECTOR

LU9/90-6308(BWM)

October 19, 1990

Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Attention: Dr. Bruce Anderson, Deputy Director
Department of Health

Dear Governor Waihee:

Draft Environmental Impact Statement (DEIS)
for the Waikikian Hotel

We have reviewed the draft EIS for the proposed Waikikian Hotel Project and have the following comments:

1. Accepting Authority

   The accepting authority is the Mayor of the City and County of Honolulu, by the Department of Land Utilization, not the Governor of the State of Hawaii. The Department of Land Utilization will determine if the Final EIS is acceptable. We have already received some of the original comment letters on the DEIS which were sent to the Office of Environmental Quality Control (OEQC), and would appreciate being sent any others that OEQC receives.

2. Liquid Waste Disposal

   The Final EIS text should correctly note that any increase in the number of rooms over the existing 132 rooms will result in inadequate sewer capacity, and that the City has no plans to relieve the inadequate sewer lines at this time.

3. Drainage

   Existing and projected drainage volume in cubic feet per second (cfs) should be noted in the Final EIS.

4. Grading

   Although the Draft EIS notes that there will be no major dredging, grading, or dewatering, since the site is level, these statements should be quantified by stating what these "nominal" levels of dredging, grading, or dewatering will be in cubic yards (cy).

Thank you for the opportunity to comment. Copies of this letter will be provided to the applicant and their agent. If there are any questions, please call Bennett Mark of our staff at 527-5038.

Very truly yours,

DONALD A. CLEGG
Director of Land Utilization

DAC:lg

cc: JAMI Corp., c/o Tyrone T. Kusao

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

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November 16, 1990

Mr. Donald A. Clegg, Director
Department of Land Utilization
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Clegg:

Subject: Draft Environmental Impact Statement for the Waikikian Hotel

Thank you for your comments on our Draft Environmental Impact Statement (EIS) as provided in your letter dated October 19, 1990, addressed to Governor John Waihee, c/o Office of Environmental Quality Control.

For your convenience, we will respond to your comments in the order presented, as follows:

1. Accepting Authority. Thank you for the clarification provided in this regard.

2. Liquid Waste Disposal. You correctly noted an oversight in the Draft EIS concerning statements made about sewer capacity. It is our understanding that the Division of Wastewater Management, Department of Public Works, has indicated that the sections of the existing sewer system which service the project site will be inadequate to accommodate any additional sewage flow for more than the existing 132 hotel rooms, and that the City has no plans to improve the inadequate sewer line.

To remedy this situation, we are proposing to construct a relief sewer line along Ala Moana Boulevard from the intersection of the Boulevard and Kalia Road to the existing Fort DeRussy Wastewater Pumping Station for a distance of approximately 1,400 lineal feet. The relief sewer line is intended to intercept the sewage from the makai area of Ala Moana Boulevard and by-pass the inadequate sewer lines along the Boulevard. In addition, it is our understanding that no sewer connection for the subject project will be permitted until the relief lines are accepted by the City.

3. Drainage. With regard to existing and projected drainage volume, the peak discharge for existing site conditions is estimated as 4.8 cubic feet per second (cfs). As a result of the proposed improvements, peak runoff generated on the site is expected to increase; estimated projected peak discharge is 5.7 cfs.

4. Grading. There will be no dredging. Expected grading work will require approximately 3,000 cubic yards (cu. yd.) of excavation and 2,000 cu. yd. of embankment. Dewatering will be approximately 240 cu. yd.

We hope this responds adequately to your concerns. Appropriate sections of the Draft EIS will be revised to reflect the above corrections and supplemental information.

In the meantime, if you should have questions or wish additional information on the above, please feel free to contact me.

Very truly yours,

Tyrone T. Kusao

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU HAWAII 96813

FRANK F. FASI
MAYOR

WALTER M. OZAWA
DIRECTOR

ALVIN K. C. AU
DEPUTY DIRECTOR

September 20, 1990

Office of Environmental Quality Control
465 South King Street, #104
Honolulu, Hawaii 96813

Attention: Dr. Bruce Anderson

Subject: Draft Environmental Impact Statement (EIS)
Waikikian Hotel Project
Tax Map Key: 2-6-9: 2, 3 and 10

Gentlemen:

We have reviewed the draft EIS for the proposed Waikikian Hotel Project and make the following comments.

The applicant has adequately addressed the recreational needs of the project and has indicated that a recreational deck for passive recreational pursuits, a swimming pool and a health/fitness facility will be provided to serve hotel guests.

Thank you for the opportunity to review the Waikikian Hotel Project. Should you have any questions, please contact Wayne Lee of our Advance Planning Branch at 523-4246.

ALVIN K. C. AU, Acting Director

AKCA:jy

cc: Tyrone T. Kusao

- 223 -

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
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FAX (808) 521-4292

October 31, 1990

Mr. Alvin K. C. Au
Acting Director
Department of Parks and Recreation
City and County of Honolulu
650 S. King Street
Honolulu, Hawaii 96813

Dear Mr. Au:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated September 20, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

FRANK F. FASI
MAYOR

MICHAEL S. NAKAMURA
CHIEF

HAROLD M. KAWASAKI
DEPUTY CHIEF

OUR REFERENCE MS-LK

October 15, 1990

Dr. Bruce Anderson
Acting Director
Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Dr. Anderson:

Subject: Waikikian Hotel Project

We have reviewed the Draft Environmental Impact Statement concerning the proposed hotel, commercial and office space, and parking complex to be constructed at the site of the existing Waikikian Hotel.

We have no further comments to offer at this time. Thank you for the opportunity to review the draft.

Sincerely,

MICHAEL S. NAKAMURA
Chief of Police

By
JOSEPH AVEIRO
Assistant Chief of Police
Support Services Bureau

cc: JAMI corporation
Tyrone T. Kusao, Inc.

-224-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

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October 31, 1990

Police Chief Michael S. Nakamura
Honolulu Police Department
City and County of Honolulu
1455 S. Beretania Street
Honolulu, Hawaii 96814

Dear Chief Nakamura:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated October 15, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

Ltr: transmit to DLN LU 10/30.7872

DEPARTMENT OF PUBLIC WORKS

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU HAWAII 96813

FRANK F. FASI
MAYOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER

C MICHAEL STREET
DEPUTY DIRECTOR

'90 OCT 17 A11:52

OFC. OF ENVIRONMENTAL QUALITY CONTROL

In reply refer to:
ENV 90-236(449)

October 15, 1990

The Honorable John Waihee, Governor
State of Hawaii
c/o The Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

Subject: Draft Environmental Impact Statement (DEIS)
Waikikian Hotel
(Tax Map Key: 2-6-9: 2, 3 and 6)

We have reviewed the DEIS and have the following comments:

1. In our comments to the Environmental Impact Statement Preparation Notice, we mentioned that the sewer adequacy was approved on a one-for-one replacement basis; therefore, any increase in the number of rooms over the existing 132 rooms will not be allowed to connect to the municipal system until the inadequate line is relieved.

2. We also indicated that the City has no plans to relieve the inadequate sewer at this time; therefore, if the developer wants to pursue the project, the relief lines will have to be constructed at his costs.

Very truly yours,

Sam Callejo

SAM CALLEJO
Director and Chief Engineer

-225-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

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November 13, 1990

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
650 S. King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Subject: Draft EIS for Waikikian Hotel
(DPW File No. ENV 90-236(449)

Thank you for your comments contained in your October 15, 1990 letter addressed to the Governor, State of Hawaii.

With reference to your first comment, please be advised that we are fully aware that sewer capacity in the area cannot accommodate units in excess of the existing 132 rooms. The statement regarding sewer adequacy for the proposed project in the Draft EIS was an oversight on our part.

Our project engineer, Hida, Okamoto & Associates, Inc. is presently working on a plan to construct a relief sewer line along Ala Moana Boulevard which will be paid for by the developer. At the appropriate time, the required plans will be submitted to your office for approval.

Very truly yours,

Tyrone T. Kusao

TTK:afk

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
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October 31, 1990

Mr. Russel S. Nagata
State Comptroller
Department of Accounting
and General Services
State of Hawaii
1151 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Nagata:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

-226-

Thank you for your letter dated September 18, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

(P)1764.0

SEP 18 1990

Governor
State of Hawaii
c/o Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Attention: Dr. Bruce Anderson

Gentlemen:

Subject: Waikikian Hotel
Draft EIS

Thank you for the opportunity to review the subject document. We have no comments to offer.

Should there be any questions, please contact Mr. Ralph Yukumoto of the Public Works Division at 548-7192.

Very truly yours,

RUSSEL S. NAGATA
State Comptroller

RY:hc
cc: JAMI Corporation
✓Tyrone T. Kusao, Inc.

JOHN WAIHEE
GOVERNOR
ROGER A. ULVELING
DIRECTOR
BARBARA KIM STANTON
DEPUTY DIRECTOR
LESLIE S. MATSUBARA
DEPUTY DIRECTOR

DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM

ENERGY DIVISION 335 MERCHANT ST., RM. 110, HONOLULU, HAWAII 96813 PHONE: (808) 548-4160 FAX: (808) 521-5243

90:863e

October 23, 1990

The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Attention: Dr. Brice Anderson

Dear Governor Waihee:

Subject: Draft Environmental Impact Statement (DEIS) for Waikikian Hotel

The Energy Division has received the above DEIS and has the following comments:

We note that in Chapter 6, neither the State's energy goals, objectives, policies, and priority guidelines as set out in the Hawaii State Plan, nor the State Energy Functional Plan are mentioned. The DEIS should examine the Waikikian Hotel project for consistency with the energy provisions of the Hawaii State Plan and with the State Energy Functional Plan. The DEIS should explain in some detail the energy impacts of the Waikikian Hotel, as well as the energy conservation design/technologies and renewable energy sources that will be used to help meet the project's energy requirements. The requirement for an evaluation of the project's energy impacts in the DEIS is spelled out in the enclosed excerpt from the OEQC Bulletin.

We recommend that specific language be included to describe the energy-efficient design/technologies and renewable energy sources that will be used to minimize energy consumption in the Waikikian Hotel. We would hope that the most efficient energy saving technology would be used in the hotel's air conditioning, water heating, and lighting systems. High efficiency motors and chillers, a heat recovery system, and energy-saving fluorescent lamps and ballasts are among the items we would like to have considered and specified in the DEIS. In addition, we recommend separate metering where appropriate for the commercial units to encourage efficient energy consumption by the occupants.

Thank you for the opportunity to provide comments.

Sincerely,

Maurice H. Kaya
Energy Program Administrator

MHK/PE:do
Enclosure
cc: JAMI Corporation
Tyrone T. Kusao

465 SOUTH KING STREET - KEKUANAOA BUILDING, #104 - HONOLULU, HAWAII 96813 TELEPHONE (808) 548-6915

OEQC BULLETIN

OFFICE OF ENVIRONMENTAL QUALITY CONTROL

JOHN WAIHEE
GOVERNOR

MARVIN T. MIURA, Ph D
DIRECTOR

Volume 5 | September 23, 1988 | Number 18

REGISTER OF CHAPTER 343, HRS DOCUMENTS

All Chapter 343, HRS documents submitted for publication in the OEQC Bulletin must be addressed to the Office of Environmental Quality Control, 465 South King Street, Room 104, Honolulu, Hawaii 96813. Documents addressed otherwise will not be considered for publication.

NEGATIVE DECLARATIONS

The following are Negative Declarations or determinations made by proposing or approving agencies that certain proposed actions will not have significant effects on the environment and therefore do not require EISs (EIS Rules 11-200-11). Publication in the Bulletin of a Negative Declaration initiates a 60-day period during which litigation measures may be instituted. Copies are available at 25 cents per page upon request to the Office. Parties wishing to comment may submit written comments to the agency responsible for the determination (indicated in project title). The Office would appreciate a copy of your comments.

KAUAI

GOLF COURSE AT HYATT REGENCY, POIPU, Ainako Resort Associates-Grove Farm Properties, Inc./County of Kauai Planning Commission

The applicant proposes to develop an 18-hole championship-calibre golf course and operate it in association with the planned 605-room Hyatt Regency Kauai at Keoneloa Bay. The proposed development will be maintained as a resort-oriented facility but will be opened to the public. It will be developed also to accommodate an increasing demand for golf play in Poipu and to make South Kauai more competitive with other visitor destination areas on the island.

The golf course will consist of 18 holes, a driving range, putting green, and clubhouse. The clubhouse will be located near the planned Hyatt Regency Kauai and will include parking and access from Poipu Road extension. The clubhouse will include a golf pro shop, restaurant, golf club storage room and golf cart maintenance area. Also proposed are a golf course maintenance building and temporary field nursery that will be located within the golf fairways away from the golf clubhouse.

RECEIVED AS FOLLOWS

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 536-6852
RES (808) 395-1338
FAX (808) 521-4292

November 16, 1990

Mr. Maurice H. Kaya
Energy Program Administrator
Department of Business and Economic
Development & Tourism
335 Merchant Street, Room 110
Honolulu, Hawaii 96813

Dear Mr. Kaya:

Subject: Draft Environmental Impact Statement for the Waikikian Hotel

Thank your for your comments on our Draft Environmental Impact Statement (DEIS) as provided in your letter dated October 23, 1990. You requested that an evaluation of the project's energy impacts be included in the DEIS. A description of the proposed energy-efficient design and technology to be incorporated within the proposed development is attached.

-228-

We hope this adequately responds to your concerns. The DEIS will be revised as appropriate to reflect the attached, and to examine the project's consistency with energy provisions of the Hawaii State Plan and State Energy Functional Plan.

In the meantime, if you should have questions, or wish additional information on the above, please feel free to contact me.

Very truly yours,

Tyrone T. Kusao

Enc.

NOTEWORTHY

NEWS FROM THE EPA

Rule finalized for Premanufacture Notification Fees

The EPA Administrator signed a final rule requiring fees from manufacturers, importers, and processors who are seeking Agency review of premanufacture notices (PMNs) for new chemicals, exemption applications and significant new-use notices submitted under Section 5 of the Toxic Substances Control Act (TSCA). The rule will be published in the Federal Register within two weeks. Contact: TSCA Assistance Information Service (202) 554-1404.

Chemical Fact Sheets

EPA has distributed about 180 fact sheets prepared by the State of New Jersey on chemicals which must be reported under Section 313 of Title III (annual toxic chemcial release reports). EPA and New Jersey have committed to developing fact sheets on the remaining Section 313 chemicals by December 31, 1988. Each fact sheet contains a 2- to 5-page summary of relevant information on each chemical and was developed primarily for individuals working with chemicals, and also offers relevant and important information for general use. To obtain copies of the fact sheets, call the TSCA Information Assistance Service (202)554-1404.

Lead in Drinking Water

Safe Drinking Water Hotline's correct number: 1-800-426-4791 or (202)382-5533 in the Washington metropolitan area.

ENERGY IMPACTS

Draft Environmental Impact Statements should comply with the requirements found in State laws for evaluating any energy impacts that the project will have. The mandate for such an evaluation is found in Chapter 344, HRS ("State Environmental Policy") and Chapter 226, HRS ("Hawaii State Planning Act"). In particular, Chapter 226-18(a)(2) and (c)(3); 226-52(a)(2) and (b)(2)(D); and 226-103(f)(1) and (2) should be noted.

ENVIRONMENTAL COUCNIL MEETINGS

The Environmental Council is currently updating its list of individuals, organizations, and agencies that receive notices of its meetings. All those wishing to be kept on or added to the list are asked to submit their names and addresses to: Environmental Council, 465 S. King Street, Room 104, Honolulu, HI 96813.

WAIKIKIAN HOTEL REDEVELOPMENT:

The following proposals relating to energy-efficient electrical and mechanical systems will be integrated with site planning and design to the maximum extent feasible:

1. Lighting systems will utilize energy-efficient lamps and ballasts. When incandescent lamps are considered necessary, because of function and design, their use will be minimized for conservation.

2. The selection of light-colored, highly-reflective finishes for back of the house areas will be coordinated with the design team, with the goal of increasing the coefficient of utilization for lighting calculations and an overall savings in energy.

3. Grounds security lighting can be reduced to a low minimum, but must also be balanced against guest safety and liability concerns.

4. Photo-electric cell controls will be provided for parking and area post-mounted lights, rather than the use of time clocks which can sometimes cause day time energization of night lighting fixtures.

5. Power factor correction capacitors will be provided for the electrical systems and coordination with specifiers of motors will be included to ensure that high power factor and high efficiency motors are generally to be provided.

6. An emergency generator will be provided for the project and the use of diesel fuel is anticipated. Heat recovery from the engine is not planned; the benefit to cost ration is not good, because the engine is only supporting the load for a low number of hours per year.

7. Individual separate tenant metering is favored, because of both the potential for energy conservation on the part of the individual tenants, as well as the elimination of hotel management responsibility for check metering of tenant utility charges.

8. The judicious use of renewable energy sources such as solar, heat recovery and efficient fuels are all mandates that modern mechanical designs incorporate. For example, hot water usage is definitely an area where heat pumps or heat recovery from air conditioners will be strongly considered.

9. Specialty systems, such as salt water cooling for air conditioners, are attractive, but the high cost of maintenance and restrictive clean water requirements generally discourage this alternative as a viable solution.

Consideration will, however, be give to these systems in the hope that benefit can be found.

10. Only proven sanitary systems and components will be specified. The range of concerns from restricted flow shower heads, to flushing rates of water closets, to guidance for guests to conserve will be addressed. An analysis will be made to determine the appropriate use of hot water system heat tapes, recirculation systems and booster pumping.

11. Extreme care will be taken to select walls, roofs, and their insulation, window and lanai openings, and ceiling types to ensure that proper "R" factor insulating materials are selected to provide maximum benefit. In addition, air conditioning systems will have to be selected to suit the application. Set-back temperatures will also be considered for guest rooms, along with beside controllers.

12. Energy management systems will be incorporated with emphasis on the control and proper cycling of large machinery, rather than excessive cycling of end use machinery, such as air handlers and fan coil units.

13. Natural ventilation will be encouraged, especially for the parking structure.

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF DEFENSE
OFFICE OF THE ADJUTANT GENERAL
3949 DIAMOND HEAD ROAD, HONOLULU, HAWAII 96816-4495

ALERIS T. LUM
MAJOR GENERAL
ADJUTANT GENERAL

MYLES M. NAKATSU
COLONEL
DEPUTY ADJUTANT GENERAL

September 13, 1990

Engineering Office

Governor, State of Hawaii
c/o QEQC
465 South King Street, #104
Honolulu, Hawaii 96813

Dear Governor:

Waikikian Hotel

Thank you for providing us the opportunity to review the above subject project.

We have no comments to offer at this time regarding this project.

Sincerely,

Jerry M. Matsuda
Lieutenant Colonel
Hawaii Air National Guard
Contracting & Engineering Officer

cc: JAMI Corporation
Tyrone T. Kusao, Inc.

NATIONAL GUARD
Americans At Their Best

-230-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 538-6852
RES (808) 395-1336
FAX (808) 521-4282

October 31, 1990

Lt. Col. Jerry M. Matsuda
Contracting and Engineering Officer
Hawaii Air National Guard
Department of Defense
State of Hawaii
3949 Diamond Head Road
Honolulu, Hawaii 96816

Dear Lt. Col. Matsuda:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated September 13, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 3378
HONOLULU, HAWAII 96801

JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

September 19, 1990

In reply, please refer to:
EPHSD
2-157

Mr. Tyrone T. Kusao
Tyrone T. Kusao Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Dear Mr. Kusao:

Subject: Comments to Environmental Assessment (EA) for Waikikian Hotel, Waikiki, Oahu, Hawaii
Tax Map Key: 2-6-9: 2,3,10

-231-

Noise

The site plan for the Waikikian Hotel shows a proposed open Tahitian Lanai Restaurant. The Department of Health has received numerous complaints concerning the noise disturbances from entertainment activities at the original Tahitian Lanai. Therefore, we have reservations regarding this proposed open restaurant design, especially if entertainment activities are permitted.

Vector Control

In view of the near proximity to food establishments and other nearby hotels at the site to be demolished, we are requiring that the developer submit a written report to meet the requirements of Chapter 26, Vector Control, 11-26-35 Rodents; Demolishing of Structure and Clearing of Sites and Vacant Lots.

Wastewater Disposal

All wastewater generated must connect to the City sewer system. No on-site or private sewage treatment plant will be allowed.

Very truly yours,

BRUCE S. ANDERSON, Ph.D.

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU HAWAII 96813
BUS (808) 538-6852
RES (808) 395-1338
FAX (808) 521-4292

November 16, 1990

Bruce S. Anderson, Ph.D.
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Anderson:

Subject: Environmental Impact Statement For Waikikian Hotel
- Your Reference #EPHSD2 -157.

Thank you for your September 19, 1990 letter containing your agency's comments in response to the project's environmental assessment report.

We agree with your statement concerning noise complaints attributed to the piano bar of the Tahitian Lanai Restaurant. As shown on Figure 3A, Site Plan of the Draft EIS document, the proposed main restaurant which includes the piano bar will be located in a completely enclosed setting as contrasted to the present establishment which is open on two sides. However, similar to the current arrangement, there will be several outdoor tables strictly for dining purpose. We are confident that the implementation of the proposed plan will reduce noise impact considerably.

We have noted your comments with respect to vector control and wastewater disposal and will comply with the stated requirements.

We appreciate your time in reviewing and commenting on the submitted document.

Very truly yours,

Tyrone T. Kusao

TTK:afk

LWI: SUMMIT TO BLU

JOHN WAIHEE
GOVERNOR OF HAWAII

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
KEITH W. AHUE
MANABU TAGOMORI
RUSSELL Y. TSUJI

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

'90 OCT 23 P1:27

REF: OCEA, TR 1.
QUALITY ...

File No.: 91-123
Doc. No.: 0166E

MEMORANDUM

OCT 22 1990

TO: Office of Environmental Quality Control

FROM: William W. Paty, Chairperson
Board of Land and Natural Resources

SUBJECT: Draft EIS for the Waikikian Hotel

Thank you for giving our Department the opportunity to comment on this matter. We have reviewed the materials you submitted and have no comments.

Thank you again for your cooperation in this matter. Please feel free to call me, or Jay Lembeck in our Office of Conservation and Environmental Affairs (at 548-7837), if you have any questions.

William W. Paty

TTK:afk

-232-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2511
HONOLULU, HAWAII 96813

BUS (808) 538-8652
RES (808) 395-1330
FAX (808) 521-4282

November 13, 1990

The Honorable William W. Paty
Chairperson
Board of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Paty:

Subject: Draft EIS for the Waikikian Hotel
(DLNR References: File No. 91-123, Doc. No. 0166E)

This is to acknowledge receipt of your October 22, 1990 memorandum addressed to the Office of Environmental Quality Control concerning the subject matter. We appreciate your taking time to review the Draft EIS document and your comments thereon.

Very truly yours,

Tyrone T. Kusao

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

'90 SEP 31 A9:16

REF:OCEA JN

QUALITY

WILLIAM W. PATY, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
KEITH W. AHUE
MANABU TAGOMORI
RUSSELL H. FURUMOTO

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION PROGRAM
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

File No.: 91-123
Doc. No.: 9232E

MEMORANDUM

SEP 28 1990

TO: Office of Environmental Quality Control

FROM: Roger C. Evans, Administrator
Office of Conservation and Environmental Affairs

SUBJECT: Draft EIS for the Waikikian Hotel

This is to acknowledge your correspondence of September 10, 1990, relative to draft EIS for the Waikikian Hotel.

Because of an extreme shortage of both personnel and positions, we can not tell you when we'll be able to answer you in terms of substance.

This problem is not unique to our office or department, but a personnel shortage that exists Statewide.

Rest assured that as soon as we can get some answers for your questions we'll respond in more detail.

-233-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1100 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 538-6652
RES (808) 395-1338
FAX (808) 521-4292

November 13, 1990

Mr. Roger C. Evans
Administrator
Office of Conservation
and Environmental Affairs
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Evans:

Subject: Draft EIS for the Waikikian Hotel
(DLNR References: File No. 91-123, Doc. No. 9232E)

This is to acknowledge receipt of your memorandum dated September 28, 1990 addressed to the Office of Environmental Quality Control regarding the subject matter. Should you wish to communicate with me at a later date concerning the proposed project, please feel free to do so.

Very truly yours,

Tyrone T. Kusao

TTK:afk

JOHN WAIHEE
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF BUDGET AND FINANCE
HOUSING FINANCE AND DEVELOPMENT CORPORATION
SEVEN WATERFRONT PLAZA, SUITE 300
500 ALA MOANA BOULEVARD
HONOLULU, HAWAII 96813
FAX (808) 543-6041

JOSEPH K. CONANT
EXECUTIVE DIRECTOR

IN REPLY REFER TO:

90:PLNG/5060jt

October 23, 1990

To: Governor, State of Hawaii
c/o Office of Environmental Quality Control

From: Joseph K. Conant
Executive Director

Subject: DRAFT ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE WAIKIKIAN HOTEL

-234-

Thank you for the opportunity to comment.

We have reviewed the draft EIS for the Waikikian Hotel and have no substantive comments to offer.

JT:aks

c: Tyrone T. Kusao, Inc.

T. YRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6652
RES (808) 395-1338
FAX (808) 521-4282

October 26, 1990

Mr. Joseph K. Conant
Executive Director
Housing Finance and Development Corp.,
State of Hawaii
7 Waterfront Plaza, Suite 300
500 Ala Moana Blvd.,
Honolulu, Hawaii 96813

Dear Mr. Conant:

Subject: Draft Environmental Impact Statement for the Waikikian Hotel

Thank you for your letter dated October 23, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

EDWARD Y HIRATA
DIRECTOR

DEPUTY DIRECTORS
DANIEL ROCHE (PRIMARY)
RONALD N HIRANO
JEANNE K SCHULTZ
CALVIN M TSUDA

IN REPLY REFER TO

HWY-PS
2.4006

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

Dr. Bruce Anderson
Office of Environmental
Quality Control
465 South King Street, #104
Honolulu, Hawaii 96813

Dear Dr. Anderson:

Subject: Environmental Impact Statement For
Waikikian Hotel, TMK: 2-6-9: 2, 3, 10

Thank you for your letter requesting our review of the subject EIS.

We have the following comments:

1. The report should include sketches of traffic circulation patterns/volumes at the hotel entrance and surrounding area. We will need more details on the hotel entrance/loop and would like to see definitive proposals for traffic impacts caused by the development.

2. We have some concern on the location of the parking entrance. We recommend advanced coordination with our Highways Division, which would include the submittal of a layout showing the location of the parking entrance.

   Measures to relieve traffic backup from the parking structure onto Ala Moana Boulevard must be considered. The parking lot attendant's booth should be placed further away from Ala Moana Boulevard.

3. Drainage requirements should comply with all City and State guidelines.

4. The traffic projections appear to be low. The report should elaborate on the assumptions used to determine the trip generation, growth rate and peak hour volumes.

5. The applicant will be required to submit plans for construction work within our highway rights-of-way for our review and approval. All costs incurred for the required improvements shall be borne by the applicant.

Very truly yours,

Edward Y. Hirata
Director of Transportation

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 538-8852
RES (808) 395-1338
FAX (808) 521-4292

November 8, 1990

Mr. Edward Y. Hirata
Director of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Hirata:

Subject: Draft Environmental Statement for the Waikikian Hotel

Thank you for your comments on our Draft Environmental Impact Statement (EIS) as provided in your letter dated October 11, 1990. For your convenience, we will respond to your comments in the order presented, as follows:

1. Traffic Circulation Patterns/Hotel Entrance/Loop. A sketch of traffic movements along the old roadway loop in front of the Waikikian Hotel site is depicted in Exhibit 1. (attached). The loop road provides access to a series of driveways including:

a. Exit from the Ilikai Hotel porte cochere (entrance is directly from Ala Moana Boulevard);

b. Separate entrances to the below-grade reserved parking level and above-grade visitor parking level of the Ilikai Hotel;

c. Intersection with the public alley which separates the Waikikian and Ilikai Hotels, and which connects to Harbor Drive (Holo Moana) makai of the hotels; and

d. Driveway for the Waikikian Hotel.

Existing and 1993 "with project" peak hour volumes are shown in Exhibit 1. The loop road also has a TheBus stop located adjacent to the Waikikian Hotel.

Additional detail on the project passenger-loading area, location and design of the hotel driveway, and disposition of the bus stop will be provided for your review during the design process.

2. Location of Parking Entrance.

The traffic plan for the hotel envisions no increase in the number of driveways at the site. The plan provides a driveway entrance/exit for the parking garage at approximately the same location as the present Waikikian Hotel driveway. We will submit plans for the entrance drive to your department for approval and will coordinate with your Highways Division as requested.

The expanded Waikikian Hotel would result in only a small increase in vehicular volumes along the roadway. Peak hour volumes along the loop roadway currently are between approximately 88 and 136 vehicles. The hotel would increase this total volume to a range between 106 and 156 vehicles.

3. Drainage Requirements.

The peak discharge for existing site conditions is estimated at 4.8 cubic feet per second (cfs). As a result of the proposed improvements, peak runoff generated on-site is expected to increase; estimated projected peak discharge is 5.7 cfs, or a potential increase of approximately 19 percent. All required drainage improvements will be developed to City and County standards to ensure that adequate and appropriate improvements are made.

4. Traffic Projections.

The estimates of non-project traffic in the area for mid-1993 were developed as follows:

a. Existing peak hour volumes were increased by three percent to reflect a continuation of the historic growth rates in the Waikiki area between mid-1990 and mid-1993;

b. Trip generation and distribution data for the Waikiki Landmark were obtained from the project Draft EIS. Directional assignment of the project trips onto Ala Moana Boulevard at the Kalakaua Avenue intersection was based on the proportional split of total peak hour trips between the two streets. This proportional split was applied to the Waikiki Landmark trips assigned to/from the streets Diamond Head of the Landmark site.

c. Trip generation, distribution, and assignment data for the Fort DeRussy development were obtained from the "Fort DeRussy Traffic Impact Report." The report forecasts were adjusted to reflect a recent revision of the plan to provide only enough additional parking to support the new hotel facility, rather than the earlier plan, used in the traffic impact report, to add approximately 1,200 parking

stalls. The future increase in Fort DeRussy traffic volumes was reduced to about one-third of that in this report to reflect the reduced scale of the new parking facilities; and

d. The increases identified in steps a., b., and c. above were added to the May 1990 traffic counts.

5. Construction Within Rights-of-Way.

All plans for construction work within highway rights-of-way will be submitted to the State Department of Transportation for review and approval, and all costs incurred for required improvements will be borne by the applicant.

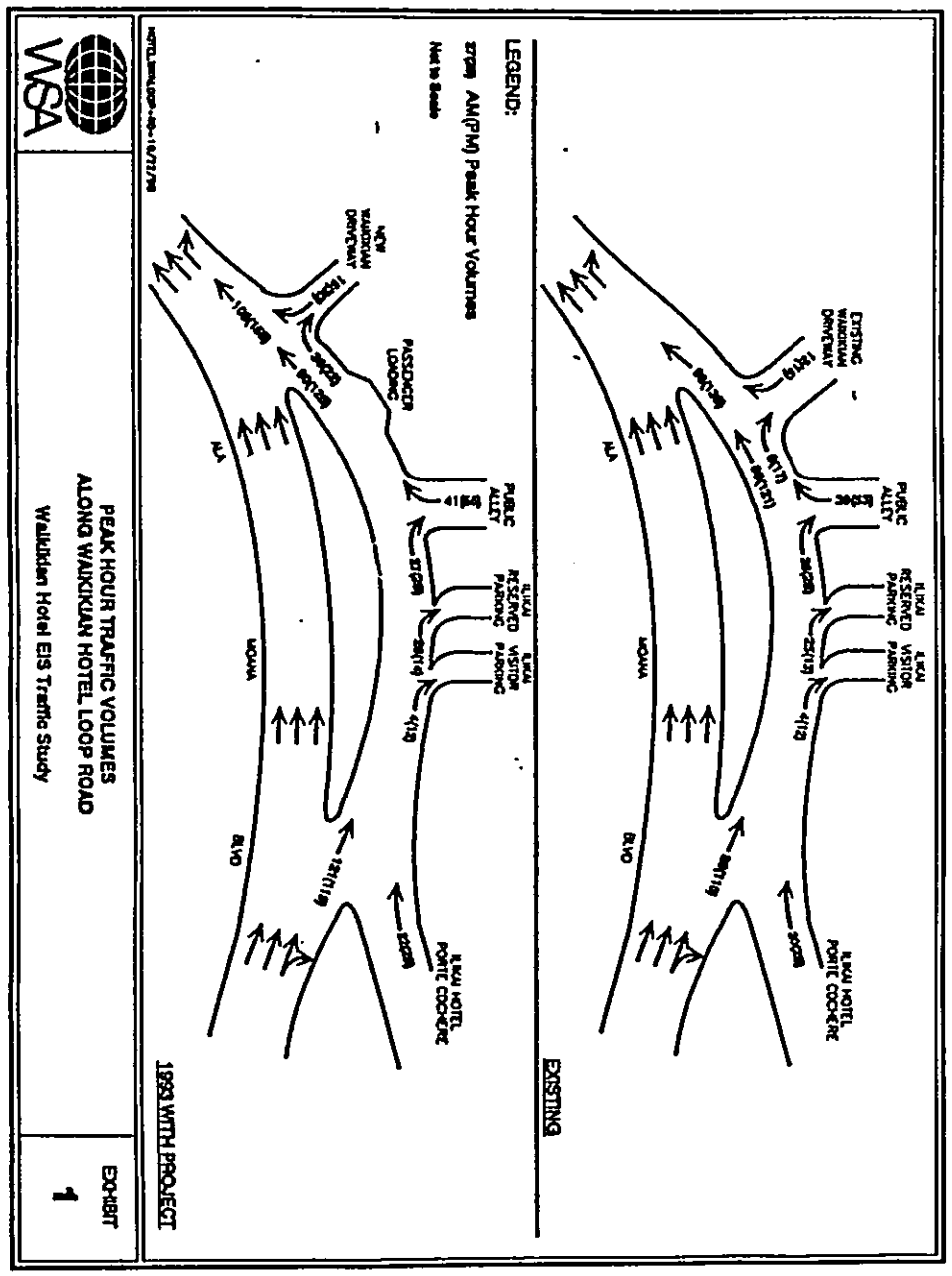
We hope this responds adequately to your concerns. Appropriate sections of the Draft EIS will be revised to reflect the above supplemental information.

In the meantime, if you should have questions or wish additional information on the above, please feel free to contact me.

Very truly yours,

Tyrone T. Kusao

Encl: Exhibit 1.



OFFICE OF STATE PLANNING
Office of the Governor
STATE CAPITOL, HONOLULU, HAWAII 96813 TELEPHONE (808) 548-3011

October 15, 1990

The Governor, State of Hawaii
c/o OEQC
465 South King Street, #104
Honolulu, Hawaii 96813

Attention: Dr. Bruce Anderson

Dear Dr. Anderson

Subject: Environmental Impact Statement (EIS)
Waikikian Hotel
Waikiki, Oahu

-238-

We have reviewed the Environmental Impact Statement for the proposed redevelopment of the Waikikian Hotel, which will consist of approximately 264 units along with 20,000 square feet of commercial and administrative office space, and parking for 180 automobiles. The 1.9 acre subject property is located between Ala Moana Boulevard and the Hilton Hawaiian Lagoon in Waikiki, Tax Map Key: 2-6-9-: 2, 3 and 10.

We have reviewed the document and have no comments to offer at this time.

Thank you for the opportunity to comment.

Sincerely,

Harold S. Masumoto
Director

cc: JAMI Corportation
Tyrone T. Kusao, Inc
OEQC

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6652
RES (808) 395-1330
FAX (808) 521-4292

October 31, 1990

Mr. Harold S. Masumoto
Director
Office of State Planning
Office of the Governor
State Capitol
Honolulu, Hawaii 96813

Dear Mr. Masumoto:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated October 15, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

University of Hawaii at Manoa

Environmental Center
Crawford 317 • 2550 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 948-7361

October 23, 1990
RE:0565

Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Attention: Dr. Bruce Anderson

Dear Governor:

Draft Environmental Impact Statement (EIS)
Waikikian Hotel
Waikiki, Oahu

The above referenced document proposes demolition of the existing Waikikian Hotel and construction of a new hotel on the same site, including 264 guest rooms, 20,000 square feet of commercial space, and 180 parking stalls.

Our review was prepared with the assistance of Chuck Gee, Travel Industry Management; Luciano Minerbi, Urban and Regional Planning, Hans-Jurgen Krock, Ocean Engineering; and William Grannis, Environmental Center.

Our reviewers have identified several areas of concern with regard to the proposed Waikikian Hotel including issues of further hotel development in Waikiki, traffic congestion, wastewater management, and human resources.

Waikiki Hotel Development

Although the Waikikian Hotel's projected room count (264) constitutes a modest addition to existing inventory in Waikiki, the continued development of high-rise structures in an area already saturated with similar buildings deserves further scrutiny. Despite the moderate increase in capacity (less than a 0.1 percent increase in the number of hotel units in Waikiki), the hotel's proposed size (350 ft. height) and location (between the Ilikai and Hilton Hawaiian properties) constitute a significant physical addition to an already congested area. While the Waikikian property is admittedly old and underutilized from an economic standpoint, the developer may want to consider the impact of such a structure within the larger perspective of Waikiki's overall growth.

Waikiki District Carrying Capacity

There has been much discussion regarding the future of Waikiki, and the possibility of implementing a master plan to guide its future growth. These discussions have been based on the perception that Waikiki's continued uncontrolled development will result in a diminished tourist product. The EIS states that "...current City policy guideline support[s] a Waikiki destination area of 'about 30,000' visitor units. Since a reliable count of existing units, including those recently approved is not available..." (pp. 105-106). However, a document published by the Hawaii Visitors Bureau in February 1989 entitled "1989 Visitor Plant Inventory" lists the total number of visitor units in Waikiki at 32,808. Although this figure was compiled by mail survey and counted only units whose owners responded to the survey, the current number of visitor units clearly exceeds limits expressed in City policy guidelines. In addition, properties under construction at the time of the survey such the Waikiki Prince Hotel (517 units) were not included.

In the light of these statistics, we recommend that the Waikikian Hotel EIS include further discussion of the relationship of the project to the Waikiki Special Design District and Development Plan Guidelines.

Traffic Congestion

While the analysis of nearby traffic patterns anticipates an impact of less than 1 percent (p. 86), the study acknowledges that the area fronting the hotel, near the existing entry to the Ilikai, may pose problems in the future (p. 135). Problems resulting from the volume of newly generated traffic will be compounded by the confusion resulting from the addition of another parking entrance at this loop area. It should be noted that this is already an area of heavy pedestrian traffic, and the addition of another entrance here may result in a very hazardous situation. The inflow and outflow of vehicles from Ala Moana Boulevard needs further attention.

Employment

Given Hawaii's current unemployment rate (below 3 percent) and the tourism industry's ongoing labor shortage, locating adequate personnel for construction and operation of the proposed hotel may pose problems. The Draft EIS estimates that in the short term, approximately 1,766 jobs will be required (p. 76). Some attention should be given to addressing recruitment and training of these workers. Many (perhaps a majority) will be commuting from distant Leeward neighborhoods, and thus the housing and traffic implications of these additional jobs also must be considered.

Wastewater Management

The Department of Public Works has noted that any increase of number of rooms above the existing 132 will result in inadequate sewer capacity and that relief lines will have to be constructed and paid for by the developer (p. 183). However, pages 6 and 9 of the summary state that increased demands on water and liquid waste disposal are expected to be met by existing facilities. This apparent discrepancy needs to be resolved in the Final EIS.

Drainage

The Draft EIS indicates that there will continue to be minor drainage toward the Hilton Lagoon after construction of the proposed Waikikian Hotel. It is our understanding that the neighboring Hilton Hawaiian Village is planning to refurbish the lagoon area to improve water quality. The Hilton's plans for the lagoon might be aided by some reconfiguration of the Waikikian's grating to divert water away from the lagoon area. Our reviewers suggest that the JAMI Corporation be in communication with the Hilton Hawaiian Village on this issue.

Socio-Economic Displacement

The Draft EIS fails to specify mitigating measures for the displacement of the few small retail shops now located on the site. Although the new building will provide increased commercial space for lease, the Draft EIS does not include a survey of the needs of existing retailers or a plan for relocating them in the new building if they desire to remain on the site. Information about commercial rental increases also is not provided at page 75-76. Thus, assessment of who will remain, who will go out of business, who will be evicted, and respective hardships for rental increases and loss of revenues is not provided. Displacement is a major impact in urban redevelopment: it should be addressed under "Mitigating Measures Proposed to Minimize Impact" (p. 130).

Thank you for the opportunity to comment on this document. We look forward to your consideration and response to our comments.

Yours truly,

John T. Harrison, Ph.D.
Environmental Coordinator

cc: JAMI Corp.
Tyrone T. Kusao, Inc. —
Roger Fujioka
Luciano Minerbi
Chuck Gee
Hans-Jurgen Krock
William Grannis

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813

BUS (808) 538-6852
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FAX (808) 521-4292

November 8, 1990

John T. Harrison, Ph.D.
Environmental Coordinator
Environmental Center
University of Hawaii at Manoa
Crawford 317, 2550 Campus Road
Honolulu, Hawaii 96822

Dear Dr. Harrison:

Subject: Draft Environmental Impact Statement for the Waikikian Hotel

Thank you for your comments on the Draft Environmental Impact Statement (EIS) as provided in your letter dated October 23, 1990. For your convenience, we will respond to your comments in the order in which they were presented, as follows:

1. Waikikian Hotel Development.

You correctly note that the proposed redevelopment of the Waikikian Hotel site represents a modest increase to the existing hotel inventory, less than one percent. The new hotel tower and accessory facilities will result, as the Draft EIS points out, in a change in the visual character of the area and some other physical impacts, for which mitigation measures have been proposed. Every effort will be made to retain as much of the existing at-grade character of the site as possible and, from a broader perspective, to meet both the State and City's expressed policy intent to improve the State's premium visitor destination. In the long term, we feel, redevelopment will carry out policy intent without severely impacting, in a negative sense, on either visitor industry growth or infrastructure.

2. Waikiki District Carrying Capacity.

The statement regarding the lack of reliability in Waikiki visitor unit counts reflects current and past differences in both the actual count and in how these units are defined, at what point in time. For example, the Hawaii Visitors Bureau's "1989 Visitor Plant Inventory," referenced in your comments, includes in its count of 32,808: hotel units (26,615), condominiums (5,204), apartment hotels (789), and "cottage units" (200). A recent letter from the City Department of General Planning, on the other hand, indicates that there now are approximately 31,800 visitor units in Waikiki. Further, since the policy guideline of "about 30,000" was adopted, visitor unit counts for Waikiki

have varied considerably, depending on where the count originated from, how a unit was defined, and at what point in time it was taken.

There are two other aspects to this issue, which from our perspective, should also be considered: the 30,000 figure is a policy guideline contained in the City's Development Plan, and other recent redevelopment projects, such as the 517-unit Waikiki Prince Hotel (as you also noted) have been approved, presumably with other long-range visitor industry objectives in mind.

From our perspective, there is both a consistency and intent question. It would be consistent to treat the 30,000 figure as a policy guideline and not an absolute cap, especially in view of the modest increase in units proposed. Secondly, to do otherwise would appear to create a much more basic conflict in policies, i.e. encouraging and promoting the upgrading and improving of the visitor plant, while prohibiting any increase in visitor units.

Finally, as discussed in the Draft EIS, no variances of any kind are proposed for the project and it is the intent to meet all current Waikiki Special District requirements. The existing hotel, as you know, was constructed long before these landscaping, setback and other requirements were adopted.

3. Traffic Congestion.

The traffic plan for the hotel envisions no increase in the number of driveways at the site. The plan provides a driveway entrance /exit for the parking garage at approximately the same location as the present Waikikian Hotel driveway.

The expanded Waikikian Hotel would result in only a small increase in vehicular volumes along the roadway. Peak hour volumes along the loop roadway currently are between approximately 88 and 136 vehicles. The hotel would increase this total volume to a range between 106 and 156 vehicles.

4. Employment.

It is difficult to respond accurately to this particular concern about the availability of personnel to fill employment opportunities created by the project. It is possible that by the time construction is actually begun, the employment profile will be different and current concerns will no longer apply. Likewise, it is difficult to predict what impacts the creation of additional jobs, especially the short-term construction-related positions, would have on existing housing or traffic. We will give further consideration to this matter as the proposed project proceeds through the approval processes.

5. Wastewater Management.

You correctly noted an oversight in the Draft EIS regarding the adequacy of sewer capacity. This will be corrected. To remedy this situation, we are proposing to construct a relief sewer line along Ala Moana Boulevard from the intersection of the Boulevard and Kalia Road to the existing Fort DeRussy Wastewater Pumping Station for a distance of approximately 1,400 lineal feet. The relief sewer line is intended to intercept the sewage from the makai area of the Boulevard and by-pass the inadequate sewer lines along the Boulevard. No sewer connection will be permitted until the relief lines are accepted by the City and the cost would be borne by the applicant.

6. Drainage.

Proposed grading works and area catch basins will insure that water is drained away from structures and prevent drainage water flow toward the Hilton Hawaiian Village Lagoon. As noted in the Draft EIS, long-term impact should be an improvement in the drainage throughout the project area and a lessening of particulate matter discharged into the Lagoon during periods of stormwater. The addition of landscaped areas to the site should also decrease runoff slightly.

7. Socio-Economic Displacement.

While displacement is often a major impact when an urban site is redeveloped, in this case, we anticipate that only 6 to 12 people (those employed by the small retail shops on the site) would be potential displacees. Even that potential negative impact is an unknown, because the expanded commercial lease space on the redeveloped site will provide additional opportunities for existing retail activities.

We hope this adequately responds to your concerns. The Draft EIS will be revised as appropriate to incorporate corrections and supplemental information on these and other issues. If you should have questions or wish additional information on the above, please feel free to contact me.

Very truly yours,

Tyrone T. Kusao

UNITED STATES
DEPARTMENT OF
AGRICULTURE

SOIL
CONSERVATION
SERVICE

P. O. BOX 50004
HONOLULU, HAWAII
96850

September 27, 1990

The Honorable John Waihee
Governor, State of Hawaii
c/o OEQC
465 S. King Street, Room 104
Honolulu, Hawaii 96813

Attention: Dr. Bruce Anderson

Dear Dr. Anderson:

Subject: Draft Environmental Impact Statement (DEIS) - Waikikian Hotel, Waikiki, Oahu, Hawaii

We have reviewed the above EIS and have no comments to offer at this time. We would appreciate the opportunity to review the final EIS.

Sincerely,

Warren M Lee

WARREN M. LEE
State Conservationist

cc:
JAMI Corporation, ATTN: Tyrone T. Kusao, Agent, 1188 Bishop Street, Suite 2507, Honolulu, HI 96813
Tyrone T. Kusao, Inc., 1188 Bishop Street, Suite 2507, Honolulu, HI 96813, Contact: Tyrone T. Kusao
Director, Office of Environmental Quality Control, 465 South King Street, Room 104, Honolulu, HI 96814

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET SUITE
HONOLULU HAWAII 9681
BUS (808) 536 0622
RES (808) 395-1338
FAX (808) 521-4252

October 31, 1990

Mr. Warren M. Lee
State Conservationist
Soil Conservation Service
U.S. Department of Agriculture
P.O. Box 50004
Honolulu, Hawaii 96850

Dear Mr. Lee:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated September 27, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER HAWAII 96858-5440

REPLY TO ATTENTION OF

Planning Division

October 10, 1990

Dr. Bruce Anderson
Acting Interim Director
Office of Environmental
Quality Control
465 South King Street, Room 104
Honolulu, Hawaii 96813

Dear Dr. Anderson:

We have reviewed the Draft Environmental Impact Statement for the proposed Waikikian Hotel, Waikiki, Oahu. Our previous comments in response to the Preparation Notice (letter dated July 27, 1990) have been incorporated into the document. We have no additional comments.

Sincerely,

Kisuk Cheung
Director of Engineering

Copies furnished:

JAMI Corporation
Tyrone T. Kusao, Agent
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

Mr. Tyrone T. Kusao
Tyrone T. Kusao, Inc.
1188 Bishop Street, Suite 2507
Honolulu, Hawaii 96813

- 243 -

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET Suite [illegible]
HONOLULU HAWAII 96813
BUS (808) 538 6852
RES (808) 395 1338
FAX (808) 521 4292

October 31, 1990

Mr. Kisuk Cheung
Director of Engineering
Department of the Army
U.S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858-5440

Dear Mr. Cheung:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated October 10, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

United States Department of the Interior

FISH AND WILDLIFE SERVICE
PACIFIC ISLANDS OFFICE
P.O. BOX 50167
HONOLULU, HAWAII 96850

OCT 2 3 1990

The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 South King Street, Suite 104
Honolulu, Hawaii 96813

Attention: Dr. Bruce Anderson

Re: Waikikian Hotel TMK: 2-6-9:2, 3 and 10

Due to current staff limitations, the Pacific Islands Office, Fish and Wildlife Enhancement cannot devote the time to adequately evaluate potential impacts to important fish and wildlife resources from the proposed project. Please understand that this notification does not represent the Fish and Wildlife Service's approval of the proposed activity. We may review future actions related to this project should workload constraints be alleviated, or if significant adverse impacts to trustee fish and wildlife resources are identified.

-244-

Sincerely yours,

Ernest Kosaka
Field Office Supervisor
Fish and Wildlife Enhancement

cc: OEQC
JAMI Corporation
Tyrone T. Kusao, Inc.

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE
HONOLULU, HAWAII 968

BUS (808) 538-6652
RES (808) 395-1338
FAX (808) 521-4292

October 31, 1990

Mr. Ernest Kosaka
Field Office Supervisor
Fish and Wildlife Enhancement
Fish and Wildlife Service
Pacific Islands Office
U.S. Department of the Interior
P.O. Box 50167
Honolulu, Hawaii 96850

Dear Mr. Kosaka:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated October 23, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

DEPARTMENT OF THE NAVY
COMMANDER
NAVAL BASE PEARL HARBOR
BOX 110
PEARL HARBOR, HAWAII 96860-5020

IN REPLY REFER TO
5090
Ser 00F2/3151
21 SEP 1990

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OFC OF TH
QUALITY

The Honorable John Waihee
Governor, State of Hawaii
c/o Office of Environmental Quality Control
465 S. King St., Room 104
Honolulu, Hawaii 96813

Dear Governor Waihee:

WAIKIKIAN HOTEL

The Draft Environmental Impact Statement (DEIS) for the Waikikian Hotel has been reviewed and we have no comments to offer. Since we have no further use for the DEIS, it is being returned to your office.

Thank you for the opportunity to review the draft.

Sincerely,

W. K. Liu
Assistant Base Civil Engineer
By direction of
the Commander

Encl:
(1) DEIS

Copy to:
Jami Corporation
Tyrone T. Kusao, Inc.

-245-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET SUITE
HONOLULU HAWAII 9681
BUS (808) 538 6634
RES (808) 395 1111
FAX (808) 521 4234

October 31, 1990

Mr. W. K. Liu
Assistant Base Civil Engineer
Department of the Navy
Naval Base Pearl Harbor
Box 110
Pearl Harbor, Hawaii 96860-5020

Dear Mr. Liu:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated September 21, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840 0001

ENV 2-1
JA/G

William A Bonnet
Manager
Environmental Department

September 26, 1990

The Governor, State of Hawaii
c/o OEQC
465 South King Street, #104
Honolulu, Hawaii 96813

Attention: Dr. Brice Anderson

Dear Sir:

Subject: Environmental Impact Statement (EIS) for the
Waikikian Hotel, Waikiki, Oahu

We have reviewed the subject EIS, and have no comments at this time on the proposed project. HECO shall reserve comment pertaining to load requirements and the protection of existing power lines within the project area until construction plans are finalized.

Sincerely,

-246-

cc: JAMI Corporation
Tyrone T. Kusao, Agent
1188 Bishop Street, Suite 2507
Honolulu, HI 96813

Tyrone T. Kusao
1188 Bishop Street, Suite 2507
Honolulu, HI 96813
Contact: Tyrone T. Kusao

An HEI Company

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 538-6652
RES (808) 395-1338
FAX (808) 521-4202

October 31, 1990

Mr. William A. Bonnet
Manager
Environmental Department
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, Hawaii 96840-0001

Dear Mr. Bonnet:

Subject: Draft Environmental Impact Statement
for the Waikikian Hotel

Thank you for your letter dated September 26, 1990 regarding your review of the subject Draft Environmental Impact Statement.

Your letter will be reproduced in the Final EIS together with this response.

Very truly yours,

Tyrone T. Kusao

TTK:afk

Waikiki Convention Center Authority
DAVIES PACIFIC CENTER 841 BISHOP STREET, RM. 2222 HONOLULU, HAWAII 96813
TELEPHONE: (808) 548-5773 FAX (808) 586-2348

October 22, 1990

'90 OCT 23 P1:31

OFC. OF ENVIRONMENTAL QUALITY CONTROL

Mr. Bruce C. Anderson
Acting Director
Office of Environmental Quality Control
Kekuanaea Building #104
465 S. King Street
Honolulu, Hawaii 96813

Dear Mr. Anderson:

Subject: Draft Environmental Impact Statement (EIS) for the Waikikian Hotel

The proposed developer for the Waikiki International Market Place site convention center has reviewed the Draft EIS prepared by JAMI Corporation and has found the following impacts upon the convention center project:

1. Added traffic generated by the project.
2. Added demand on sewer, water, power and communications systems.
3. Changes in demographics and its various impacts.

Other areas may be affected to a lesser degree, and a thorough review of the impacts should be done prior to issuance of the final enviornmental impact statement. Should you desire to meet with us to review the concerns, please call me and 548-5773.

Sincerely,

Alan S. Hayashi
Executive Director

ASH/cli:0568

cc: Ron Watase
David Ayer

-247-

TYRONE T. KUSAO, INC.
Planning and Zoning Consultant

1188 BISHOP STREET, SUITE 2507
HONOLULU, HAWAII 96813
BUS (808) 536-6652
RES (808) 395-1338
FAX (808) 521-4202

November 13, 1990

Mr. Alan S. Hayashi
Executive Director
Waikiki Convention Center Authority
841 Bishop Street, Room 2222
Honolulu, Hawaii 96813

Dear Mr. Hayashi:

Subject: Draft EIS for the Waikikian Hotel

This is to acknowledge receipt of a copy of your letter dated October 22, 1990 to OEQC concerning the subject Draft EIS. We understand the comments regarding project impacts were provided by the proposed developer of the Waikiki Market Place site convention center. Our responses to his comments, in the order presented, are as follows:

1. Added traffic - Our traffic engineer's conclusion regarding the project's traffic impacts is as follows:

   "The proposed project would impact morning or afternoon peak hour traffic by less than one percent within the area. The morning peak hour traffic conditions within the project vicinity are the less critical. Afternoon peak hour traffic at the Kalia-Ena Road/Ala Moana Boulevard will experience operational problems, with or without the project."

2. Added demands on sewer and water - With respect to sewers, the existing system is able to accommodate 132 of the proposed 264 units on a one for one replacement basis. Our project engineer is presently working on a plan for construction of a relief sewer line along Ala Moana Boulevard, which will accommodate the proposed development.

The October 5, 1990 response letter from the Board of Water Supply had the following to say concerning water supply to this project:

> "There is an existing 12-inch water main on Ala Moana Boulevard that should be adequate to meet the anticipated demands of the project; however, the availability of additional water, if required, will be determined when the building permit is submitted for our review and approval."

3. Demographic changes - As you may know, the existing Waikikian Hotel is comprised of 132 rooms. The proposed project will contain 264 units which represent a net increase of 132 rooms.

   The completion of this project will add to the visitor population of Waikiki, but the change appears relatively insignificant. Owing to the proposed hotel use, there will be no impact on the permanent resident composition of Waikiki.

We hope the foregoing adequately responds to the stated concerns. Should there be questions, please feel free to contact me.

Very truly yours,

Tyrone T. Kusao

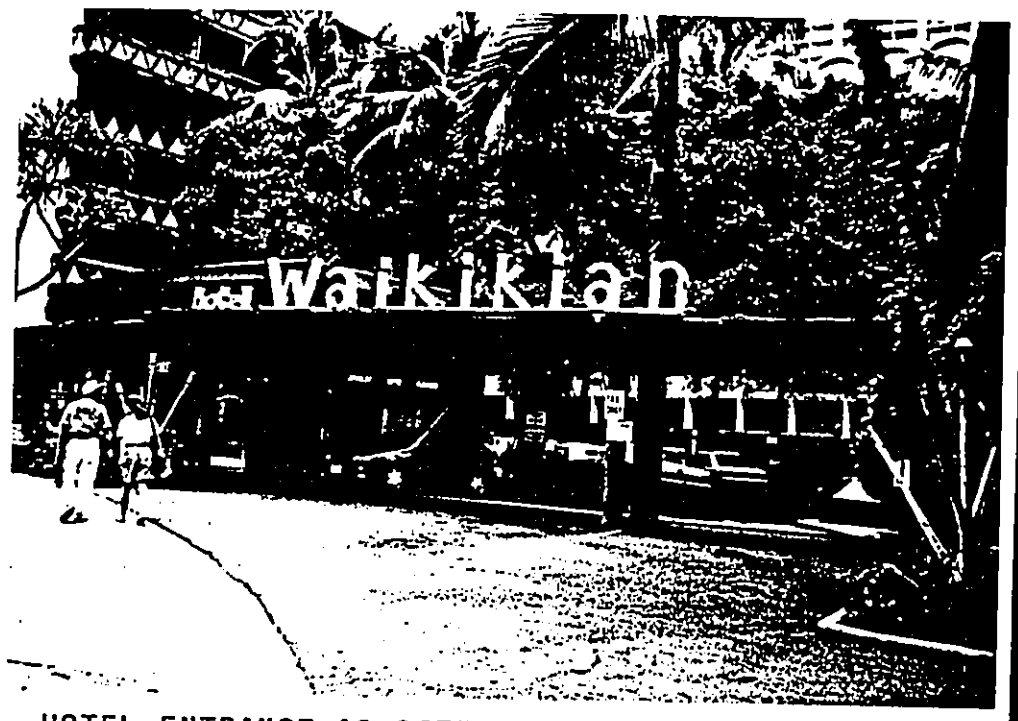
TTK:afk

Appendices

Appendix A

Site Photos

APPENDIX A. - SITE PHOTOGRAPHS



HOTEL ENTRANCE AS SEEN FROM THE ALA MOANA BLVD. FRONTAGE; AN 8-STORY STRUCTURE TO THE LEFT CONTAINS 44 GUEST ROOMS

VIEW OF THE HOTEL POOL AND RESTAURANT AREA AS SEEN FROM THE WEST END OF THE PROJECT SITE

APPENDIX A.
SITE PHOTOGRAPHS

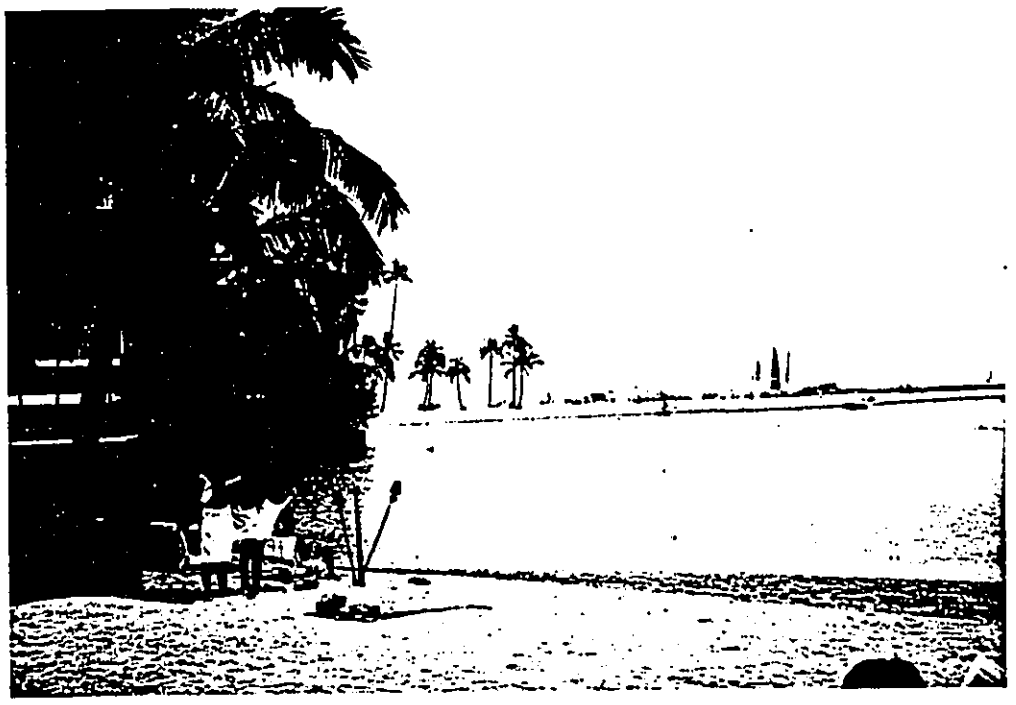
PUBLIC RIGHT-OF-WAY RUNNING PARALLEL TO THE SITE, LOOKING TOWARD ALA MOANA; TAHITIAN LANAI IS ON THE RIGHT

RIGHT-OF-WAY TO THE ALA WAI YACHT HARBOR AS VIEWED FROM ALA MOANA; THE ILIKAI IS ON THE RIGHT

APPENDIX A.
SITE PHOTOGRAPHS

VIEW OF THE INTERIOR OF THE SITE WITH PAVED WALKWAYS AND TROPICAL LANDSCAPING

APPENDIX A.
SITE PHOTOGRAPHS



MAKAI VIEWS OF THE LAGOON AND HARBOR FROM
THE WEST END OF THE PROJECT SITE

APPENDIX A.
SITE PHOTOGRAPHS

Appendix B

Archaeology — Historical Literature and Document Search

Applied Research Group, Bishop Museum

MS. 071190

HISTORICAL LITERATURE AND DOCUMENTS SEARCH ARCHAEOLOGICAL TESTING AND SUBSEQUENT PROCEDURES FOR THE PROPOSED REDEVELOPMENT OF THE WAIKIKIAN HOTEL WAIKIKI, KONA, O'AHU ISLAND

PART 1
HISTORICAL LITERATURE AND DOCUMENTS SURVEY

by

Gwen Hurst
Historical Archaeologist

Paul L. Cleghorn, Ph.D.
Supervisory Archaeologist

for

Tyrone T. Kusao, Inc.
Planning and Zoning Consultant
1188 Bishop Street, Suite 2507
Honolulu, Hawai'i 96813

July 1990

Public Archaeology Section
Applied Research Group
Bishop Museum
Honolulu, Hawai'i

INTRODUCTION

The Public Archaeology Section of Bishop Museum Applied Research Group completed pre-field data search for the Waikikian Hotel redevelopment under contract to Tyrone T. Kusao, Incorporated. The following report summarizes the findings of this first increment of preliminary archaeological assessment. The objectives of this data search were threefold:

1) To assess prehistoric and historic activities and land use of the project area.

2) To determine the extent of potential impacts to the site area during development and/or construction, and

3) To facilitate testing and monitoring through the identification of archaeologically sensitive locales within the project area.

SITE DESCRIPTION

The Waikikian Hotel, in the Waikiki District of Oahu, fronts Ala Moana Boulevard and extends westerly towards the Ala Wai Yacht Harbor. The project parcel is located within the Waikiki Archaeological District (50-80-14-2872) listed in the Historic Preservation Program Site inventory of the State Department of Land and Natural Resources. Roughly, this district includes everything seaward of the Ala Wai Canal. The Waikiki Gateway Park and the Hilton Lagoon Apartments are located to the east and south of the project site area (Figure 1). The project area is totally altered and several structures currently exist on the property. No archaeological surface remains are present.

Figure 1: WAIKIKIAN HOTEL SITE AREA (U. S. Geological Survey, 1983)

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Several archaeological investigations in the vicinity of the Waikikian Hotel have been conducted. Survey and testing of the Fort DeRussy Military Reservation (BPBM Site 50-Oa-A4-25/ State Site 50-80-14-9500), to the east of the Waikikian Hotel, was conducted by Dr. Paul Rosendahl of The Bishop Museum Anthropology Department in 1976/1977 (Rosendahl 1977). The archaeological reconnaissance survey for the U. S. Army Support Command Hawaii (USASCH) recorded subsurface pit burials which were reinterred at Fort DeRussy. No associated surface remains were recorded (Rosendahl 1977). The Hilton Hawaiian Village site, to the south of the Waikikian Hotel, was monitored and tested during remodeling of the Hawaiian Village in 1986/1987 by PHRI, Inc. Site reports on the Hawaiian Village project have not been filed with the State Historic Sites office, and the results of archaeological data recovery are unknown. Monitoring and data recovery of the Moana Hotel (Site 50-Oa-A4-27), further south of the project area, was directed by Jeannette Simons of the Bishop Museum Applied Research Group between January and August of 1988. A number of in situ and secondarily deposited burials, prehistoric and historic artifacts were recovered from the Moana Hotel project (Simons 1989).

DOCUMENTS SEARCH

Pre-field data search focused on early and late historical documents to enhance predictability and facilitate the location of archaeological remains within the Waikikian Hotel redevelopment project area. Archaeological reports and published literature was consulted to identify prehistoric context and associated subsurface depositions potentially existing within the site. The majority of documents researched were land records containing feature descriptions of the site area, locations of structures, and development of the property. Sanborn Fire Insurance maps provided locations of post-1900 structural relocations and subsequent expansion of structures existing on the site prior to demolition for the current Waikikian Hotel.

PREHISTORIC AND EARLY HISTORIC OVERVIEW OF WAIKIKI

Waikiki, because of it's favorable location (fresh water, plains for agriculture, and sea resources) has been suggested as one of the first areas on Oahu settled by the early chiefs of Hawaii (Handy and Handy 1971:9, 480). Early in the historic period of Hawaii, Waikiki was noted as a large settlement intensively developed for agriculture and aquaculture, and was favored as the seat of the ruling chiefs on Oahu. Vancouver's expedition in 1792 noted that the large village of Waikiki, with groves of coconut palm trees lining the beach, were associated with extensive agricultural plantations, and several hundred artificial ponds for fish, turtle, and duck. Controlled irrigation ditches existing in Waikiki in this early contact period supplied wetland taro, yam, and sweet potato fields. These fields were separated by narrow, low, stone wall causeways with stands of sugar cane along the edges (Vancouver 1984: 161-164).

A shift of population and royal residences from the Waikiki area to Honolulu in the early 1800's was prompted by the entrance of foreign vessels into Honolulu Harbor in 1794 (Thrum 1878:24), and subsequent foreign trade impacts and commerce in the Honolulu area. Decline in the native population and maintenance of agriculture/aquaculture in Waikiki is also attributed to the decrease of native population from introduced diseases and epidemics (Nakamura 1979:17). In 1859 the Waikiki beachfront (Figure 2) appears to have a number of thatched huts along the beachfront with the fish ponds becoming marshy. Taro planting in Waikiki was revived by King Kamehameha IV in 1863 with prison labor (Handy and Handy 1972:48). These fields were apparently redeveloped into predominately rice fields cultivated by the Chinese by 1900. The Waikikian Hotel project area, until filled during a reclamation project in the 1920's "consisted mostly of fishponds" (Nakamura 1979:107).

Figure 2: WAIKIKI IN 1859 (Hawaii State Archives)

THE PAOA ESTATE 1847-1956

Local newspaper coverage of the opening of the Waikikian Hotel on 1 October 1956 states that "the Waikikian is built...on two acres of Paoa Estate property" (Pacific Commercial Advertiser, 11:2). The Paoa houselot property in Waititi [sic] was acquired by his people from Ka'ahumanu about 1820 and claimed by Paoa during the Mahele awards in 1847. Native Testimony (3:509) and Foreign Testimony (3:181) describe the houselot as being bound mauka by the government road (Beach Road, later Ala Moana); a government lot waialae; a stream on the Honolulu side; and the sea makai. In an 1847 claim for a section of an irrigation ditch, indicating agricultural use of the property, Paoa states that "the houselot where we live is on the north of the government fence at Kalia. Some planted trees grow there, five hau and four hala [pandanus or screw palm]. There is a well which is used jointly" (Native

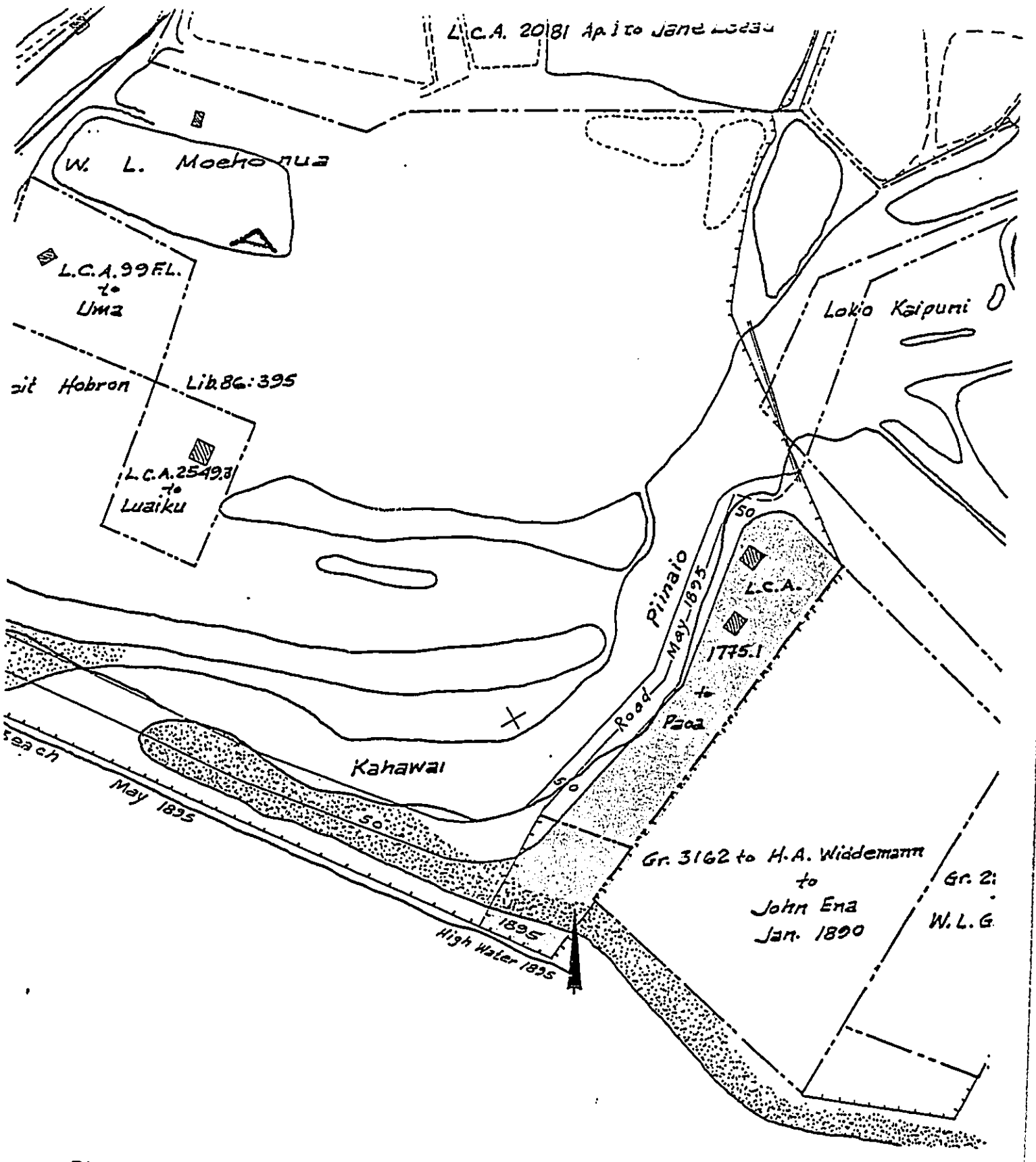


Figure 3: PAOA ESTATE 1881. Screened area indicates project parcel.
(S. E. Bishop, Hawaiian Fort Survey. Copy from 1952 reconstruction).

Register, 16 December 1847, 3:250). Henry Paoa, a fisherman, is listed in the Honolulu City directories residing on the west side of Beach Road from 1888 through 1901 (Lane 1888:320).

H. Widemann obtained the government lot (Grant 3162) bordering Paoa's land in 1877 (Paradise of the Pacific...Index). Widemann's award was deeded to John Ena on 15 January 1890. The 1890 survey notes a buried stone at the SE corner of Paoa's land as the point of beginning, also with the corners along Paoa's land being marked by "posts in the ground" (Liber 122:47). Two structures are shown in the northeast portion of the Waikikian Hotel project area at about this period (Figure 3).

By deed, the Paoa land, and project area was transferred to Hoolae on 20 October 1893 (Liber 141:452). A portion of this lot, 502/1000 acres along Beach Road (Ala Moana), was deeded by Hoole and wife to the Minister of the Interior on 29 May 1895 (Liber 155:63). Two houses and one barn are shown on the subject property in the 1895 deed to the Minister of the Interior (Figure 4). Between 1895 and 1915, the property was transferred from Hoolae E. Coit Hobron; the specific land transfer was not located during this research. Subsequently in 1914, a one story structure with attachments and a detached building are show on the property (Figure 5).

The Honolulu Japanese Contractors Association, formed in 1911 (Odo and Sinoto 1985:165), and represented by M. Ohta, M. K. Goto, and M. Akimoto, obtained a twenty-five year lease of the Paoa property from E. Coit Hobron on 21 April 1915 (Liber 517:27-29). In 1918 a portion of the property was in commercial use as a Japanese tea house managed by Asa Morifuji (Polk-Husted, 1918:1275).

A "Waikiki Reclamation Project" proposed by L. E. Pinkham, president of the Board of Health, to develop the "swamp lands" of Waikiki was initiated in 1906 (Pinkham 1906). After nearly fifteen years of arbitration, the reclamation project of filling in the fishponds was begun in 1922 by the Hawaiian Dredging Company (Thrum 1923:65-67). The Reclamation Project extended from King Steet to the Pacific Ocean, and was bounded on the east by Kapahulu

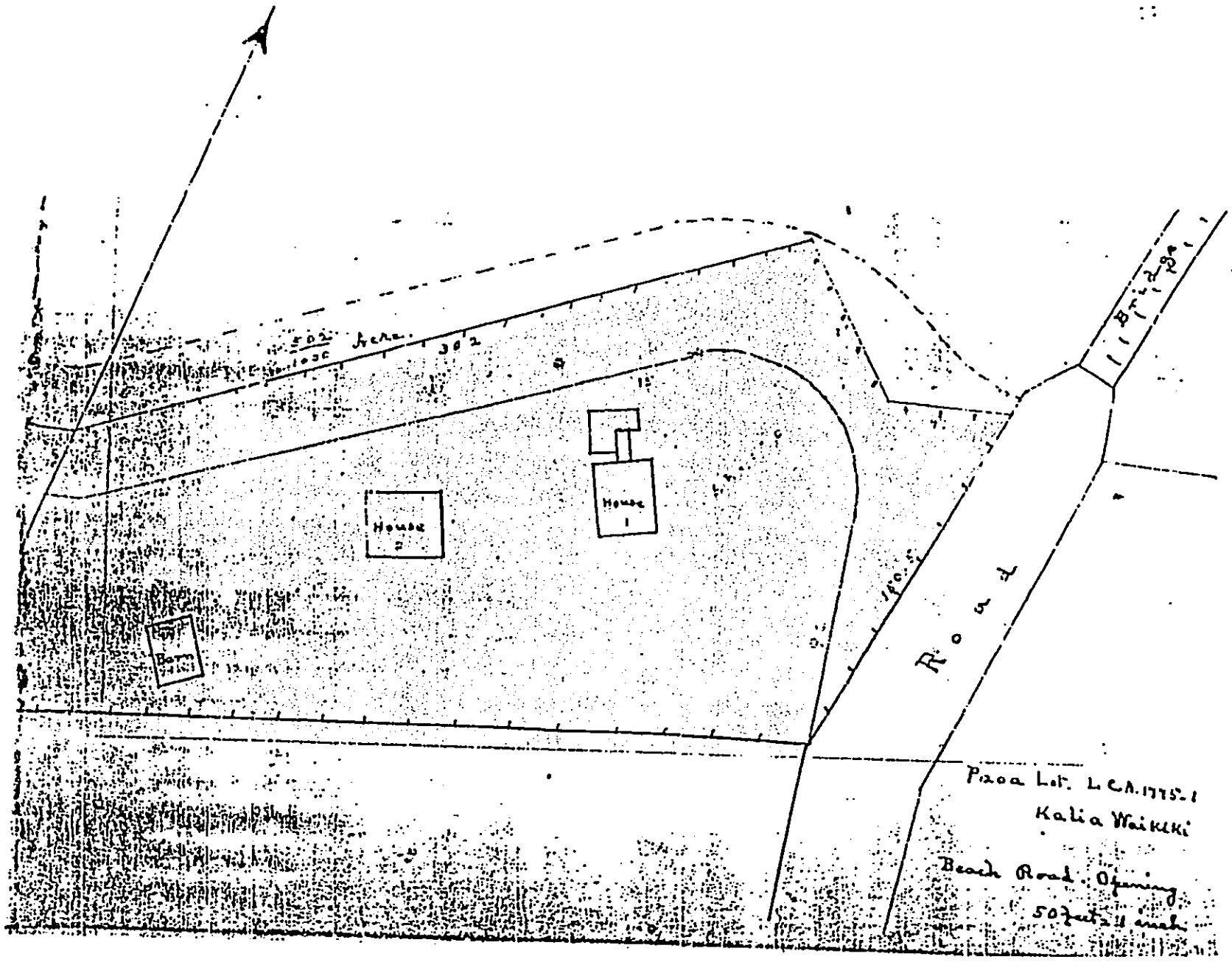


Figure 4: PAOA ESTATE 1895. Screened area indicates project parcel. (Liber 155:63)

RECEIVED AS FOLLOWS

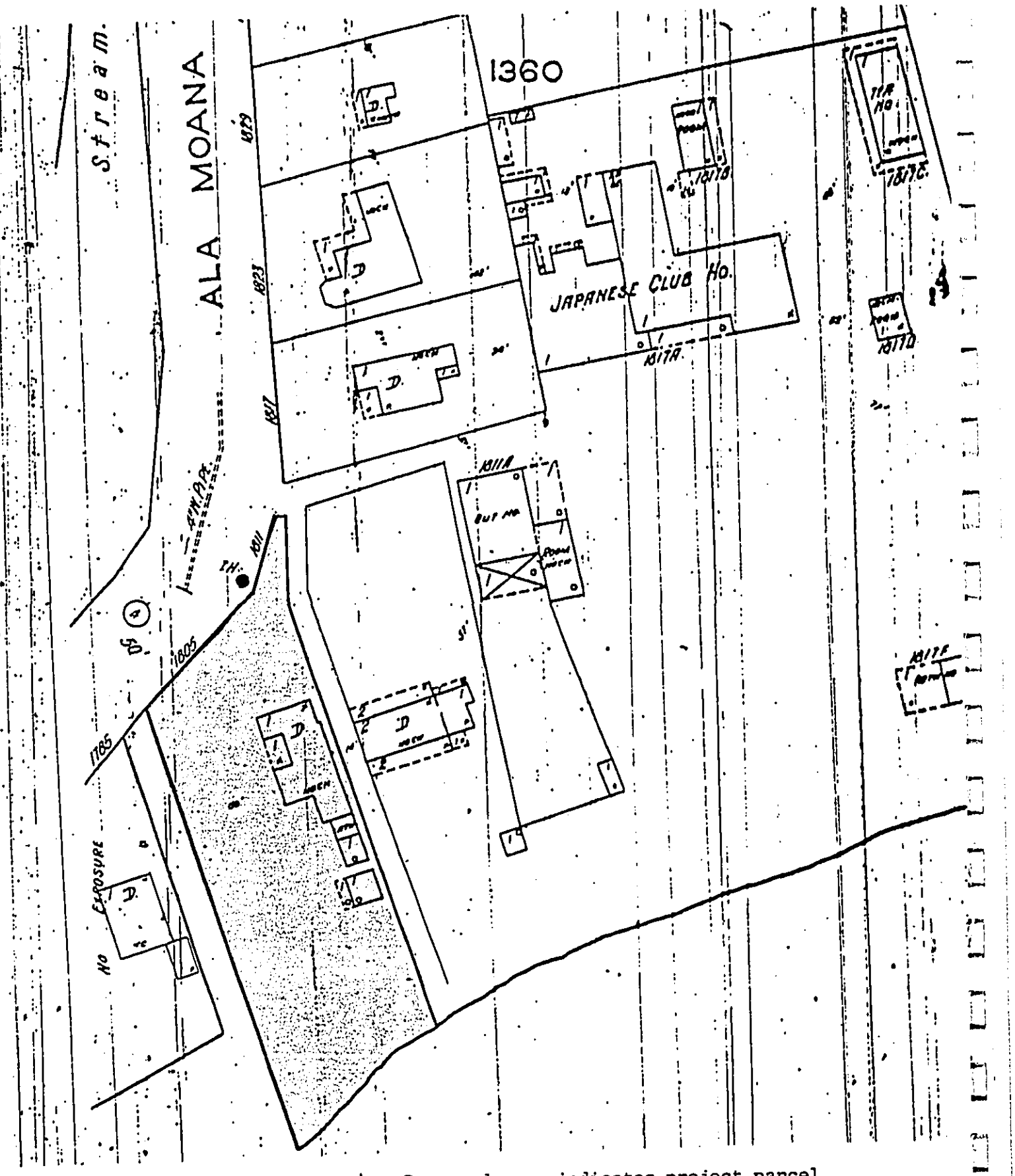


Figure 5: PAOA ESTATE 1914. Screened area indicates project parcel.
(Sanborn Map Company)

Road, and to the west by Sheridan Street (Nakamura 1979:79), and enclosed the Waikikian Hotel project area:

> "In 1928, the United States Army Corps of Engineers issued Permit No. 45, to dredge the 'Waikiki Drain Canal.' Presumably, Permit No. 45 gave the Hawaiian Dredging Company permission to dredge the ocean reef areas...During the early months of 1928 the spoils obtained from the reef were used to fill in and around...Fort DeRussy, at Waikiki. This area also once consisted mostly of fishponds" (Nakamura 1979:107).

A stratigraphic profile of the Waikiki area proposed for reclamation in 1906 (Figure 6) indicates that the original surface of the Waikikian Hotel project area has one to two feet of soil overlying sand below the fill. An aerial photograph (Figure 7) of the project area in 1928 shows some coral fill along the north and east edges of the lot with five buildings and heavy vegetation.

Leasehold buildings, constructed after reclamation filling of the project area were subleased to Noboru Yamasaki by T. W. Oda representing the Honolulu Japanese Contractors Association on 10 January 1928 (Liber 919:124). A new Japanese tea house, the *Shioyu Tea Gardens*, opened in 1930 utilizing four one-story separate buildings over the Paoa estate grounds (Figure 8). The Shioyu Tea House Gardens were remodeled and expanded during the remainder of the sublease which expired in 1940.

Records following vacancy of the tea house and gardens in 1940, and during World War II are intermittent. A Mutual Telephone directory (1945:51) lists the Sea Side Gardens at this address in 1945, and later city directories list the Sea Side Gardens at this location through 1955 (Polk 1947-1955). Sea Side Gardens was demolished for the Waikikian Hotel development in 1955/56.

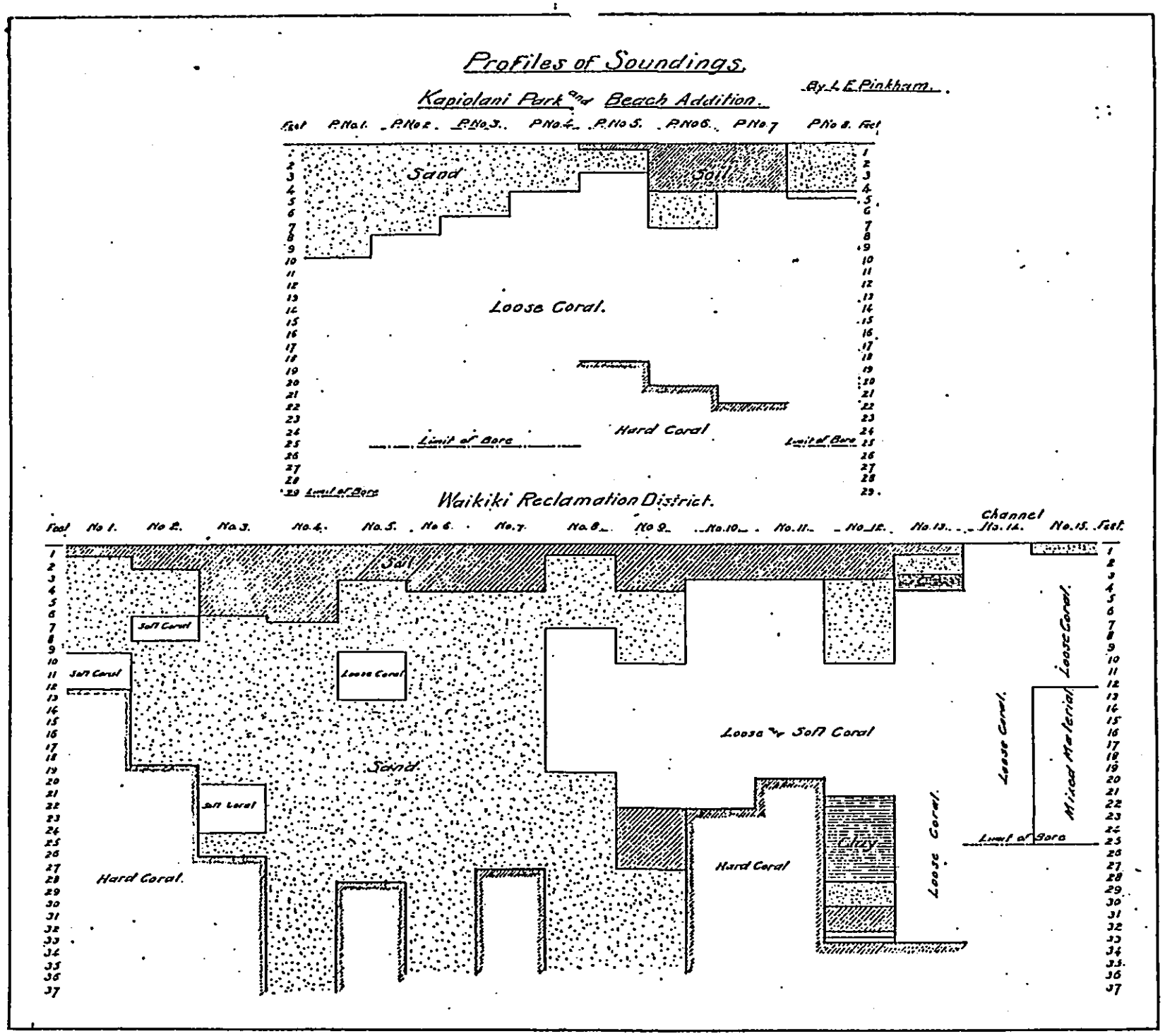


Figure 6: WAIKIKI STRATIGRAPHIC PROJECT, 1906 (Pinkham)

Figure 7: MOUTH OF WAIKIKI (Ala Wai) CANAL, 1927. (U. S. Army, Bishop Museum)

RECEIVED AS FOLLOWS

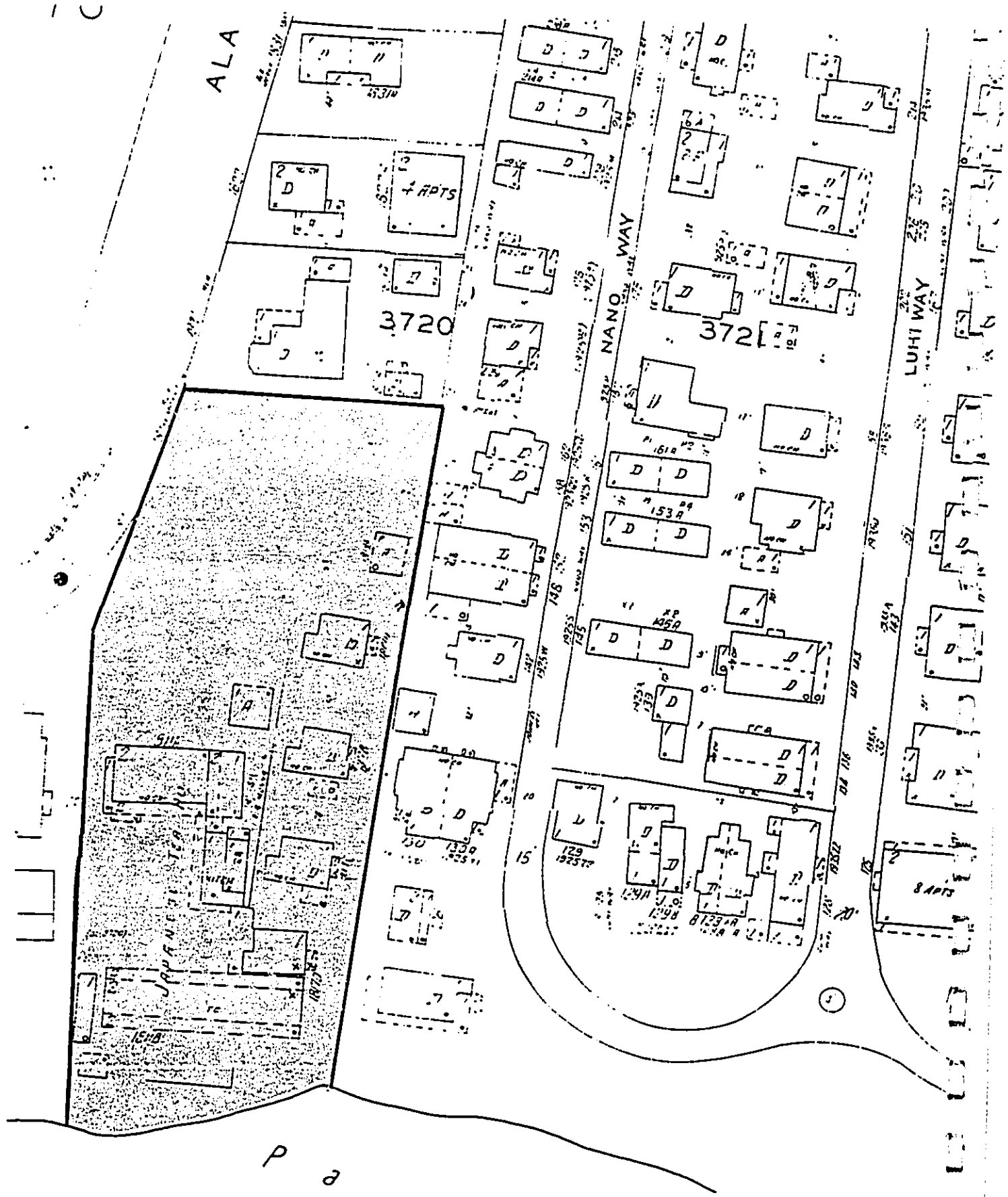


Figure 8: PAOA ESTATE 1937 SHOWING JAPANESE TEA HOUSE BUILDINGS.

(Sanborn Map Company)

ANTICIPATED PREHISTORIC DEPOSITION AND HISTORIC ARCHAEOLOGICAL FEATURES

Two major development impacts to the Waikikian Hotel project site have occurred within the twentieth century. Coral fill material was deposited on the site area in 1928. Introduction of this material raised the project area ground surface thereby potentially lessening some heavy construction impacts to subsurface features during construction of the Waikikian Hotel in 1955/56. Introduced fill material also may better the chances of the preservation of subsurface and surface remains. Secondary disturbed deposits are expected from disturbance of fill material and subsurface excavations for installation of the 1955 Waikikian Hotel foundations, piers, and utility service.

The archaeological record indicates that the entire Waikiki area is prehistorically sensitive. Preservation of prehistoric artifacts and features, and otherwise generally decomposable artifactual materials is high because of the inundated nature of the project area. Frequent discovery of prehistoric burials during development in adjacent areas suggest the likelihood of encountering burials during construction. Aquacultural and agricultural deposition in the form of faunal and botanical remains indicating specific prehistoric and early historic activities are also projected potentially preserved depositions. The remains of cultural features, stone causeways, pond areas, and habitation sites are other archaeological resources that may be present and exposed during construction related excavation activities.

Historically, early site land records specifically describe an irrigation waterway and a well. The locations of these subsurface features are unknown, as are the location of privies not mentioned in land records. An early historic fence, location of two houses and a barn by 1895, and building locations prior to the 1920's reclamation project are known and possibly still exist in situ below the fill material. Remains of the Japanese tea house are likely to have been removed during construction of the Waikikian Hotel, or may still be present as scattered disturbed deposits.

RECOMMENDATIONS

Several stages of construction redevelopment of the Waikikian Hotel have been proposed. In conjunction with construction redevelopment, several phases of archaeological monitoring and testing are necessary to protect potential archaeological data and resources. Recommended preliminary archaeological data recovery during the earlier phases to assist in determining testing areas and procedures are:

- Monitoring of core sample borings during the construction design stage to recover data on depths of fill, stratigraphic sequences, and context.

- Additional monitoring of the surface removal of existing structures and pavement. Existing subsurface foundations, piers, and utility service pipes should be left in situ until after archaeological testing and determinations to avoid further disturbance of archaeological resources.

- Backhoe assisted archaeological excavation testing will be recommended following retrieval of core analysis and determined in conjunction with known feature locations.

A complete data recovery plan will be formulated contingent upon the results of this initial testing phase.

Illegal destruction of archaeological sites and removal of artifacts by collectors are common on Oahu and usually occur during nighttime hours and weekends. High fencing, alarm systems and manned patrol of the entire site during these periods is necessary.

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Appendix C

Air Quality Studies

Rowan Williams Davies & Irwin Inc.

RWDI

Rowan Williams
Davies & Irwin Inc.

AIR QUALITY STUDIES FOR THE WAIKIKIAN HOTEL DEVELOMENT HONOLULU, HAWAII

August 7, 1990

Report 90-254F-6

Submitted to:

KAJIOKA, OKADA & PARTNERS INC. (KOP)

HONOLULU, HAWAII

By:

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GUELPH, ONTARIO

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1. INTRODUCTION

Kajioka, Okada & Partners Inc. (KOP) retained Rowan Williams Davies & Irwin Inc. (RWDI) to address future air quality concerns resulting from the increase in vehicular traffic associated with the planned Waikikian Hotel development in Honolulu, Hawaii. These air quality concerns were addressed by numerical modelling. The following report presents the methodology, results and conclusions of the numerical modelling.

2. METHODOLOGY

2.1 Objectives

The objectives of this study were:

i) to numerically model vehicular emissions (both mobile and idling emissions) at the following intersections:

Ala Moana Boulevard and Hobron Lane (Figure 1);
Ala Moana Boulevard, Ena Road and Kalia Road (Figure 2).

ii) to predict worst-case 1-hour (AM and PM) and 8-hour carbon monoxide (CO) concentrations at selected receptor locations situated in the vicinity of the two identified intersections (refer to Figures 1 and 2);

and iii) to compare the predicted worst-case 1-hour and 8-hour carbon monoxide concentrations to State and National Ambient Air Quality Standards (AAQS). The State and National AAQS are presented in Table 3.

2.2 Intersection Analysis

The CAL3QHC intersection model[1,2,3] was used to determine the worst-case 1-hour (AM and PM) and 8-hour carbon monoxide concentrations produced by vehicular traffic passing through the two studied intersections. The CAL3QHC intersection model required the following input parameters in order to assess the air quality:

i) Pollutant emission rates for both moving and idling vehicles

The MOBILE4 emissions model[4,5] was used to predict the mobile and idling vehicular emission rates for carbon monoxide. Relevant MOBILE4 input parameters are presented in Table 1. The mobile emission rates required by CAL3QHC are dependent upon the intersection approach speeds. Conservative estimates of vehicle approach speeds were provided by Wilbur Smith Associates[6] and are also presented in Table 1.

ii) Traffic volumes and intersection light cycles

Wilbur Smith Associates[7,8] supplied both the traffic volumes and the intersection light cycles. Peak 1-hour (AM and PM), and 8-hour traffic volumes are presented in Figures 3 through 16. AM and PM intersection light cycles are presented in Figures 17 through 20.

iii) Background CO concentrations

Discussions with Hawaiian Clean Air Branch[9] indicated that background CO concentrations are not monitored at the present time. The two existing CO monitoring sites are located within street canyons; therefore, the recorded CO concentrations are continuously susceptible to vehicular CO emissions. Conservative estimates of worst-case background concentrations may be obtained from existing data by selective averaging (when traffic is not present) of the hourly measurements. Data taken at the State of Hawaii, Department of Health's, 2131 Kalakaua Avenue (Waikiki) monitoring station[10,11] was selectively analyzed in order to determine worst-case background CO concentrations. Table 2 presents the background concentrations used in this study.

As a comparison, Newell et al.[12] have reported average monthly background CO concentrations ranging between 0.17-0.09 ppm (Mauna Loa Observatory, Hawaii). These reported results are at least 5 times lower than the conservative values used in this study.

iv) Receptor and roadway co-ordinates

Figures 1 and 2 illustrate the receptor locations at which pollutant concentrations were predicted by the model. The letter B denotes bus stop locations and the letter E identifies building entrances. The receptor height used in the model was 1.5 meters (approximately 5 feet above ground), which corresponds to the typical height at which pedestrians would inhale airborne pollutants.

Roadway and receptor co-ordinates required by the CAL3QHC model were obtained from drawings supplied by KOP and/or drawings acquired from the Sanborn Map Company.

v) Meterological conditions

Worst-case meterological conditions used in the CAL3QHC analysis are documented in Table 2.

2.3 Traffic Scenarios Tested

RWDI selected three traffic scenarios for the worst-case numerical analysis. The scenarios were as follows:

i) projected 1993 traffic with the Waikikian Hotel development (Figures 3 through 8);

ii) projected 1993 traffic without the Waikikian Hotel development (Figures 9 through 14);

and iii) existing 1990 traffic (CO concentrations were only predicted for the 8-hour averaging period, Figures 15 and 16).

2.4 Worst-case Analysis

Worst-case conditions incorporate the following events:

i) low winds speeds;

ii) steady wind directions for the duration of the averaging period;

iii) low temperatures;

iv) low traffic speeds;

v) high traffic volumes;

and vi) high background concentrations.

The frequency with which worst-case conditions occur simultaneously is extremely low. Therefore, the worst-case analysis can be used as a diagnostic tool. If State and National AAQS are not exceeded under the modelled worst-case conditions, it is expected that they will never be exceeded.

3. RESULTS

Predicted worst-case carbon monoxide concentrations for the two identified intersections and three tested scenarios (including background levels) are presented in Tables 4 through 9.

Examining the 1-hour results, we find that both the State and National AAQS will not be exceeded under worst-case conditions. Examining the 8-hour results, we find that under worst-case conditions Ala Moana/Hobron intersection receptors locations 1 and 11, as well as Ala Moana/Ena/Kalia intersection receptors locations 4, 9, 10 and 13 may exceed State AAQS. These results are indicative of the low levels of service (i.e. delays) observed on Hobron Road (southbound) and Kalia Road (northbound)[7], as well as the queuing of traffic on Ala Moana Boulevard.

Although six receptor locations may exceed 8-hour State AAQS under worst-case conditions, the exceedences are minor (under 0.45 ppm); therefore, the frequency with which these exceedences will occur is extremely low. As an added reassurance, only receptor location 4, at the Ala Moana/Ena/Kalia intersection is identified as being critical (bus stop).

A comparison of the "with" and "without" the Waikikian development scenarios indicates that the impact of the development on air quality at both the Ala Moana\Hobron and Ala Moana\Ena\Kalia intersections will be minimal. The 1-hour results are projected to increase a maximum of 0.2 ppm (PM concentrations at receptors 6,7 and 12) for the Ala Moana/Hobron intersection, and 0.4 ppm (PM concentration at receptor 14) for the Ala Moana/Ena/Kalia intersection. The 8-hour results are projected to increase a maximum of 0.2 ppm (receptor 10) for the Ala Moana/Hobron intersection, and 0.2 ppm (receptor 13) for the Ala Moana/Ena/Kalia

intersection.

A further comparison of the 8-hour "with" and "without" scenarios to the existing conditions indicates a future trend toward improved air quality conditions at the two intersections. This trend is a result of predicted lower vehicular carbon monoxide emissions in the future (as determined by MOBILE4).

4. CONCLUSIONS

The worst-case numerical modelling of carbon monoxide concentrations for the Waikikian Hotel development (1993) led to the following conclusions:

1. Under worst-case conditions carbon monoxide concentrations are well below the 1-hour and 8-hour National AAQS at all receptors locations (both intersections);

2. Under worst-case conditions carbon monoxide concentrations are below the 1-hour State AAQS at all receptors locations (both intersections);

3. Under normal conditions carbon monoxide concentrations are well below the 8-hour State AAQS at all receptor locations (both intersections). Under worst-case conditions CO concentrations at receptor locations 1 and 11 of the Ala Moana/Hobron intersection and receptor locations 4, 9, 10 and 13 of the Ala Moana/Ena/Kalia intersection may exceed State AAQS by no more than 0.45 ppm. Due to the conservative nature of these "worst-case" conditions the frequency with which these exceedences may occur is extremely low;

4. A comparison of the "with" and "without" the Waikikian Hotel development scenarios indicates that the traffic volumes associated with the proposed Waikikian Hotel development will only increase worst-case CO concentrations by a maximum of 0.2 ppm. Also, the locations identified in conclusion 3 are still projected to exceed State AAQS under worst-case conditions for the "without" scenario;

5. Comparison of the two 1993 scenarios to existing (1990) scenario indicates that, despite projected increases in traffic volume, there is a trend toward lower CO concentrations. This trend is a result of the U.S. Environmental Protection Agency's forecasts that, as new cars are equipped with better catalytic converters and old cars retire, vehicular pollutant emission rates will decrease.

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TABLE 1 Inputs for MOBILE4

a) Temperature

1-Hour Concentrations	65°F	based on the normal daily minimum temperature for Honolulu, Hawaii (January)[13]
8-Hour Concentrations	72°F	based on the normal daily mean temperature for Honolulu, Hawaii (January)[13]

b) MOBILE4 default values:

i) default vehicle mix;
ii) no mechanics training;
iii) no anti-tampering;
iv) 1993 current test year (and 1990 when examining the existing CO scenarios).

c) Vehicle speeds (as supplied Wilbur Smith Associates[6]):

The CAL3QHC numerical model requires that the MOBILE4 exhaust emissions be based on intersection approach speeds.

Wilbur Smith Associates indicated that no data was available for the streets in question and that 15 mph for Hobron Lane, Ena Road and Kalia Road, and 25 mph for Ala Moana Boulevard would be good conservative approximations of the intersection approach speeds.

d) Hot and Cold Start Percentages

	1-hour	8-hour
% vehicle miles (accumulated in cold start, non-catalyst)	50.0	20.6
% vehicle miles (accumulated in hot start, non-catalyst and catalyst)	10.0	27.0
% vehicle miles (accumulated in cold start, catalyst)	50.0	20.3

e) Idling emission rates[2] (for 1-Hour Concentrations)

$$\text{(Idle Emissions @ 65°F)} = \frac{\text{(Idle Emissions @ 72°F)(Mobile Emissions @ 65°F \& 2.5 mph)}}{\text{(Mobile Emissions @ 72°F \& 2.5 mph)}}$$

TABLE 2 Worst-case Inputs for CAL3QHC

Daily Stability	Class D[14]
Wind Speed	1.0 meters/second for 1-hour concentrations; 1.5 meters/second for 8-hour concentrations.
Wind Direction	Worst case as identified by applying 10° increments
Mixing Height	850 meters
Receptor Height	1.5 meters
Carbon Monoxide Background Concentrations	
	1.4 ppm[I] for the 1-hour analysis; 0.8 ppm[II] for the 8-hour analysis.
Light Cycles	As supplied by Wilbur Smith Associates[7] (refer to Figures 17 through 20)

I Average 1-hour concentration at the Kalakaua Avenue minitoring site for January, 1988[11].

II Average 1-hour concentration between 12 midnight and 5 am at the Kalakaua Avenue minitoring site (for January, 1988)[11].

Table 3 State and National Ambient Air Quality Standards

	Averaging Period	State	Federal	
		(ppm)	Primary[a] (ppm)	Secondary[b] (ppm)
Carbon Monoxide	1-hour*	8.7	35	35
	8-hour*	4.35	8.7	8.7

* Not to be exceeded more than once per year.

a National Primary Standard: The level of air quality necessary, with an adequate margin of safety, to protect the public health.

b National Secondary Standard: The level of air quality necessary to protect the public welfare from any known or anticipated adverse effect of the pollutant.

Table 4	Ala Moana Boulevard/Hobron Lane Intersection (1993, with project traffic)		
Receptor Location	CO Concentration (ppm)		
	1-Hour AM	1-Hour PM	8-Hour
1	7.9	8.3	4.4*
2	5.3	5.8	3.0
3	4.9	5.9	3.1
4	4.0	4.9	2.5
5	5.9	6.9	3.8
6	6.5	7.7	3.9
7	5.3	6.1	3.1
8	4.3	5.2	2.6
9	4.3	4.9	2.4
10	5.2	6.1	3.2
11	6.2	8.6	4.5*
12	4.5	7.2	3.0
13	4.9	6.2	3.2
14	5.2	6.4	3.1

* indicates that the State Standard has been exceeded

Table 5 Ala Moana Boulevard/Hobron Lane Intersection (1993, without project traffic)

Receptor Location	CO Concentration (ppm)		
	1-Hour AM	1-Hour PM	8-Hour
1	7.8	8.2	4.3
2	5.3	5.7	2.9
3	4.9	5.8	3.1
4	4.0	4.9	2.5
5	5.9	6.9	3.8
6	6.4	7.5	3.8
7	5.2	5.9	3.0
8	4.3	5.2	2.6
9	4.3	4.9	2.4
10	5.1	6.0	3.0
11	6.2	8.6	4.4*
12	4.4	7.0	2.9
13	4.9	6.2	3.1
14	5.1	6.3	3.0

* indicates that the State Standard has been exceeded

Table 6	Ala Moana Boulevard/Hobron Lane Intersection (1990)		
Receptor Location	CO Concentration (ppm)		
	1-Hour AM	1-Hour PM	8-Hour
1	---	---	5.6*
2	---	---	3.7
3	---	---	3.7
4	---	---	3.1
5	---	---	4.6*
6	---	---	5.0*
7	---	---	3.7
8	---	---	3.3
9	---	---	3.1
10	---	---	3.9
11	---	---	5.4*
12	---	---	3.5
13	---	---	3.8
14	---	---	3.8

* indicates that the State Standard has been exceeded

Table 7 Ala Moana Boulevard/Ena Road/Kalia Road Intersection (1993, with project traffic)

Receptor Location	CO Concentration (ppm)		
	1-Hour AM	1-Hour PM	8-Hour
1	4.4	5.7	2.9
2	4.4	4.9	2.8
3	5.3	5.7	3.2
4	7.0	8.5	4.6*
5	6.7	8.3	4.3
6	4.3	5.1	2.5
7	3.7	4.3	2.3
8	5.7	6.8	3.6
9	5.9	8.3	4.4*
10	6.3	8.7	4.5*
11	4.0	4.5	2.4
12	5.1	5.8	3.1
13	7.8	8.6	4.8*
14	5.3	6.5	3.1
15	5.2	6.9	3.6
16	4.7	5.9	2.8
17	4.2	5.9	2.7
18	4.7	6.0	3.2

* Indicates that the State Standard has been exceeded

Table 8	Ala Moana Boulevard/Ena Road/Kalia Road Intersection (1993, without project traffic)		
Receptor Location	CO Concentration (ppm)		
	1-Hour AM	1-Hour PM	8-Hour
1	4.4	5.6	2.9
2	4.3	4.9	2.7
3	5.2	5.7	3.2
4	7.0	8.4	4.6*
5	6.6	8.2	4.2
6	4.3	5.1	2.5
7	3.7	4.3	2.2
8	5.7	6.7	3.6
9	5.8	8.2	4.4*
10	6.3	8.7	4.5*
11	4.0	4.5	2.4
12	5.1	5.7	3.0
13	7.7	8.4	4.6*
14	5.2	6.1	3.1
15	5.2	6.9	3.5
16	4.7	5.9	2.8
17	4.2	5.9	2.7
18	4.7	5.9	3.2

* indicates that the State Standard has been exceeded

Table 9 Ala Moana Boulevard/Ena Road/Kalia Road Intersection (1990)

Receptor Location	CO Concentration (ppm)		
	1-Hour AM	1-Hour PM	8-Hour
1	---	---	3.6
2	---	---	3.2
3	---	---	4.0
4	---	---	5.8*
5	---	---	5.4*
6	---	---	3.0
7	---	---	2.8
8	---	---	4.2
9	---	---	5.5*
10	---	---	5.7*
11	---	---	2.7
12	---	---	3.7
13	---	---	6.0*
14	---	---	3.9
15	---	---	4.4*
16	---	---	3.6
17	---	---	3.1
18	---	---	4.0

* indicates that the State Standard has been exceeded

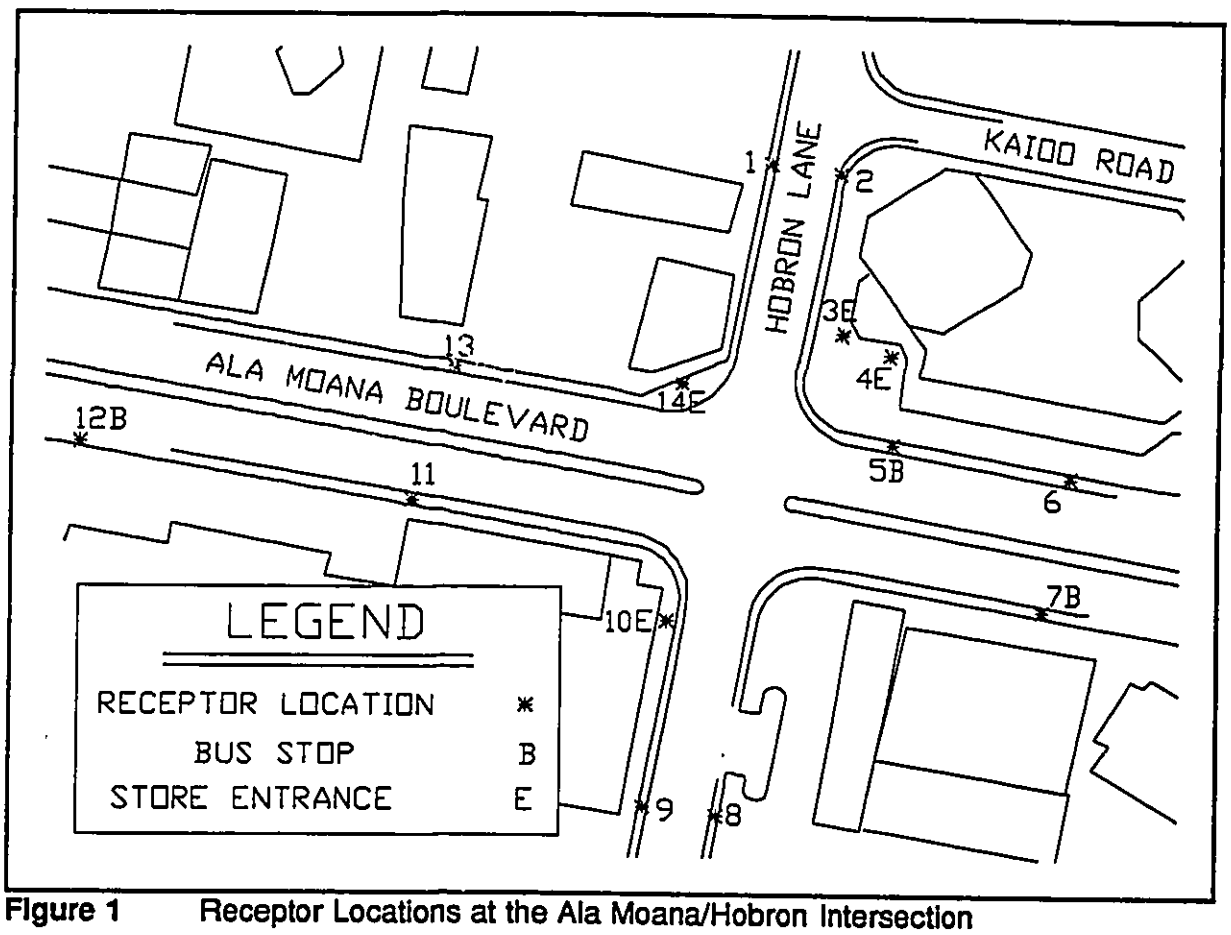


Figure 1 Receptor Locations at the Ala Moana/Hobron Intersection

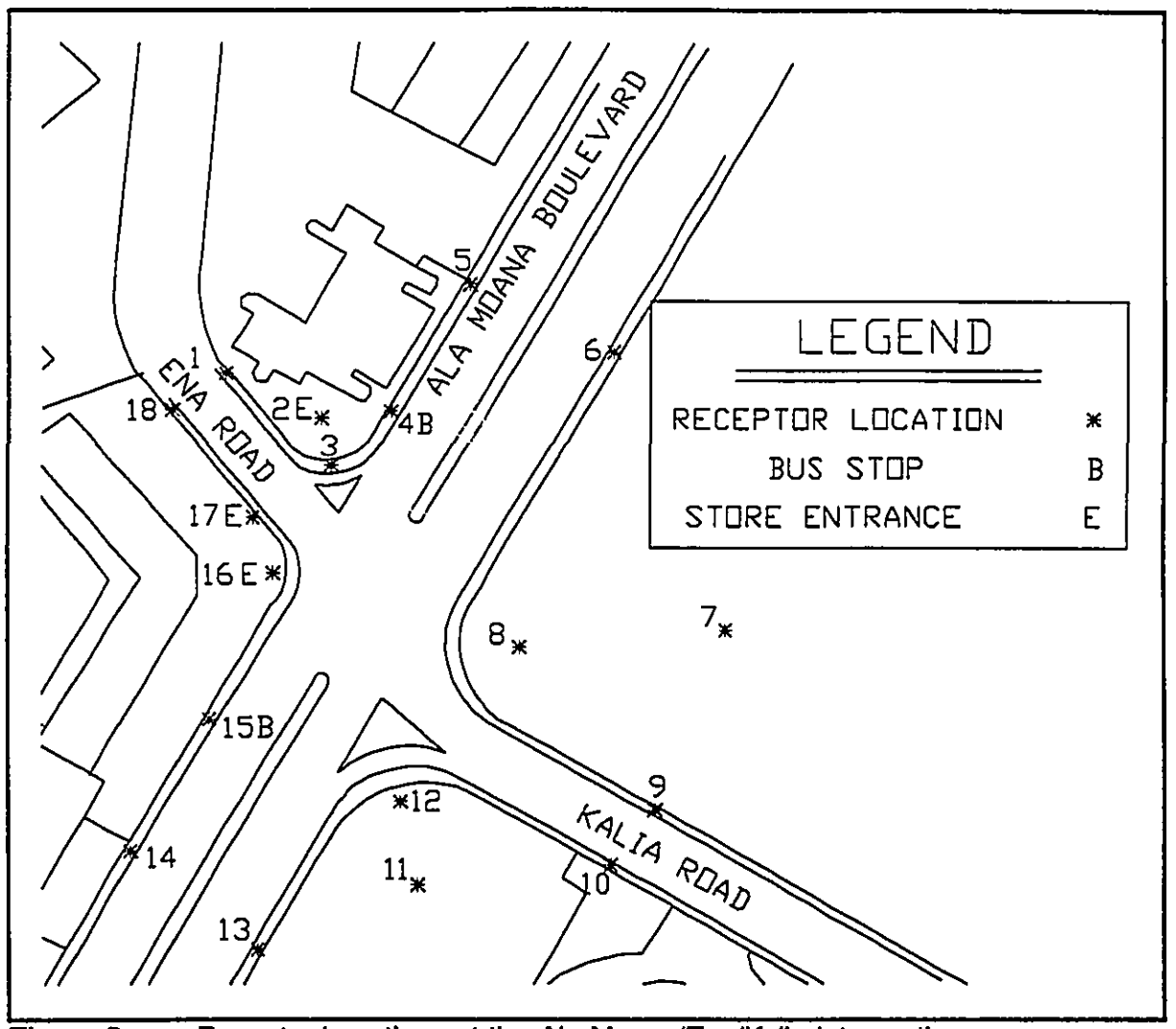


Figure 2 Receptor Locations at the Ala Moana/Ena/Kalia Intersection

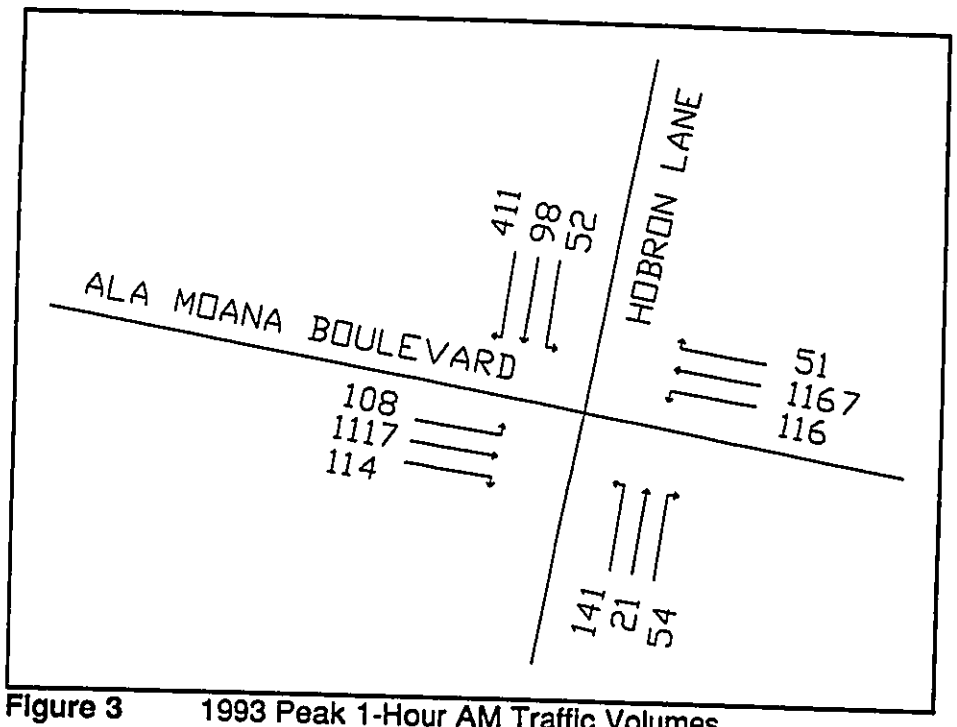


Figure 3 1993 Peak 1-Hour AM Traffic Volumes (with the Proposed Project)

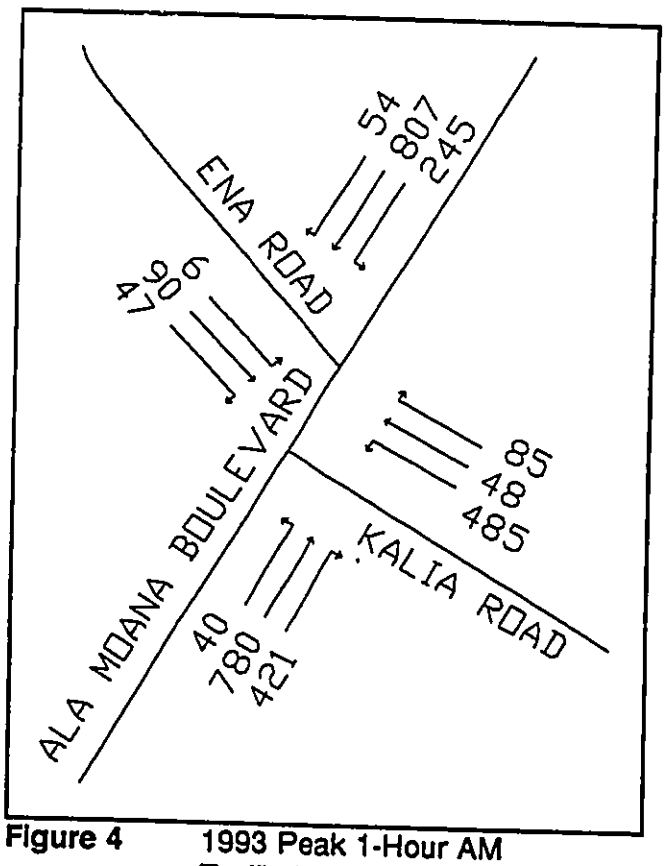


Figure 4 1993 Peak 1-Hour AM Traffic Volumes (with the Proposed Project)

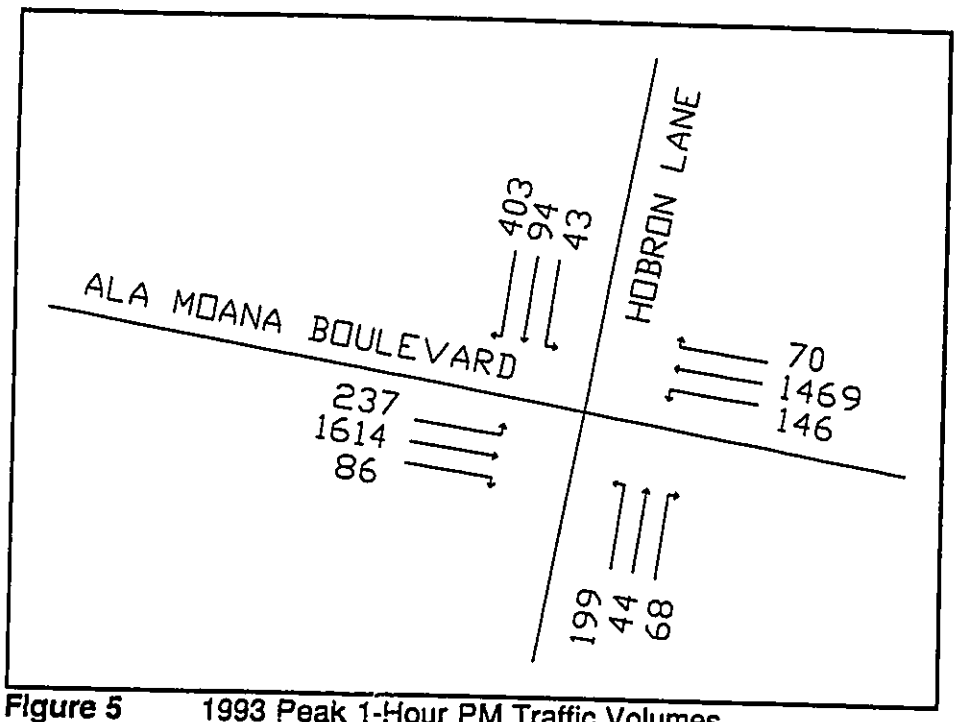


Figure 5 1993 Peak 1-Hour PM Traffic Volumes (with the Proposed Project)

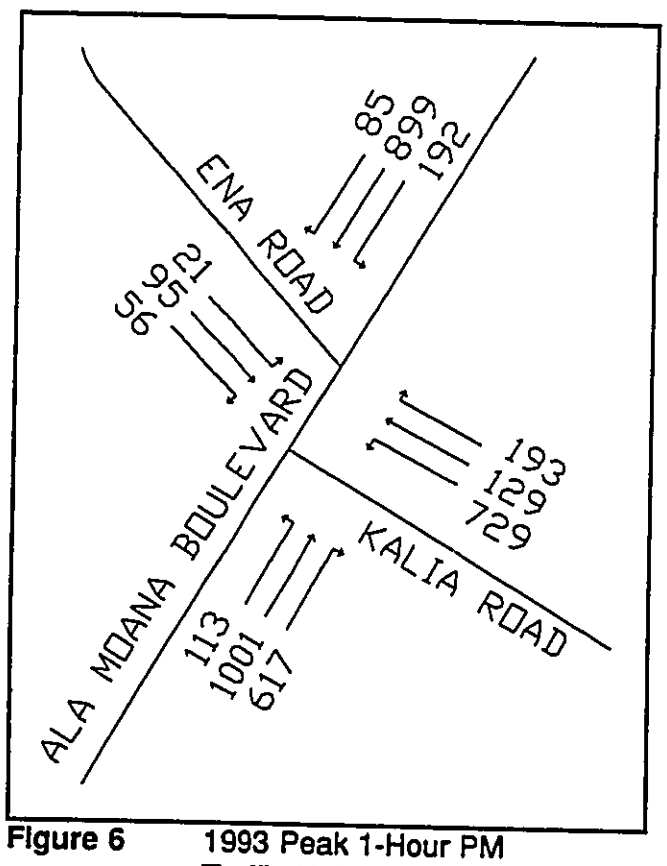


Figure 6 1993 Peak 1-Hour PM Traffic Volumes (with the Proposed Project)

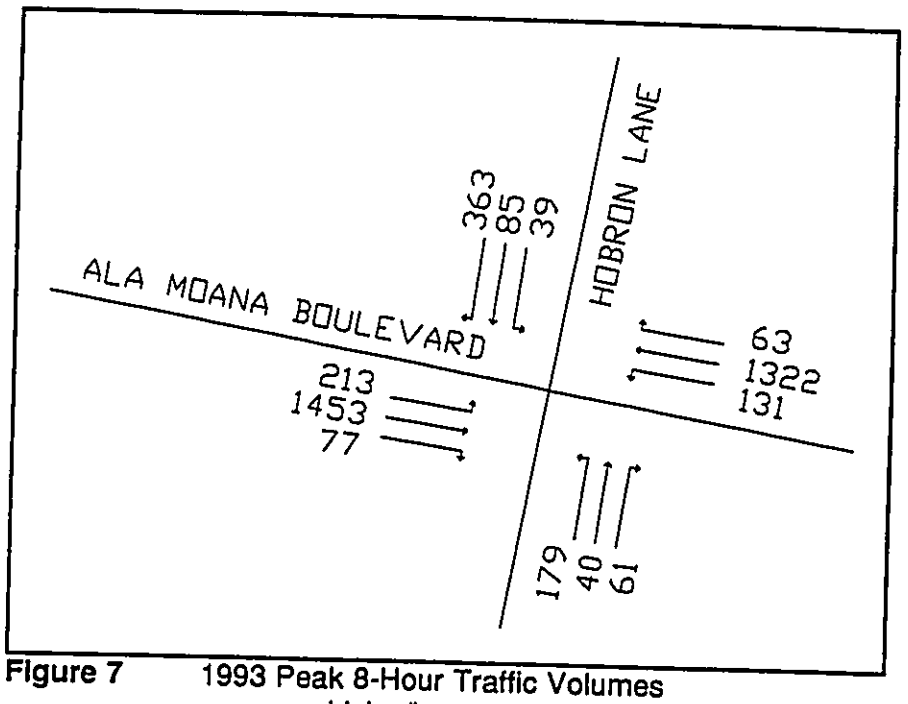


Figure 7 1993 Peak 8-Hour Traffic Volumes
vehicles/hour
(with the Proposed Project)

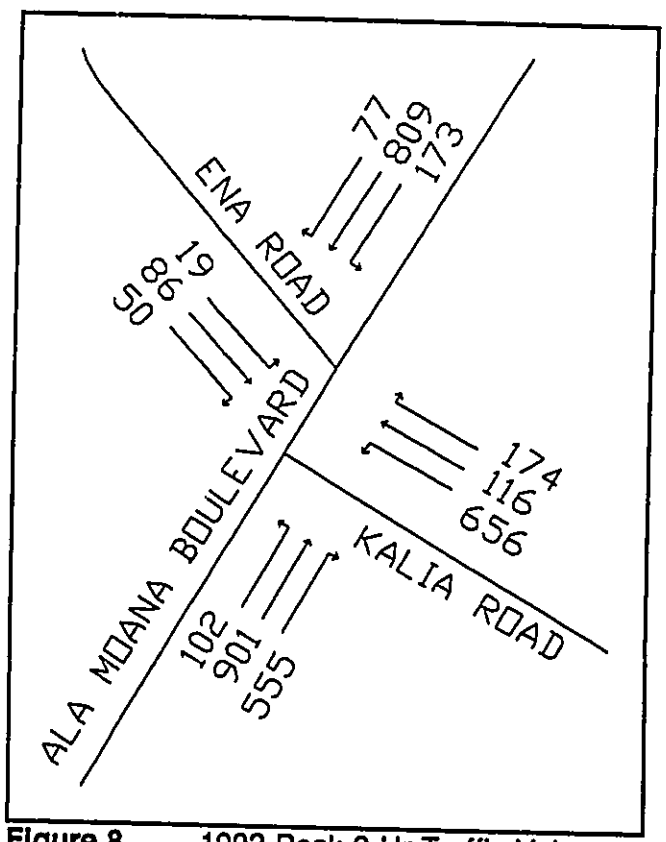


Figure 8 1993 Peak 8-Hr Traffic Volumes
vehicles/hour
(with the Proposed Project)

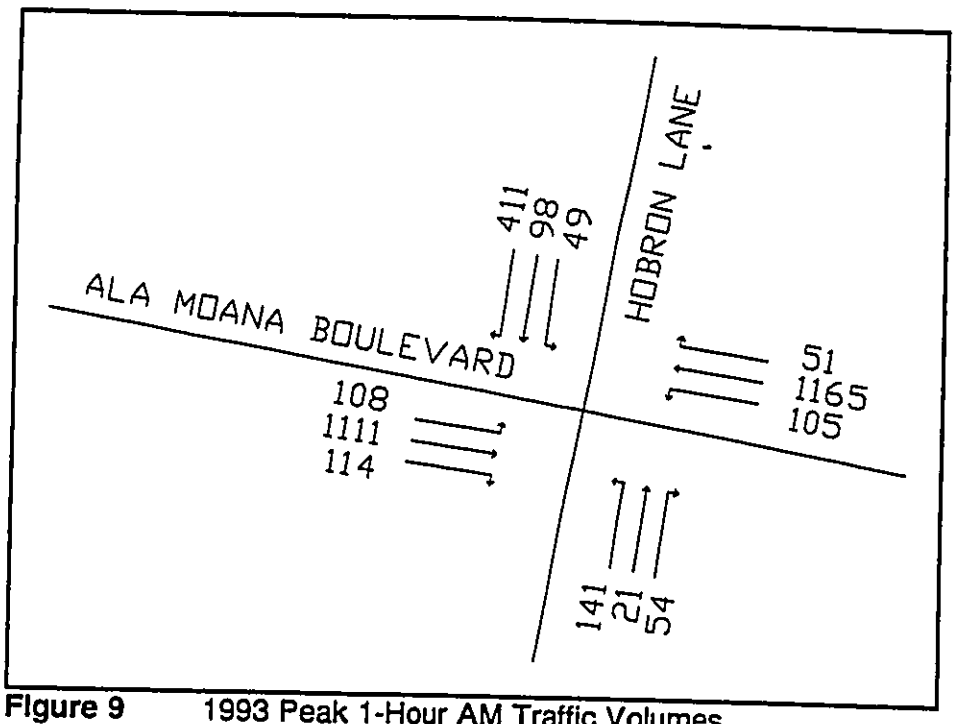


Figure 9 1993 Peak 1-Hour AM Traffic Volumes (without the Proposed Project)

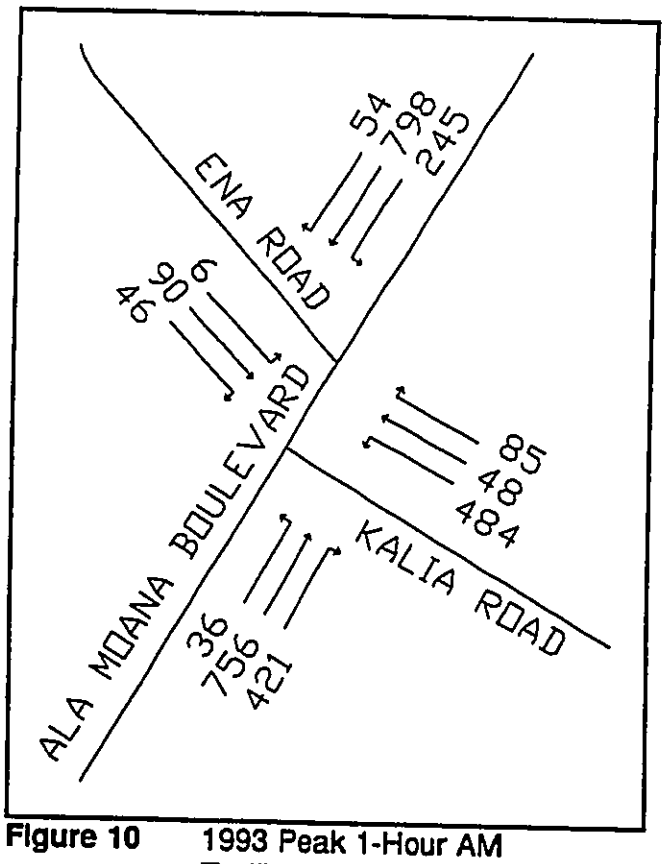


Figure 10 1993 Peak 1-Hour AM Traffic Volumes (without the Proposed Project)

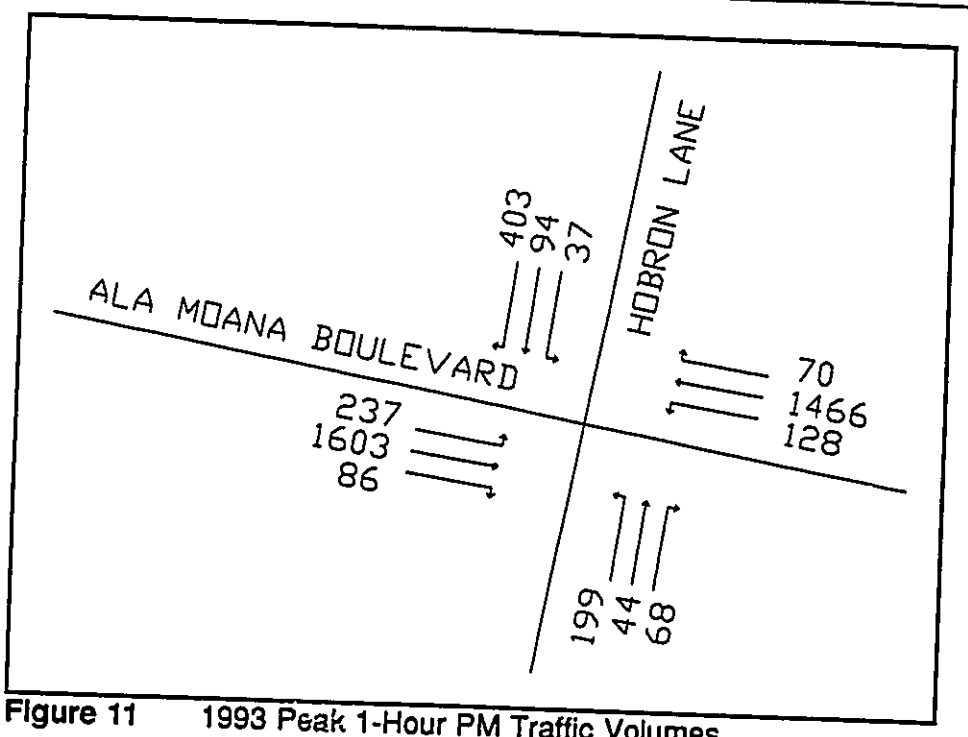


Figure 11 1993 Peak 1-Hour PM Traffic Volumes (without the Proposed Project)

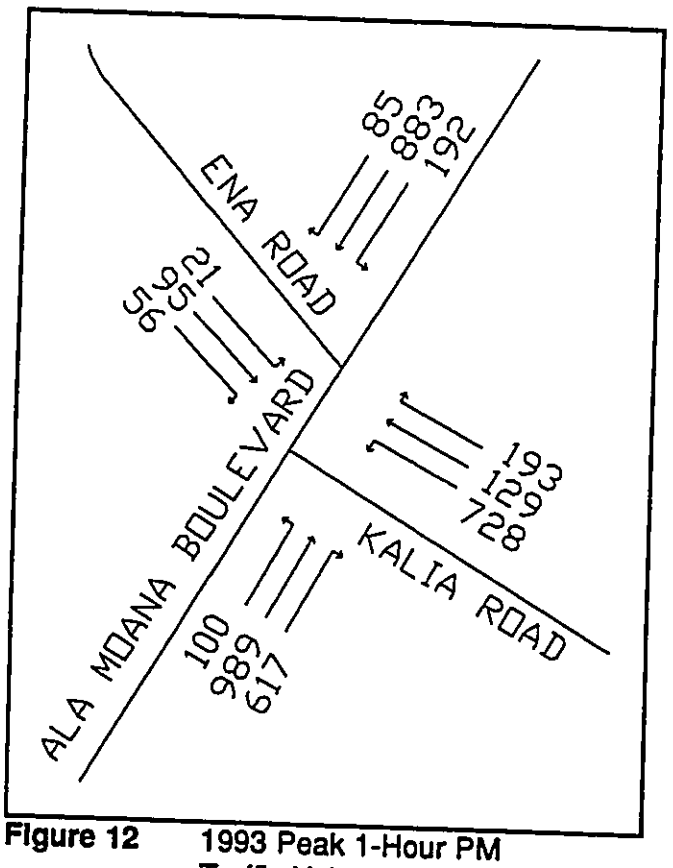


Figure 12 1993 Peak 1-Hour PM Traffic Volumes (without the Proposed Project)

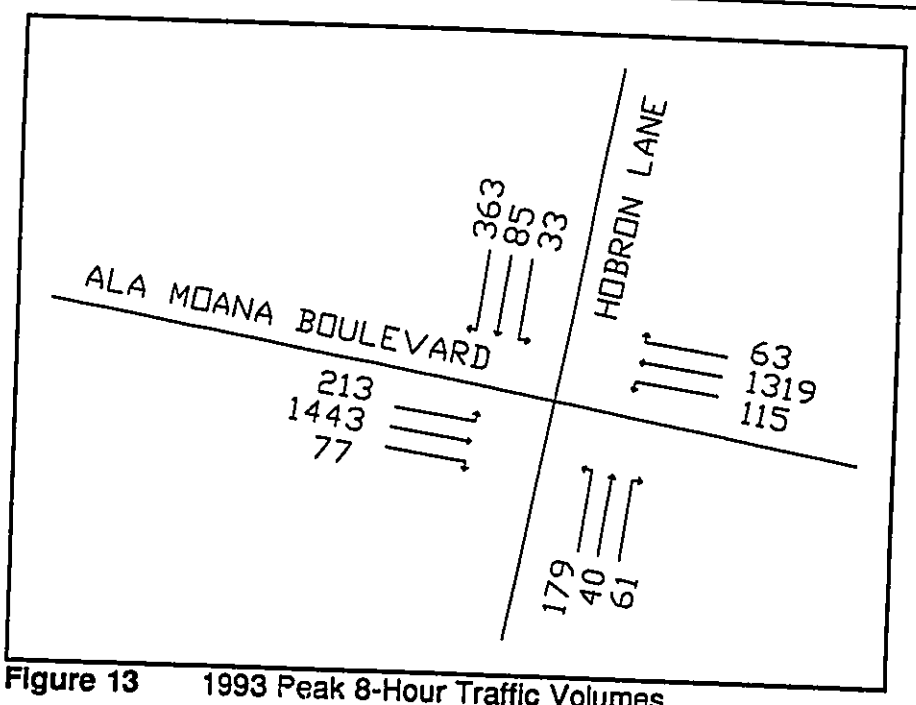


Figure 13 1993 Peak 8-Hour Traffic Volumes
vehicles/hour
(without the Proposed Project)

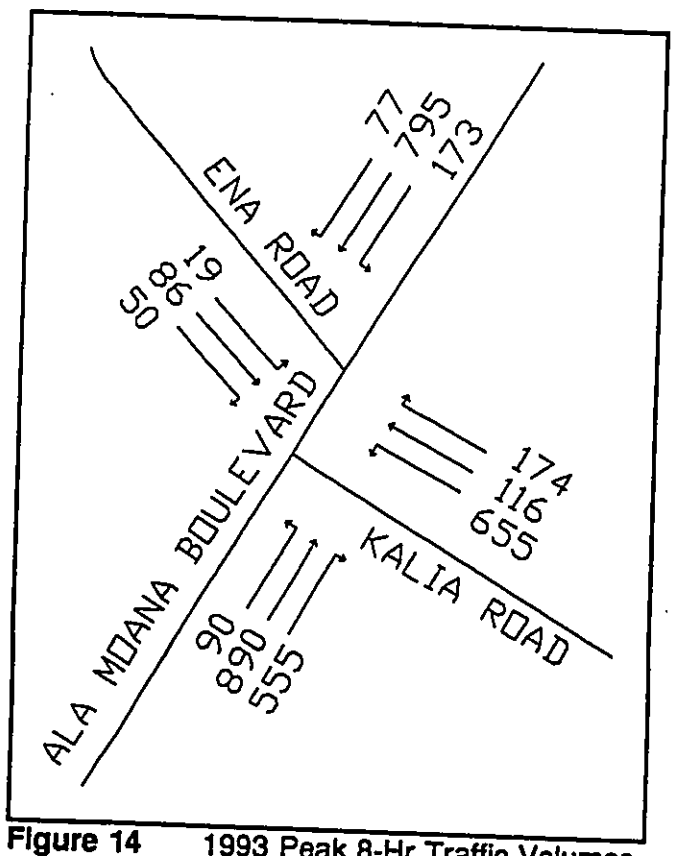


Figure 14 1993 Peak 8-Hr Traffic Volumes
vehicles/hour
(without the Proposed Project)

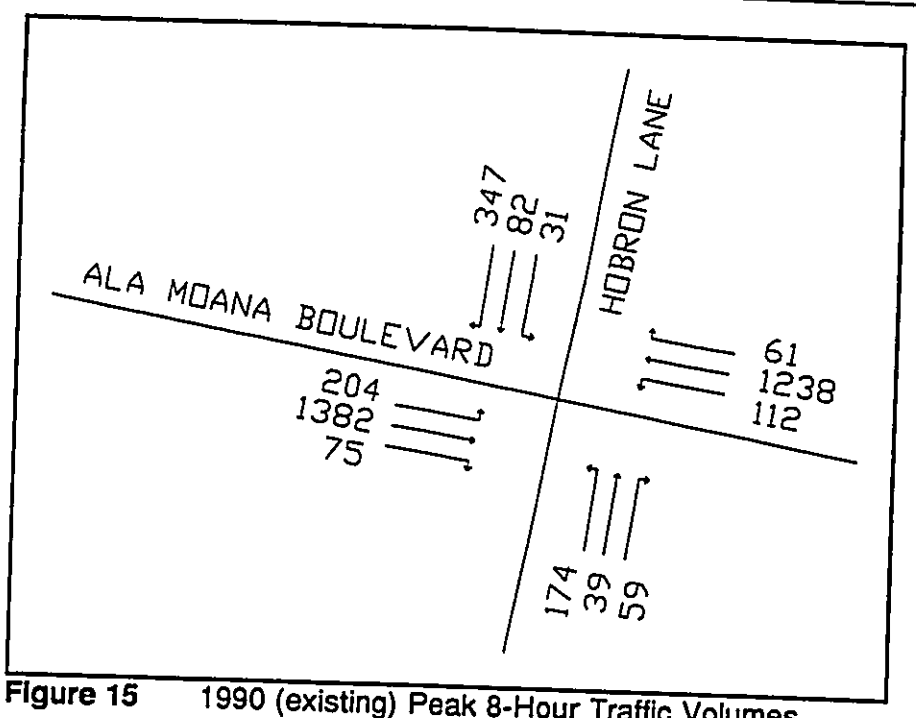


Figure 15 1990 (existing) Peak 8-Hour Traffic Volumes
vehicles/hour

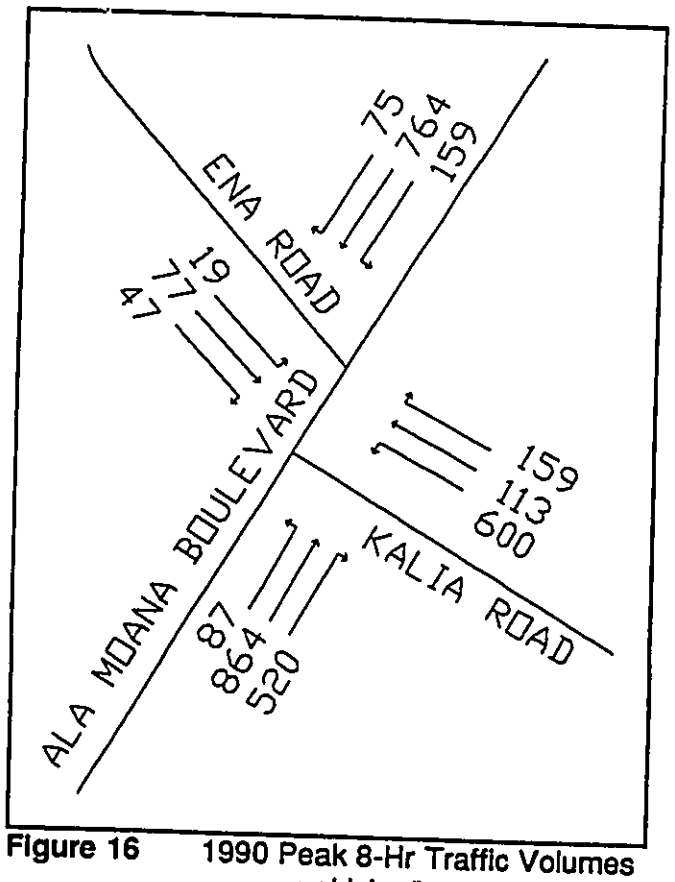
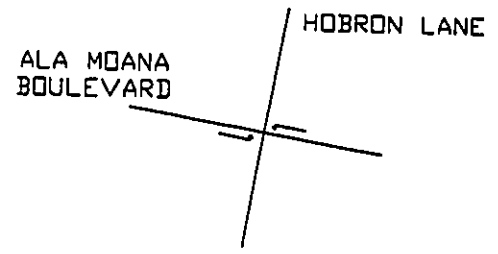


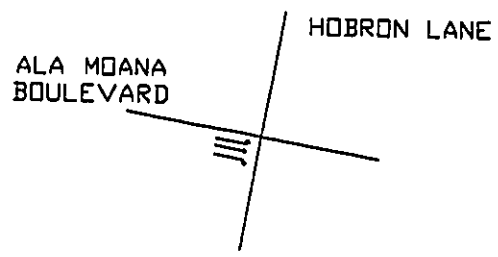
Figure 16 1990 Peak 8-Hr Traffic Volumes
vehicles/hour
(existing)

TOTAL CYCLE TIME 142 SEC

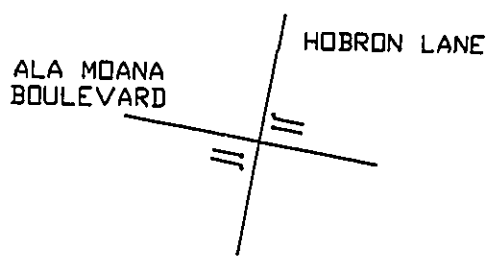
PHASE 1	GREEN	11	SEC
	YELLOW	5	SEC
	RED	126	SEC



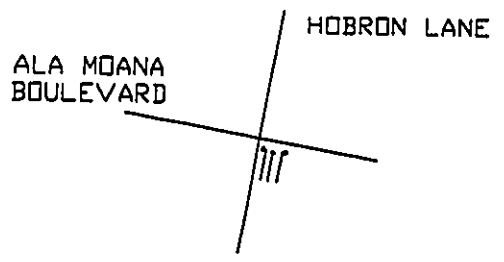
PHASE 2	GREEN	7	SEC
	YELLOW	0	SEC
	RED	135	SEC



PHASE 3	GREEN	62	SEC
	YELLOW	5	SEC
	RED	75	SEC



PHASE 4	GREEN	27	SEC
	YELLOW	5	SEC
	RED	110	SEC



PHASE 5	GREEN	14	SEC
	YELLOW	5	SEC
	RED	123	SEC

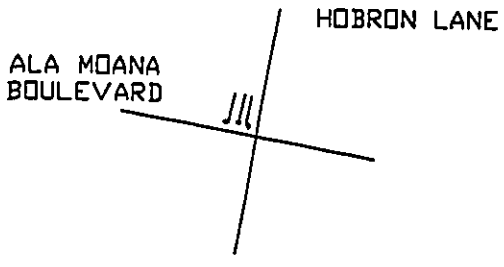
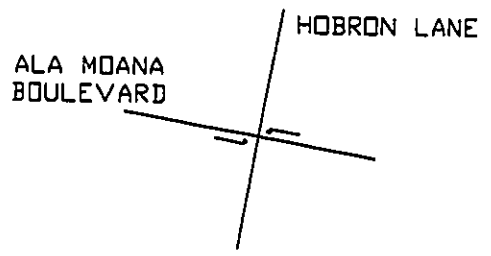


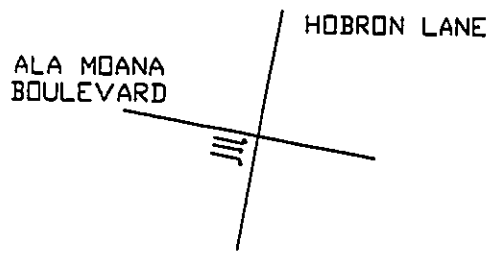
Figure 17 1-Hour AM Traffic Light Cycles for the Ala Moana/Hobron Intersection

TOTAL CYCLE TIME 162 SEC

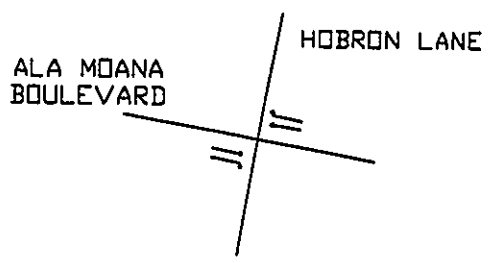
PHASE 1	GREEN	23	SEC
	YELLOW	0	SEC
	RED	139	SEC



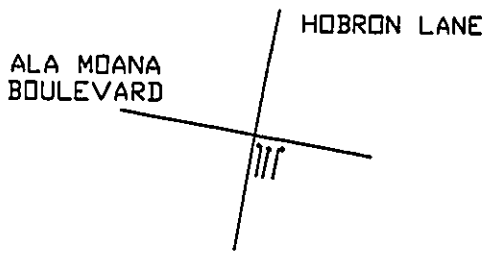
PHASE 2	GREEN	10	SEC
	YELLOW	0	SEC
	RED	152	SEC



PHASE 3	GREEN	65	SEC
	YELLOW	5	SEC
	RED	92	SEC



PHASE 4	GREEN	33	SEC
	YELLOW	5	SEC
	RED	124	SEC



PHASE 5	GREEN	15	SEC
	YELLOW	5	SEC
	RED	142	SEC

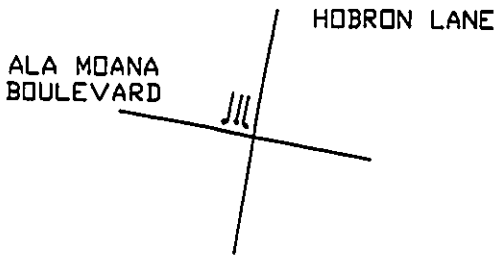
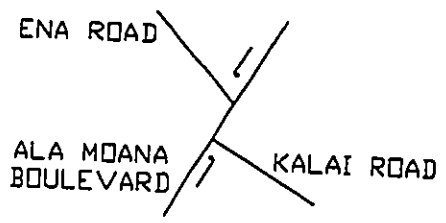


Figure 18 1-Hour PM Traffic Light Cycles for the Ala Moana/Hobron Intersection

TOTAL CYCLE TIME 138 SEC

PHASE 1	GREEN	7	SEC
	YELLOW	5	SEC
	RED	126	SEC



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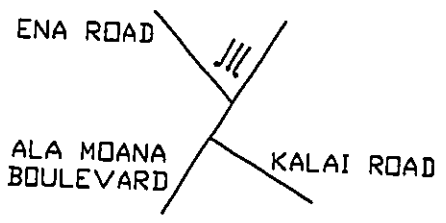
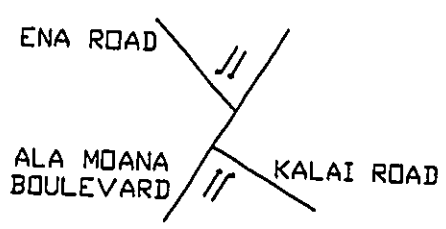
	RED	122	SEC



PHASE 3	GREEN	35	SEC
	YELLOW	5	SEC
	RED	98	SEC



PHASE 4	GREEN	29	SEC
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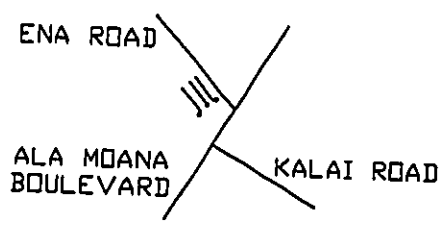
	RED	104	SEC



PHASE 5	GREEN	30	SEC
	YELLOW	5	SEC
	RED	103	SEC

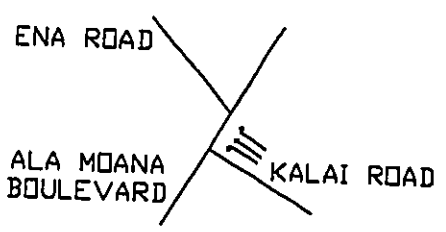
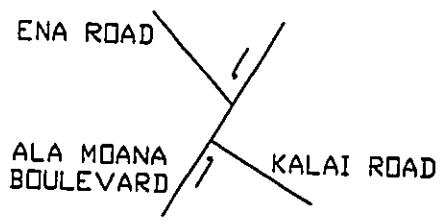


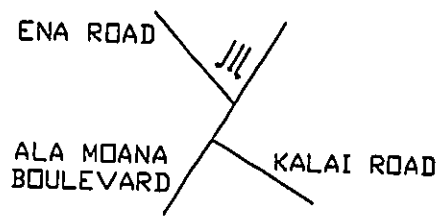
Figure 19 1-Hour AM Traffic Light Cycles for the Ala Moana/Ena/Kalia Intersection

TOTAL CYCLE TIME 168 SEC

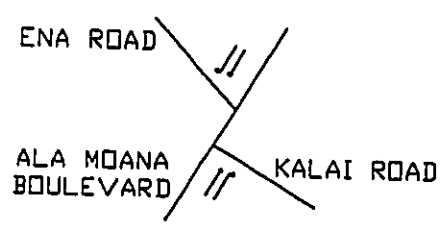
PHASE 1	GREEN	11	SEC
	YELLOW	5	SEC
	RED	152	SEC



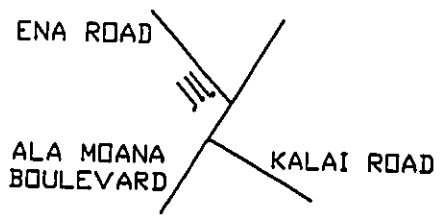
PHASE 2	GREEN	10	SEC
	YELLOW	0	SEC
	RED	158	SEC



PHASE 3	GREEN	53	SEC
	YELLOW	5	SEC
	RED	110	SEC



PHASE 4	GREEN	27	SEC
	YELLOW	5	SEC
	RED	136	SEC



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	RED	117	SEC

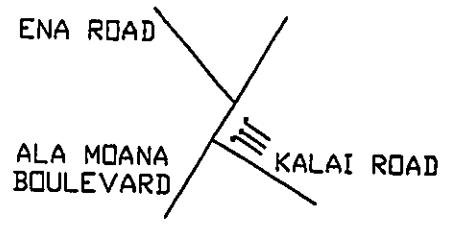

Figure 20 1-Hour PM Traffic Light Cycles for the Ala Moana/Ena/Kalia Intersection

Appendix D

Noise Study

Y. Ebisu Associates

NOISE STUDY
FOR THE PROPOSED
WAIKIKIAN HOTEL PROJECT
OAHU, HAWAII

Prepared for:

TYRONE T. KUSAO, INC.

Prepared by:

Y. EBISU & ASSOCIATES
1126 12th Avenue, Room 305
Honolulu, Hawaii 96816

AUGUST 1990

Existing Noise Environment.

The existing traffic noise levels in the project environs along Ala Moana Boulevard are in the "Significant Exposure, Normally Unacceptable" category. Within the interior (makai) half of the project site, where traffic noise is shielded by existing low-rise and high-rise buildings, existing noise levels are in the "Moderate Exposure, Acceptable" category. Typical average noise levels at locations near Ala Moana Boulevard range from 65 to 70 dB, with maximum and minimum levels of 83 and 55 dB, respectively. Near the lagoon at the makai end of the project site, average background noise levels range from 55 to 60 dB, with maximum and minimum levels of 68 and 51 dB, respectively. The results of background ambient noise measurements on the project site indicate that the locations on the project site which are near Ala Moana Boulevard are relatively noisy, while the interior locations toward the beach are approximately 10 dB quieter than those near the boulevard.

Potential Noise Impacts.

Impacts from traffic noise are possible at the proposed hotel units in the project tower, and particularly at those end units which face Ala Moana Boulevard. Because these units are expected to be in the luxury category, mitigation of high traffic noise levels through the use of total closure and air conditioning is recommended. The remaining units which face Diamond Head will be partially shielded from Ala Moana Boulevard, and should experience at least 5 dB less traffic noise than the end units which face Ala Moana Boulevard. Traffic noise levels along the Diamond Head side of the hotel tower should range between 60 to 65 Ldn, and be within the "Moderate Exposure, Acceptable" category.

Unavoidable, but temporary, noise impacts will occur during the construction of the proposed project, particularly during the

excavation and pile driving activities on the project site. Because construction activities are predicted to be audible within the project and at adjoining properties, the quality of the acoustic environment may be degraded to unacceptable levels during periods of construction. Mitigation measures to reduce construction noise to inaudible levels will not be practical in all cases, so the use of quiet equipment and compliance with the State Department of Health (DOH) permit procedures for construction noise are recommended. Under DOH permit procedures, noisy construction activities are not allowed on holidays, Saturdays, Sundays, during the early morning, and during the late evening periods.

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CHAPTER I. SUMMARY

The existing and future traffic noise levels in the vicinity of the proposed Waikikian Hotel Project in Waikiki were evaluated for their potential impacts and their relationship to current FHA/HUD noise standards. The traffic noise level increases along five roadways in the project environs were calculated with and without the project. Following project build-out by CY 1993, increases in traffic noise of 0.2 to 0.3 Ldn units are predicted to occur as a result of project plus non-project traffic.

Along Ala Moana Boulevard, traffic noise levels are expected to increase by 0.3 Ldn, primarily as a result of non-project traffic. Along Hobron Lane, Kalia Road, and Ena Road, traffic noise levels are expected to increase by approximately 0.1 to 0.3 Ldn by CY 1993 as a result of non-project traffic. Project traffic will add approximately 0 to 0.1 additional Ldn units of noise along Hobron Lane, Kalia Road, and Ena Road in the immediate vicinity of the project. These levels of traffic noise increases resulting from project generated traffic are not considered to be significant and should not generate adverse noise impacts.

It will not be possible to obtain adequate setback of the project's tower building from the centerline of Ala Moana Boulevard so as to meet FHA/HUD noise standards along the north face of the tower. Because of this, impacts from traffic noise are possible at the proposed project units which face Ala Moana Boulevard. Because these units are expected to be in the luxury category, mitigation of high traffic noise levels through the use of closure and air conditioning is recommended.

Unavoidable, but temporary, noise impacts will occur during the construction of the proposed project, particularly during the excavation and pile driving activities on the project site. Because construction activities are predicted to be audible within the project and at adjoining properties, the quality of the acoustic environment may be degraded to unacceptable levels during pe-

riods of construction. Mitigation measures to reduce construction noise to inaudible levels will not be practical in all cases, but the use of quiet equipment is recommended as a standard mitigation measure.

CHAPTER II. PURPOSE

The primary objective of this study was to describe the existing and future traffic noise environment in the environs of the proposed Waikikian Hotel Project in Waikiki on the island of Oahu. Traffic noise level increases and impacts associated with the proposed development were to be determined within the project site as well as along the public roadways expected to service the project traffic. A specific objective was to determine future traffic noise level increases associated with both project and non-project traffic, and the potential noise impacts associated with these increases. Assessments of possible future impacts from short term construction noise and vibration at the project site were also included as noise study objectives.

CHAPTER III. NOISE DESCRIPTORS AND THEIR RELATIONSHIP TO LAND USE COMPATIBILITY

The noise descriptor currently used by federal agencies (such as FHA/HUD) to assess environmental noise is the Day-Night Average Sound Level (Ldn). This descriptor incorporates a 24-hour average of instantaneous A-Weighted Sound Levels as read on a standard Sound Level Meter. By definition, the minimum averaging period for the Ldn descriptor is 24 hours. Additionally, sound levels which occur during the nighttime hours of 10:00 PM to 7:00 AM are increased by 10 decibels (dB) prior to computing the 24-hour average by the Ldn descriptor. A more complete list of noise descriptors is provided in **APPENDIX B** to this report.

TABLE 1, derived from **Reference 1**, presents current federal noise standards and acceptability criteria for residential land uses. Land use compatibility guidelines for various levels of environmental noise as measured by the Ldn descriptor system are shown in **FIGURE 1.** As a general rule, noise levels of 55 Ldn or less occur in rural areas, or in areas which are removed from high volume roadways. In urbanized areas which are shielded from high volume streets, Ldn levels generally range from 55 to 65 Ldn, and are usually controlled by motor vehicle traffic noise. Residences which front major roadways are generally exposed to levels of 65 Ldn, and as high as 75 Ldn when the roadway is a high speed freeway. In the project area, traffic noise levels associated with Ala Moana Boulevard are typically greater than 70 Ldn along the Right-of-Way due to the large volume of traffic on that major thoroughfare. The range of background ambient noise levels at other urbanized areas on Oahu are shown in **FIGURE 2.**

For the purposes of determining noise acceptability for funding assistance from federal agencies (FHA/HUD and VA), an exterior noise level of 65 Ldn or lower is considered acceptable. This standard is applied nationally (**Reference 2**), including Hawaii. Because of our open-living conditions, the predominant use of nat-

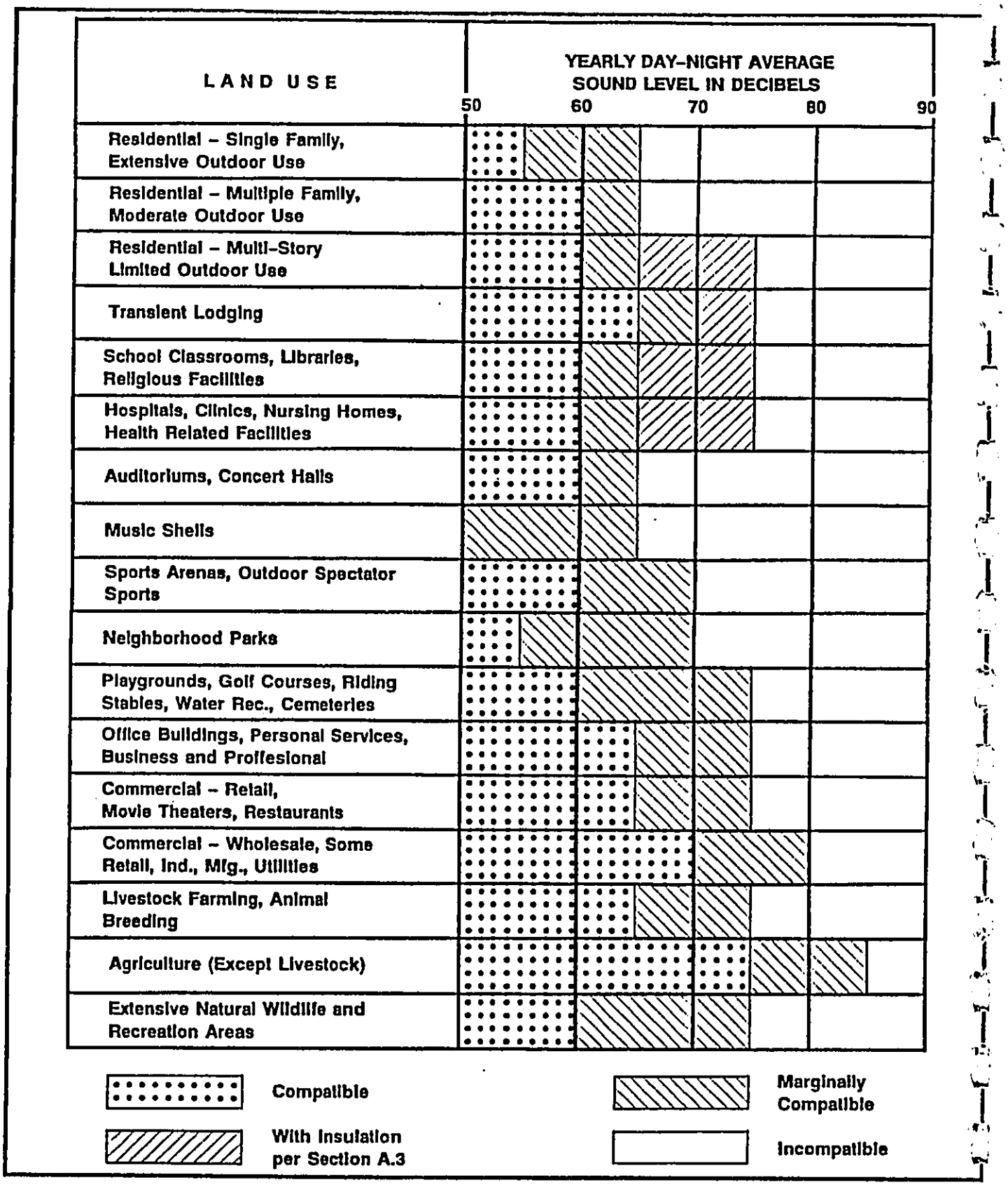
TABLE 1

EXTERIOR NOISE EXPOSURE CLASSIFICATION (RESIDENTIAL LAND USE)

NOISE EXPOSURE CLASS	DAY-NIGHT SOUND LEVEL	EQUIVALENT SOUND LEVEL	FEDERAL[1] STANDARD
Minimal Exposure	Not Exceeding 55 L_{dn}	Not Exceeding 55 L_{eq}	Unconditionally Acceptable
Moderate Exposure	Above 55 L_{dn} But Not Above 65 L_{dn}	Above 55 L_{eq} But Not Above 65 L_{eq}	Acceptable[2]
Significant Exposure	Above 65 L_{dn} But Not Above 75 L_{dn}	Above 65 L_{eq} But Not Above 75 L_{eq}	Normally Unacceptable
Severe Exposure	Above 75 L_{dn}	Above 75 L_{eq}	Unacceptable

Notes: (1) Federal Housing Administration, Veterans Administration, Department of Defense, and Department of Transportation.

(2) FHWA uses the L_{eq} instead of the L_{dn} descriptor. For planning purposes, both are equivalent if: (a) heavy trucks do not exceed 10 percent of total traffic flow in vehicles per 24 hours, and (b) traffic between 10:00 PM and 7:00 AM does not exceed 15 percent of average daily traffic flow in vehicles per 24 hours. The noise mitigation threshold used by FHWA for residences is 67 L_{eq}.

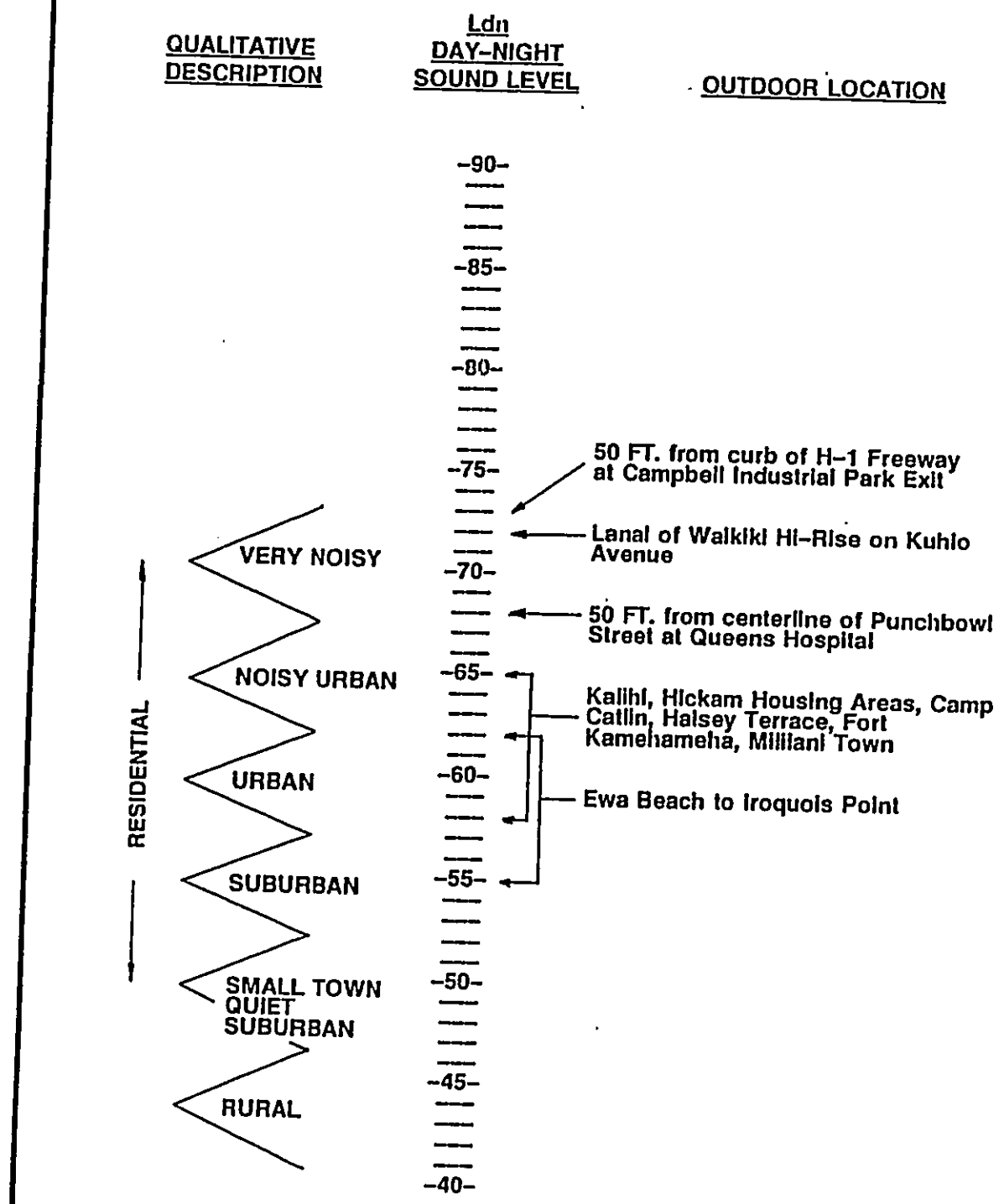


LAND USE COMPATIBILITY
WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVEL
AT A SITE FOR BUILDINGS AS COMMONLY CONSTRUCTED
(Source: American National Standards Institute S3.23-1980)

FIGURE
1

FIGURE 2

RANGE OF EXTERIOR BACKGROUND AMBIENT NOISE LEVELS



urally ventilated dwellings, and the relatively low exterior-to-interior sound attenuation afforded by these naturally ventilated structures, an exterior noise level of 65 Ldn does not eliminate all risks of noise impacts. Because of these factors, and as recommended in **Reference 3**, a lower level of 55 Ldn is considered as the "Unconditionally Acceptable" (or "Near-Zero Risk") level of exterior noise. However, after considering the cost and feasibility of applying the lower level of 55 Ldn, government agencies such as FHA/HUD and VA have selected 65 Ldn as a more appropriate regulatory standard.

For commercial, industrial, and other non-noise sensitive land uses, exterior noise levels as high as 75 Ldn are generally considered acceptable. Exceptions to this occur when naturally ventilated office and other commercial establishments are exposed to exterior levels which exceed 65 Ldn.

On the island of Oahu, the State Department of Health (DOH) regulates noise from construction activities, through the issuance of permits for allowing excessive noise during limited time periods. State DOH noise regulations are expressed in maximum allowable property line noise limits rather than Ldn (see **Reference 4**). Although they are not directly comparable to noise criteria expressed in Ldn, State DOH noise limits for residential, apartment/commercial, and industrial lands equate to approximately 55, 60, and 76 Ldn, respectively.

It should be noted that the noise compatibility guidelines and relationships to the Ldn noise descriptor may not be applicable to impulsive noise sources such as pile drivers. The use of penalty factors (such as adding 10 dB to measured sound levels or the use of C-Weighting filters) have been proposed. However, the relationships between levels of impulsive noise sources and land use compatibility have not been as firmly established as have the relationships for non-impulsive sources. The State DOH limits for impulsive sounds which exceed 120 impulses in any 20 minute period are 10 dB above the limits for non-impulsive sounds. If impulsive

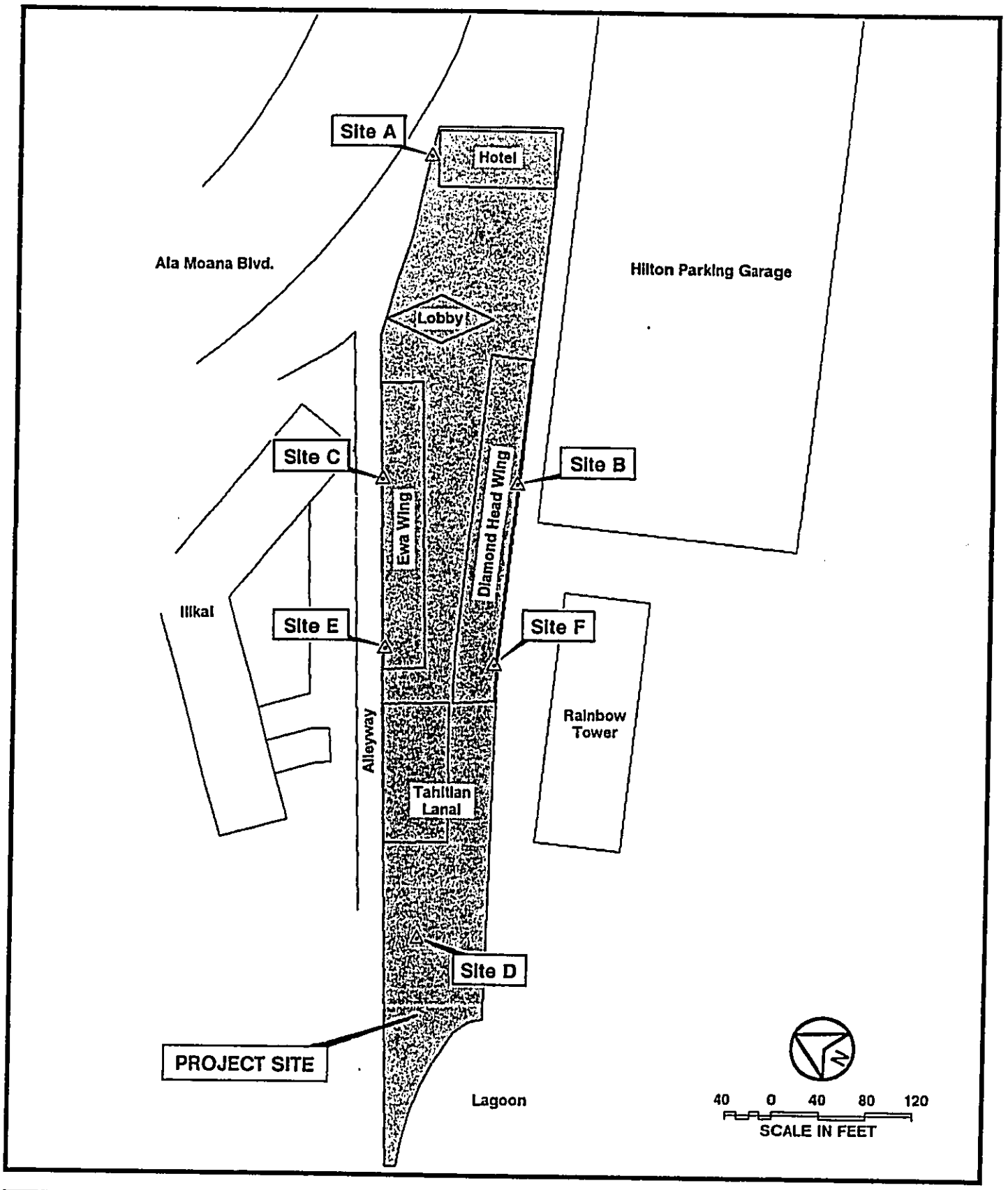
sounds do not exceed 120 impulses in any 20 minute time period, there are no regulatory limits on their sound levels under the State DOH regulations.

CHAPTER IV. GENERAL STUDY METHODOLOGY

Existing traffic and background ambient noise levels were measured at six locations on the project site. The purpose of these measurements were to provide a basis for developing the project's traffic noise contributions along the roadways which will service the proposed development, and to describe the existing noise environment at the makai (seaward) portions of the project site which are shielded from traffic noise. The locations of the measurement sites are shown in **FIGURE 3**. Noise measurements were performed during the month of July 1990, and their results are summarized in **TABLE 2A**. The results of the traffic noise measurements were compared with calculations of existing traffic noise levels to validate the computer model used. The traffic noise measurement results, and their comparisons with computer model predictions of existing traffic noise levels are summarized in **TABLE 2B**.

Traffic noise calculations for the existing conditions as well as noise predictions for the Year 1993 were performed using the Federal Highway Administration (FHWA) Noise Prediction Model (**Reference 5**). Traffic data entered into the noise prediction model were: hourly traffic volumes, average vehicle speeds, estimates of traffic mix, and hard ground propagation loss factor. The traffic study for the project (**Reference 6**), and Hawaii State Department of Transportation counts on Ala Moana Boulevard (**Reference 7**) were the primary sources of data inputs to the model. For existing and future traffic on all roadways in the project environs, it was assumed that the average noise levels, or Leq(h), during the PM peak hour were 1.2 dB less than the 24-hour Ldn along each roadway. This assumption was based on computations of both the hourly Leq and the 24-hour Ldn of traffic noise on Ala Moana Boulevard (see **FIGURE 4**).

Traffic noise calculations for both the existing and future conditions in the project environs were developed for ground level



LOCATIONS OF NOISE MEASUREMENT SITES

FIGURE 3

TABLE 2A

RESULTS OF BACKGROUND AMBIENT NOISE LEVEL MEASUREMENTS
(July 25-26, 1990)

Location	Time (HRS)	Lmin	Leq	L10	Lmax
A. 4th Floor, Hotel at Ala Moana Blvd	2226-2248	57.6	67.2	70.0	78.6
	0013-0032	55.5	64.2	67.0	82.6
	0425-0437	54.5	59.5	63.0	69.5
B. Diamond Head Wing at Hilton Parking Garage	1457-1513	58.5	62.5	65.0	76.2
	2109-2118	57.0	58.9	61.0	73.3
	0038-0052	55.2	56.7	58.0	68.1
	0445-0453	56.0	56.9	58.0	62.8
	0910-0925	58.0	65.4	70.0	83.1
C. Ewa Wing(Mauka) at Alleyway/Ilikai	1518-1529	59.4	64.1	69.0	75.8
	2123-2133	57.2	60.7	63.0	72.7
	0057-0108	55.5	57.1	58.0	67.9
D. Tahitian Lanai Near Lagoon	1532-1545	56.0	59.6	62.0	67.1
	2200-2213	56.0	57.5	59.0	67.7
	0112-0128	50.7	53.0	54.0	59.2
	0519-0533	53.8	54.9	56.0	61.8
E. Ewa Wing(Makai) at Alleyway/Ilikai	0458-0513	59.4	61.9	66.0	73.2
	0930-0939	60.1	68.1	71.0	85.1
F. Diamond Head Wing at Condominium	0539-0544	56.8	57.7	59.0	61.7
	0946-0958	56.5	60.2	62.0	75.2

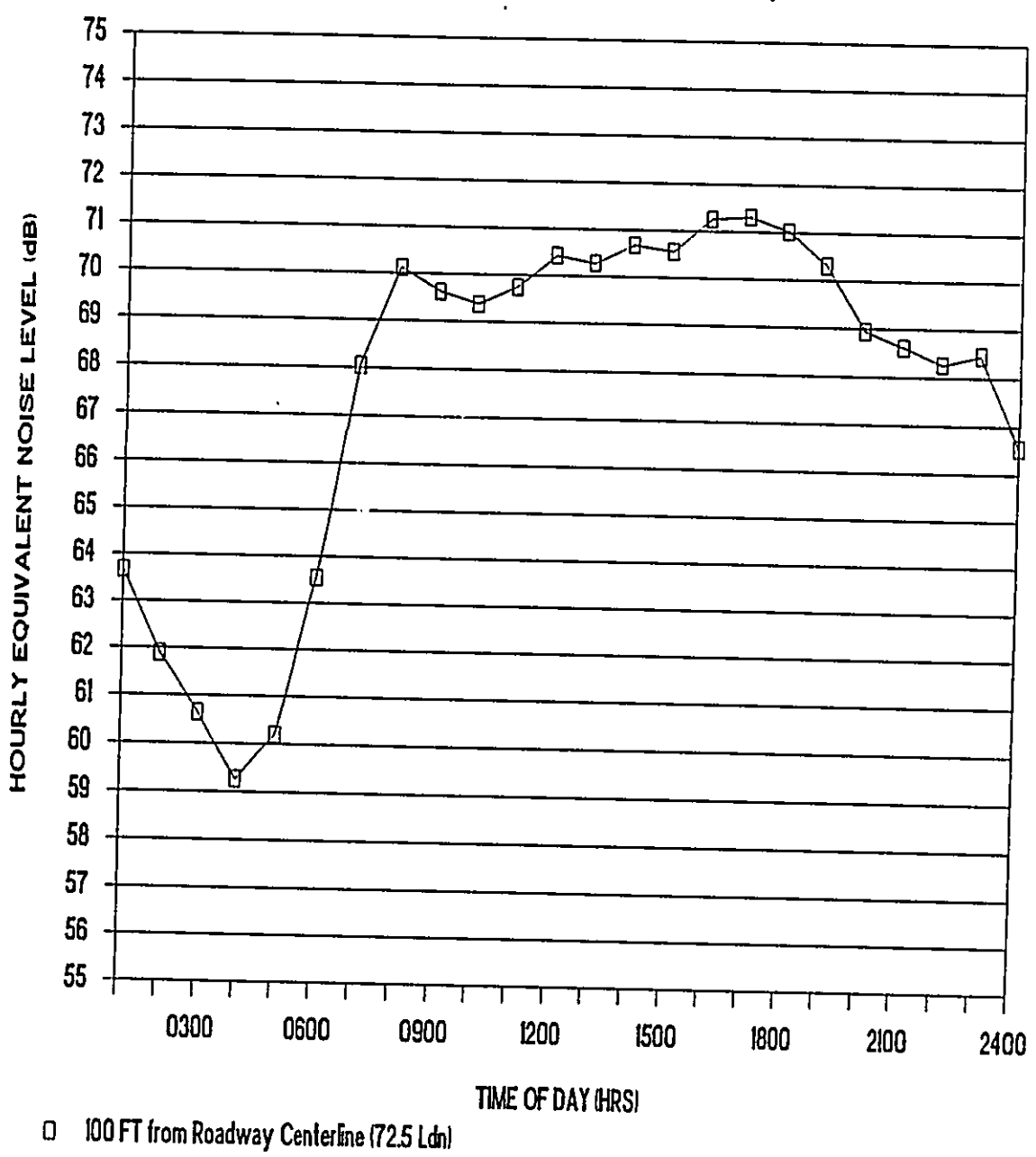
TABLE 2B

TRAFFIC NOISE MEASUREMENT RESULTS

Location	Time of Day (HRS)	Ave.Speed (MPH)	Hourly Traffic Volume			Measured Leq (dB)	Predicted Leq(dB)
			Auto	Med.Truck	Heavy Truck		
A. 90 FT from the center-line of Ala Moana Blvd. 35 FT AGL (7/25/90).	1600 TO 1700	37	3,042	85	154	71.3	71.3
A. 90 FT from the center-line of Ala Moana Blvd. 35 FT AGL (7/26/90).	0700 TO 0800	37	2,215	117	91	70.3	70.4

FIGURE 4

HOURLY VARIATIONS OF TRAFFIC NOISE AT 100 FT SETBACK DISTANCE FROM THE CENTERLINE OF ALA MOANA BOULEVARD AT ALA WAI CANAL BRIDGE (Station SL-50, 12/19-20/89)



and elevated receptors without the benefit of shielding effects. Traffic noise levels were calculated for future conditions with and without the proposed project. The forecasted changes in traffic noise levels over existing levels were calculated for both future scenarios, and noise impact risks evaluated. The relative contributions of non-project and project traffic to the total noise levels were also calculated, and an evaluation of possible traffic noise impacts was made.

Calculations of average exterior and interior noise levels from construction activities were performed for typical naturally ventilated and air conditioned dwellings. Predicted noise levels were compared with existing background ambient noise levels, and the potential for noise impacts was assessed. Potential noise impacts from pile driving operations were also discussed, and mitigation measures recommended.

CHAPTER V. EXISTING NOISE ENVIRONMENT

The existing traffic noise levels in the project environs along Ala Moana Boulevard are in the "Significant Exposure, Normally Unacceptable" category. Within the interior (makai) half of the project site, where traffic noise is shielded by existing low-rise and high-rise buildings, existing noise levels are in the "Moderate Exposure, Acceptable" category.

The results of the July 1990 traffic and background ambient noise measurements are summarized in **TABLES 2A and 2B**, with measurement locations identified in **FIGURE 3**. Site A was located at the 4th floor lanai of the existing Waikikian Hotel, overlooking Ala Moana Boulevard. The remaining Sites B thru F were located at ground level on or adjacent to the project site. Typical average (or Leq) noise levels at locations near Ala Moana Boulevard ranged from 65 to 70 dB, with maximum (or Lmax) and minimum (or Lmin) levels of 83 and 55 dB, respectively. At Site D, which was near the lagoon, average background noise levels ranged from 55 to 60 dB, with maximum and minimum levels of 68 and 51 dB, respectively. The results of the background ambient noise measurements indicated that the locations on the project site which are near Ala Moana Boulevard are relatively noisy, while the interior locations toward the beach are approximately 10 dB quieter than those near the boulevard. Local traffic along the driveways which border the project site produced intermittent noise events with maximum levels of 65 to 85 dB.

As shown in **TABLE 2B**, correlation between measured and predicted traffic noise levels was good at Site A, where traffic noise from Ala Moana Boulevard was the dominant noise source. Results of calculations of existing (CY 1990) traffic noise levels during the PM peak hour period are shown in **TABLE 3**. The results of the calculations apply at 50 FT distances from the centerlines of the roadway sections in the project environs. Calculated setback distances from these roadways to the existing 65, 70, and 75

TABLE 3

COMPARISONS OF EXISTING AND CY 1993 TRAFFIC NOISE LEVELS
ALONG ACCESS ROADS TO PROJECT SITE
(PM PEAK HOUR AND 50 FT FROM ROADWAY CENTERLINES)

LOCATION	SPEED (MPH)	VPH	***** HOURLY LEQ IN dB **** AUTO	MT	HT	ALL VEH
EXISTING (CY 1990) PM PEAK HR. TRAFFIC:						
Ala Moana Boulevard @ Project	37	3,203	67.7	63.7	71.9	73.7
Hobron Lane (Mauka Side)	22	849	53.5	49.2	56.8	59.0
Hobron Lane (Makai Side)	22	600	52.0	47.6	55.3	57.5
Kalia Road @ Ala Moana Blvd.	25	1,810	58.6	54.3	67.5	68.2
Ena Road @ Ala Moana Blvd.	22	464	50.9	46.5	54.2	56.4
CY 1993 PM PEAK HR. TRAFFIC WITH THE PROJECT:						
Ala Moana Boulevard @ Project	37	3,413	68.0	64.0	72.2	74.0
Hobron Lane (Mauka Side)	22	891	53.7	49.4	57.1	59.2
Hobron Lane (Makai Side)	22	637	52.3	47.9	55.6	57.7
Kalia Road @ Ala Moana Blvd.	25	1,955	59.0	54.7	67.9	68.6
Ena Road @ Ala Moana Blvd.	22	499	51.2	46.8	54.5	56.7

Notes:

The following assumed traffic mixes of autos, medium trucks, and heavy vehicles were used for existing and future conditions:

(a) Ala Moana Boulevard: 92.7% autos, 2.6% medium trucks, and 4.7% heavy trucks or buses.

(b) Kalia Road: 90.0% autos, 2.0% medium trucks, and 8.0% heavy trucks or buses.

(c) All Other Streets: 96.0% autos, 2.0% medium trucks, and 2.0% heavy trucks or buses.

Ldn contours are shown in **TABLE 4.** The traffic noise levels shown in the tables only apply when unobstructed line-of-sight conditions exist to the roadways. These conditions would generally occur at short (50 to 100 FT) distances to a roadway, within any flat, open space along the roadway, and at distant, but elevated locations above the roadway. The existing traffic noise levels shown in the tables should be reduced by 3 to 5 dB (or Ldn) if partial shielding (line-of-sight obstruction) exists between the roadway and the receptor location. If the receptor is located behind a major obstruction (large building), the noise levels in the tables should be reduced by 5 to 10 dB.

TABLE 4

EXISTING AND CY 1993 DISTANCES TO 65, 70, AND 75 Ldn TRAFFIC NOISE CONTOURS

STREET SECTION	65 Ldn SETBACK (FT) EXISTING	65 Ldn SETBACK (FT) CY 1993	70 Ldn SETBACK (FT) EXISTING	70 Ldn SETBACK (FT) CY 1993	75 Ldn SETBACK(FT) EXISTING	75 Ldn SETBACK(FT) CY 1993
Ala Moana Boulevard @ Project	493	525	156	166	49	53
Hobron Lane (Mauka Side)	16	17	5	5	2	2
Hobron Lane (Makai Side)	12	12	4	4	1	1
Kalia Road @ Ala Moana Blvd.	139	150	44	47	14	15
Ena Road @ Ala Moana Blvd.	9	10	3	3	1	1

Notes:

(1) All setback distances are from the roadways' centerlines.
(2) See TABLE 3 for traffic volume, speed, and mix assumptions.
(3) Ldn assumed to be equal to PM Peak Hour Leq plus 1.2 dB along all roadways.
(4) Setback distances are for unobstructed line-of-sight conditions.
(5) Hard ground conditions assumed along all roadways.

CHAPTER VI. FUTURE TRAFFIC NOISE ENVIRONMENT

Predictions of future traffic noise levels were made using the traffic volume assignments of **Reference 6** for CY 1993 with and without the proposed project. The future projections of project plus non-project traffic noise levels on the roadways which would service the project are shown in **TABLE 3** for the PM peak hour of traffic. As indicated in **TABLE 3**, traffic noise levels are predicted to increase by 0.2 to 0.3 dB during the PM peak hour. These predictions assume that average vehicle speeds and traffic mix will not change from current conditions. The dominant traffic noise source in the project area will continue to be traffic noise from Ala Moana Boulevard, but the 0.3 dB increase in this noise source following project build-out is not expected to be significant, with or without the project.

TABLE 4 summarizes the predicted setback distances to the 65, 70, and 75 Ldn traffic noise contour lines along the roadways servicing the project and attributable to both project plus non-project traffic by CY 1993. The setback distances in **TABLE 4** do not include the beneficial effects of noise shielding from buildings, or the detrimental effects of additive contributions of noise from intersecting streets or reflections from building walls. As indicated in **TABLE 4**, relatively large setback distances to the 65 and 70 Ldn contours from the centerline of Ala Moana Boulevard are predicted to continue to exist in CY 1993. The proposed hotel end units which face Ala Moana Boulevard are expected to be exposed to traffic noise levels between 65 to 70 Ldn, and be within the "Significant Exposure, Normally Unacceptable" noise exposure category. The remaining units (three per floor) which face Diamond Head will be partially shielded from Ala Moana Boulevard, and should experience at least 5 dB less traffic noise than the end units which face Ala Moana Boulevard. Traffic noise levels along the Diamond Head side of the hotel tower should range between 60 to 65 Ldn, and be within the "Moderate Exposure, Ac-

ceptable" category.

TABLE 5 presents the predicted increases in traffic noise levels associated with non-project and project traffic by CY 1993, and as measured by the Ldn descriptor system. As indicated in **TABLE 5**, the increases in traffic noise along all streets in the project environs are predicted to be insignificant. Project traffic are expected to increase traffic noise levels by 0 to 0.1 Ldn, which will not be measurable. Additionally, increases in noise levels attributable to project traffic will be less than those attributable to non-project traffic.

TABLE 5

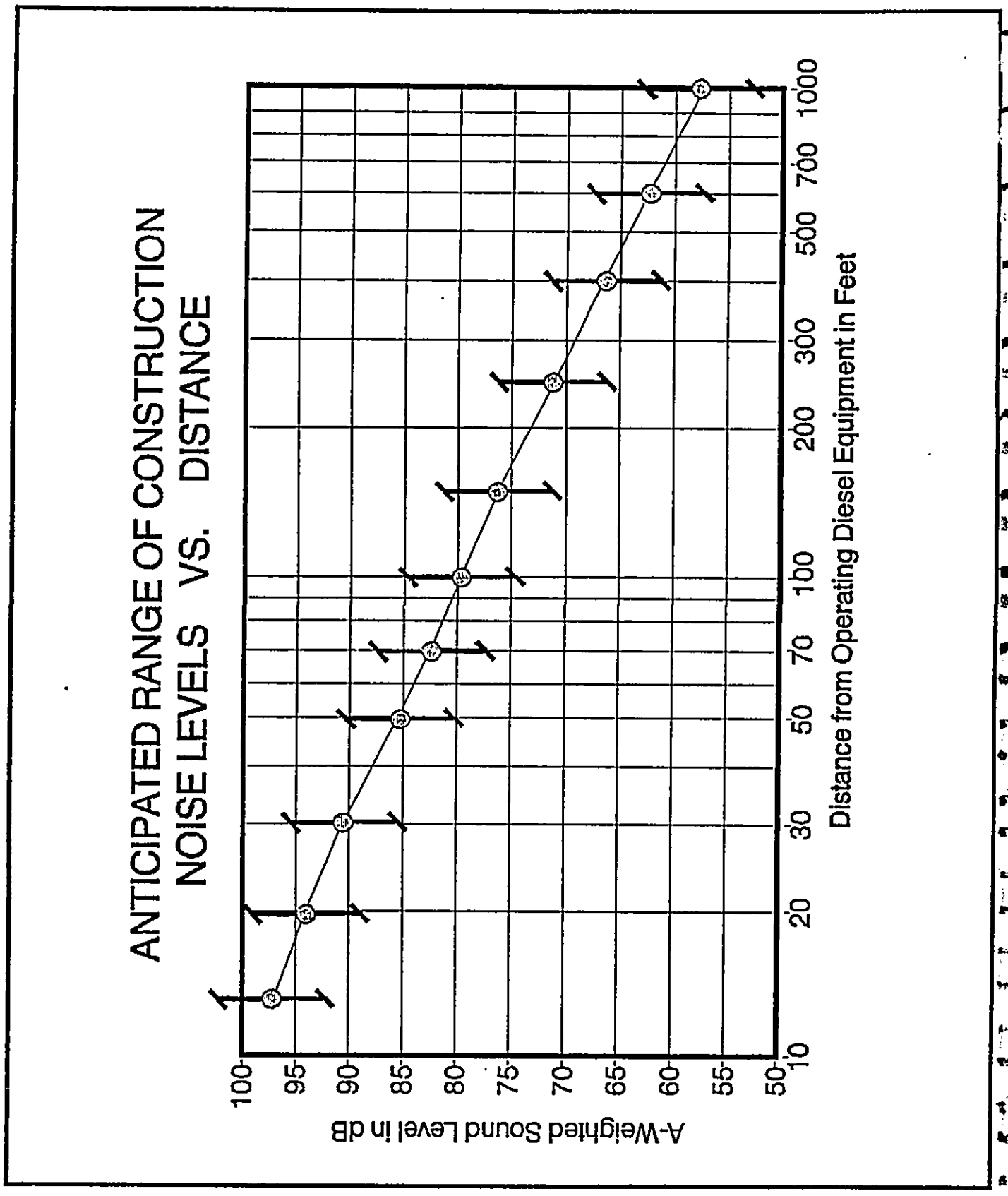
CALCULATIONS OF PROJECT AND NON-PROJECT
TRAFFIC NOISE CONTRIBUTIONS (CY 1993)

STREET SECTION	NOISE LEVEL INCREASES (Ldn) DUE TO NON-PROJECT TRAFFIC	PROJECT TRAFFIC
Ala Moana Boulevard @ Project	0.2	0.1
Hobron Lane (Mauka Side)	0.2	0.0
Hobron Lane (Makai Side)	0.1	0.1
Kalia Road @ Ala Moana Blvd.	0.3	0.0
Ena Road @ Ala Moana Blvd.	0.2	0.1

CHAPTER VII. DISCUSSION OF PROJECT RELATED NOISE IMPACTS AND POSSIBLE MITIGATION MEASURES

Traffic Noise. Impacts from traffic noise are possible at the proposed hotel units in the project tower, and particularly at those end units which face Ala Moana Boulevard. Because these units are expected to be in the luxury category, mitigation of high traffic noise levels through the use of total closure and air conditioning is recommended. Minimum exterior-to-interior noise reductions of approximately 25 dB are required to achieve an interior noise level of 45 Ldn, which is the maximum recommended level of interior noise which minimizes risks of adverse health and welfare effects. This level of exterior-to-interior noise reduction is not difficult to obtain with standard construction materials and methods. However, because of the luxury nature of the proposed units and the relatively high levels of exterior noise associated with Ala Moana Boulevard, it is suggested that glazing and exterior wall components with minimum STC 35 rating be used for the dwelling units to minimize risks of occupant dissatisfaction. The glazing is normally the weak acoustical link, but attainment of the STC 35 rating is possible through the use of minimum 9/32" thick, laminated, glass on the building's exterior.

General Construction Noise. Audible construction noise will probably be unavoidable during the entire project construction period. The total time period for construction is unknown, but it is anticipated that the actual work will be moving from one location on the project site to another during that period. Actual length of exposure to construction noise at any receptor location will probably be less than the total construction period for the entire project. Typical levels of exterior noise from construction activity (excluding pile driving activity) are shown in **FIGURE 5**. The impulsive noise levels of impact pile drivers are approximately 15 dB higher than the levels shown in **FIGURE 5**, while the intermittent noise levels of vibratory pile drivers are at the



CONSTRUCTION NOISE LEVELS VS. DISTANCE

FIGURE 5

upper end of the noise level ranges depicted in the figure. Typical levels of construction noise inside naturally ventilated and air conditioned structures are approximately 10 and 20 dB less, respectively, than the levels shown in **FIGURE 5**. The residential and hotel units within the neighboring buildings north and south of the project site are predicted to experience the highest noise levels during construction activities due to their close proximity to the construction site. Adverse impacts from construction noise are not expected to be in the "public health and welfare" category due to the temporary nature of the work, the prevalent use of air conditioning within the adjoining buildings, and due to the administrative controls available for regulation of construction noise. Instead, these impacts will probably be limited to the temporary degradation of the quality of the acoustic environment in the immediate vicinity of the project site.

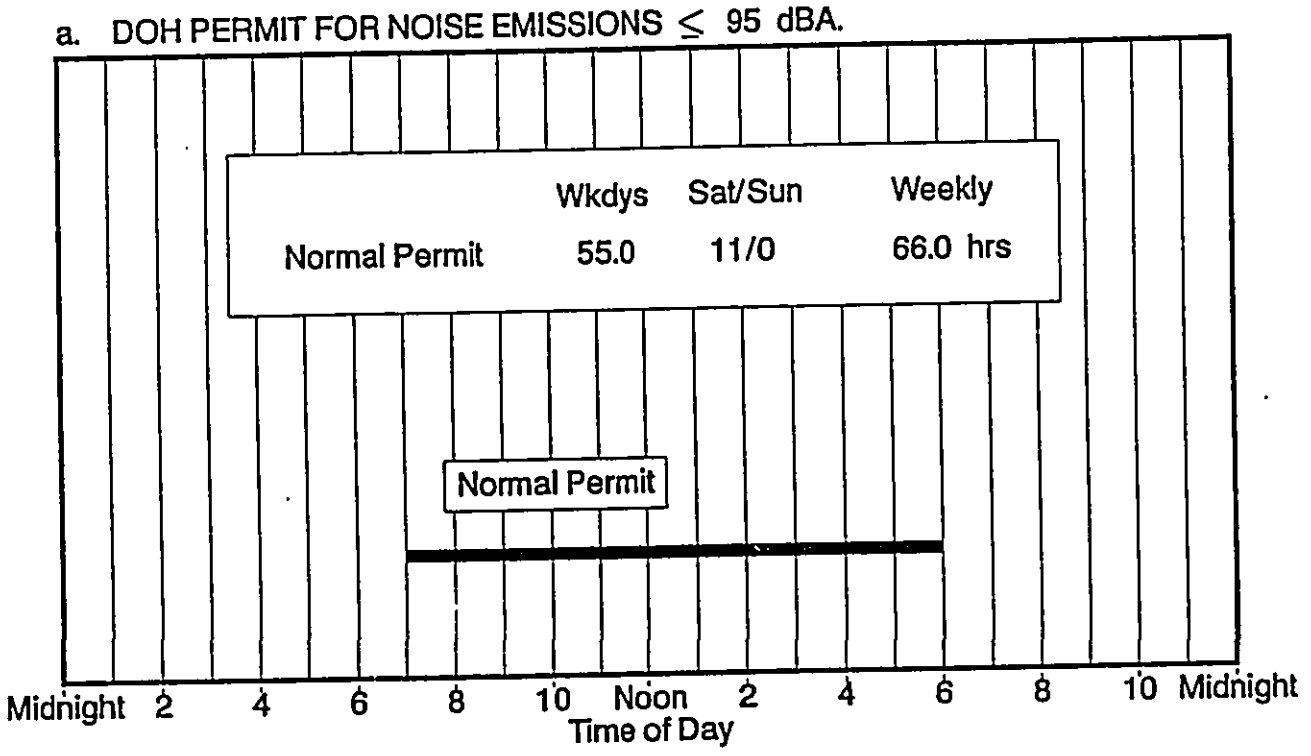
Mitigation of construction noise to inaudible levels will not be practical in all cases due to the intensity of construction noise sources (80 to 90+ dB at 50 FT distance), and due to the exterior nature of the work (pile driving, grading and earth moving, trenching, concrete pouring, hammering, etc.). The use of properly muffled construction equipment should be required on the job site.

The incorporation of State Department of Health construction noise limits and curfew times, which are applicable on the island of Oahu (**Reference 4**), are other noise mitigation measure which are normally applied to construction activities. **TABLE 6** depicts the allowed hours of construction for normal construction noise (levels which do not exceed 95 dB at the project's property line) and for construction noise which exceeds 95 dB at the project's property line. Noisy construction activities are not allowed on holidays, Saturdays, Sundays, during the early morning, and during the late evening periods under the DOH permit procedures.

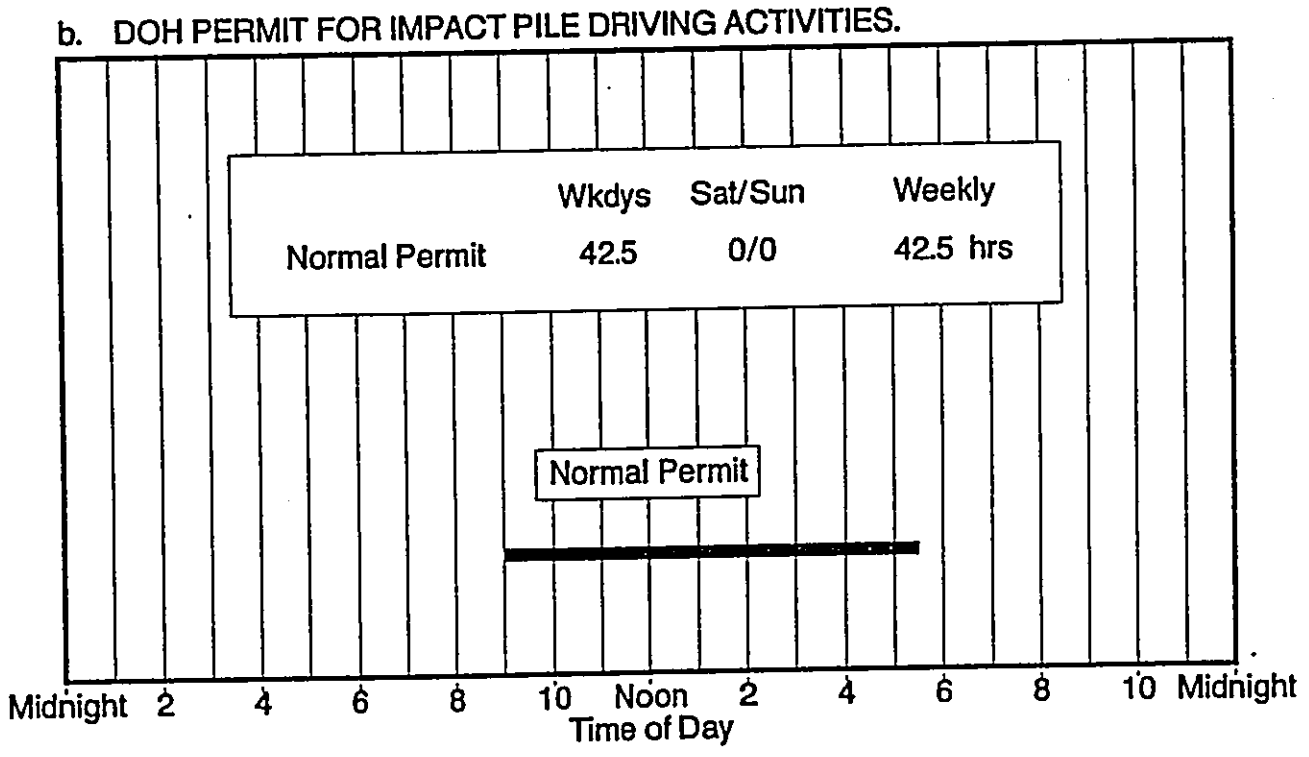
TABLE 6

AVAILABLE WORK HOURS UNDER DOH PERMIT PROCEDURES FOR CONSTRUCTION NOISE

a. DOH PERMIT FOR NOISE EMISSIONS ≤ 95 dBA.



b. DOH PERMIT FOR IMPACT PILE DRIVING ACTIVITIES.



APPENDIX A. REFERENCES

(1) "Guidelines for Considering Noise in Land Use Planning and Control;" Federal Interagency Committee on Urban Noise; June 1980.

(2) "Environmental Criteria and Standards, Noise Abatement and Control, 24 CFR, Part 51, Subpart B;" U.S. Department of Housing and Urban Development; July 12, 1979.

(3) "Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety;" Environmental Protection Agency (EPA 550/9-74-004); March 1974.

(4) "Title 11, Administrative Rules, Chapter 43, Community Noise Control for Oahu;" Hawaii State Department of Health; November 6, 1981.

(5) Barry, T. and Reagan, J., "FHWA Highway Traffic Noise Prediction Model;" FHWA-RD-77-108, Federal Highway Administration; Washington, D.C.; December 1978.

(6) Waikikian Hotel Traffic Study; Wilbur Smith Associates; June 12, 1990.

(7) December 19-20, 1989 24-Hour Traffic Counts; Station SL-50, Ala Moana Boulevard at Ala Wai Canal Bridge; Hawaii State Department of Transportation.

APPENDIX B

EXCERPTS FROM EPA'S ACOUSTIC TERMINOLOGY GUIDE

Descriptor Symbol Usage

The recommended symbols for the commonly used acoustic descriptors based on A-weighting are contained in Table I. As most acoustic criteria and standards used by EPA are derived from the A-weighted sound level, almost all descriptor symbol usage guidance is contained in Table I.

Since acoustic nomenclature includes weighting networks other than "A" and measurements other than pressure, an expansion of Table I was developed (Table II). The group adopted the ANSI descriptor-symbol scheme which is structured into three stages. The first stage indicates that the descriptor is a level (i.e., based upon the logarithm of a ratio), the second stage indicates the type of quantity (power, pressure, or sound exposure), and the third stage indicates the weighting network (A, B, C, D, E.....). If no weighting network is specified, "A" weighting is understood. Exceptions are the A-weighted sound level and the A-weighted peak sound level which require that the "A" be specified. For convenience in those situations in which an A-weighted descriptor is being compared to that of another weighting, the alternative column in Table II permits the inclusion of the "A". For example, a report on blast noise might wish to contrast the LCdn with the LAdn.

Although not included in the tables, it is also recommended that "Lpn" and "LepN" be used as symbols for perceived noise levels and effective perceived noise levels, respectively.

It is recommended that in their initial use within a report, such terms be written in full, rather than abbreviated. An example of preferred usage is as follows:

The A-weighted sound level (LA) was measured before and after the installation of acoustical treatment. The measured LA values were 85 and 75 dB respectively.

Descriptor Nomenclature

With regard to energy averaging over time, the term "average" should be discouraged in favor of the term "equivalent". Hence, Leq, is designated the "equivalent sound level". For Ld, Ln, and Ldn, "equivalent" need not be stated since the concept of day, night, or day-night averaging is by definition understood. Therefore, the designations are "day sound level", "night sound level", and "day-night sound level", respectively.

The peak sound level is the logarithmic ratio of peak sound pressure to a reference pressure and not the maximum root mean square pressure. While the latter is the maximum sound pressure level, it is often incorrectly labelled peak. In that sound level meters have "peak" settings, this distinction is most important.

"Background ambient" should be used in lieu of "background", "ambient", "residual", or "indigenous" to describe the level characteristics of the general background noise due to the contribution of many unidentifiable noise sources near and far.

With regard to units, it is recommended that the unit decibel (abbreviated dB) be used without modification. Hence, DBA, PNdB, and EPNdB are not to be used. Examples of this preferred usage are: the Perceived Noise Level (Lpn was found to be 75 dB. Lpn = 75 dB). This decision was based upon the recommendation of the National Bureau of Standards, and the policies of ANSI and the Acoustical Society of America, all of which disallow any modification of bel except for prefixes indicating its multiples or submultiples (e.g., deci).

Noise Impact

In discussing noise impact, it is recommended that "Level Weighted Population" (LWP) replace "Equivalent Noise Impact" (ENI). The term "Relative Change of Impact" (RCI) shall be used for comparing the relative differences in LWP between two alternatives.

Further, when appropriate, "Noise Impact Index" (NII) and "Population Weighed Loss of Hearing" (PHL) shall be used consistent with CHABA Working Group 69 Report Guidelines for Preparing Environmental Impact Statements (1977).

APPENDIX B (CONTINUED)

TABLE I

A-WEIGHTED RECOMMENDED DESCRIPTOR LIST

TERM	SYMBOL
1. A-Weighted Sound Level	L_A
2. A-Weighted Sound Power Level	L_{WA}
3. Maximum A-Weighted Sound Level	L_{max}
4. Peak A-Weighted Sound Level	L_{Apk}
5. Level Exceeded x% of the Time	L_x
6. Equivalent Sound Level	L_{eq}
7. Equivalent Sound Level over Time (T) (1)	$L_{eq(T)}$
8. Day Sound Level	L_d
9. Night Sound Level	L_n
10. Day-Night Sound Level	L_{dn}
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$
12. Sound Exposure Level	L_{SE}

(1) Unless otherwise specified, time is in hours (e.g. the hourly equivalent level is $L_{eq(1)}$). Time may be specified in non-quantitative terms (e.g., could be specified a $L_{eq(WASH)}$ to mean the washing cycle noise for a washing machine).

SOURCE: EPA ACOUSTIC TERMINOLOGY GUIDE, BNA 8-14-78, NOISE REGULATION REPORTER.

APPENDIX B (CONTINUED)

TABLE II

RECOMMENDED DESCRIPTOR LIST

TERM	A-WEIGHTING	ALTERNATIVE[1] A-WEIGHTING	OTHER[2] WEIGHTING	UNWEIGHTED
1. Sound (Pressure)[3] Level	L_A	L_{pA}	L_B, L_{pB}	L_p
2. Sound Power Level	L_{WA}		L_{WB}	L_W
3. Max. Sound Level	L_{max}	L_{Amax}	L_{Bmax}	L_{pmax}
4. Peak Sound (Pressure) Level	L_{Apk}		L_{Bpk}	L_{pk}
5. Level Exceeded x% of the time	L_x	L_{Ax}	L_{Bx}	L_{px}
6. Equivalent Sound Level	L_{eq}	L_{Aeq}	L_{Beq}	L_{peq}
7. Equivalent Sound Level[4] Over Time(T)	$L_{eq(T)}$	$L_{Aeq(T)}$	$L_{Beq(T)}$	$L_{peq(T)}$
8. Day Sound Level	L_d	L_{Ad}	L_d	L_{pd}
9. Night Sound Level	L_n	L_{An}	L_{Bn}	L_{pn}
10. Day-Night Sound Level	L_{dn}	L_{Adn}	L_{Bdn}	L_{pdn}
11. Yearly Day-Night Sound Level	$L_{dn(Y)}$	$L_{Adn(Y)}$	$L_{Bdn(Y)}$	$L_{pdn(Y)}$
12. Sound Exposure Level	L_S	L_{SA}	L_{SB}	L_{Sp}
13. Energy Average value over (non-time domain) set of observations	$L_{eq(e)}$	$L_{Aeq(e)}$	$L_{Beq(e)}$	$L_{peq(e)}$
14. Level exceeded x% of the total set of (non-time domain) observations	$L_{x(e)}$	$L_{Ax(e)}$	$L_{Bx(e)}$	$L_{px(e)}$
15. Average L_x value	L_x	L_{Ax}	L_{Bx}	L_{px}

(1) "Alternative" symbols may be used to assure clarity or consistency.

(2) Only B-weighting shown. Applies also to C,D,E,.....weighting.

(3) The term "pressure" is used only for the unweighted level.

(4) Unless otherwise specified, time is in hours (e.g., the hourly equivalent level is Leq(1). Time may be specified in non-quantitative terms (e.g., could be specified as Leq(WASH) to mean the washing cycle noise for a washing machine.

DEPARTMENT OF GENERAL PLANNING
AUGUST 3, 1990

PROPOSED GOLF COURSE PROJECT: EVALUATIVE CRITERIA

Proposed Golf Course: _____

DP Area: _____ No. of Acres: _____

Developer: _____

Tax Map Key: _____

I. APPROVALS NEEDED AND PROCESSING STATUS

Zoning:	Designation Needed _____	Date Application Submitted _____
Dev. Plan:	Designation Needed _____	Date Application Submitted _____
SLUC:	Classification Needed _____	Date Application Submitted _____
Other:	_____	

Comments:

II. GENERAL CHARACTERISTICS

New Golf Course ____ Expansion ____ No. of Holes ____

Ownership: Private ____ Public ____

Operation: Private Membership ____ Semi-private ____ Public ____

Type of Course: Stand Alone ____ Integrated ____

Existing DP Designation _____

Existing Zoning _____

Existing State Land Use District _____

III. REVIEW CRITERIA

A. LAND USE IMPLICATIONS

	YES	NO
1. Golf course is: (select one category or subcategory only)		
(a) integral part of resort complex	___	___
(b) integral part of planned development with		
(i) 60% or more of the housing units are affordable to families at or below 120% of median income	___	___
(ii) 30% of the housing is affordable to families at or below 120% of median income and 30% is affordable to families between 120%-140% of median income	___	___
(iii) 30% of the housing is affordable to families between 120%-150% of median income	___	___
(iv) market priced housing	___	___
(c) integral part of resort and housing planned development	___	___
2. Golf course functions:		
(a) as buffer between potentially incompatible uses (e.g., blast zones, industrial from housing, shoreline buffer, agricultural uses from urban, especially residential, etc.)	___	___
(b) to use land on which environmental hazards preclude more intensive uses (e.g., flood areas, blast zones, AICUZ over 60, steep slopes, etc.)	___	___
(c) other - specify: _____	___	___

B. LAND USE APPROVALS RECEIVED/IMPACT ON AGRICULTURAL USE

	YES	NO
1. Portion(s) of proposed golf course sites are:		
(a) in State Urban District or Conservation District	___	___
(b) designated Parks/Golf Course on DP	___	___
(c) zoned Resort or P-2	___	___
APPLIES ONLY IF IN STATE AGRICULTURE DISTRICT		
2. Proposed golf course is not located on Land Study Bureau A or B soils.	___	___
3. Proposed golf course site is located on land: (select one category only)		
(a) which is not currently in use for agricultural production	___	___
(b) which has not been used for agricultural production within the last 5 years	___	___

C. ENVIRONMENTAL IMPACT

1. Proposed golf course does not impact sensitive areas or is not in proximity to:		
marshes	___	___
water quality, AA or AAA	___	___
2. Subsurface water type available is:		
(a) basal water (aquifer)	___	___
(b) caprock water	___	___
(i) fresh	___	___
(ii) brackish	___	___
(c) dike water	___	___
(d) other _____		
3. Golf course is located below the No-Pass Line.	___	___

	YES	NO
4. Developer has established a groundwater monitoring plan and system.	____	____
5. Irrigated areas will be no closer than 500 feet from potable water wells and reservoirs.	____	____
6. Irrigated areas will be no closer than 100 feet from any private residence.	____	____
7. There are holding/mixing ponds in the design.	____	____
8. Electric, not gas, golf carts will be used.	____	____
9. Management programs have been developed in applying fertilizer or pesticides and		
(a) provide for the employment of a well qualified Golf Course Superintendent and/or other professional staff	____	____
(b) provide monitoring and reporting of types and applications	____	____
10. Recharge Area: golf course is located in area characterized by less than 50" average annual rainfall or above caprock	____	____
11. Less than 50% of the project site will be completely cleared and grubbed.	____	____
12. Alterations to the topography:		
(a) % slope of existing topography _____		
(b) amount of cut and fill that will take place:		
Cut _____		
Fill _____		
(c) result of alterations to topography will be:		
(i) significant i.e., _____	____	____
(ii) moderate i.e., _____	____	____
(iii) slight i.e., _____	____	____

	YES	NO
D. INFRASTRUCTURE		
1. To irrigate the golf course: (select one category only)		
(a) nearly all potable water is used	____	____
(b) approximately a 50-50 mix of potable and non-potable water sources are used	____	____
(c) nearly all non-potable water is used	____	____
2. Net water usage is less than 100,000 gallons per day of potable water.	____	____
3. Sewage effluent is used for irrigation.	____	____
4. No new wells are needed to support golf course	____	____
5. Golf course will be connected to a public or centralized sewage system.	____	____
6. There is adequate existing road access to course.	____	____
E. COMMUNITY BENEFIT		
1. The availability of public play and green fees at the golf course will be:		
(a) 100% public play at municipal golf course prices	____	____
(b) 50% public play with green fees at municipal golf course prices	____	____
(c) 30% public play at municipal golf course prices	____	____

	YES	NO
2. The cash value of community benefits is approximately the following amount:		
(a) $100 million	____	____
(b) $75 million	____	____
(c) $50 million	____	____
(d) $25 million	____	____
(e Less than $25 million	____	____

(Note: Community benefits include off-site improvements to service the community, park dedication beyond requirements, cash contribution in lieu of providing affordable housing, other direct cash contributions, etc.)

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

BENJAMIN B. LEE
CHIEF PLANNING OFFICER

ROLAND D. LIBBY, JR.
DEPUTY CHIEF PLANNING OFFICER

(EC)

July 19, 1990

The Honorable Arnold Morgado, Jr., Chair
and Members of the City Council
City and County of Honolulu
Honolulu, Hawaii 96813

Dear Chair Morgado and Councilmembers:

Development Plan Common Provisions Amendment
90/CP-5(IC)

Attached for your information is a summary description of a proposed amendment to the Development Plan Common Provisions to establish procedures and guidelines to be used by the Department of General Planning in reviewing applications in the Annual Amendment Review for the development of private golf courses. A similar notification was sent to State, Federal and City agencies, neighborhood boards and community organizations for their comments. These comments are an important factor in the preparation of our final report and recommendation to the Planning Commission.

We are presently in the agency and public review phase of the independent consideration amendment process. After receipt of comments, we will prepare our report to recommend or reject the proposed changes. The report is forwarded to the Planning Commission with a copy to the City Council.

The Planning Commission will conduct a public hearing and transmit their recommendation and our department's report on the amendment to the City Council for appropriate action.

If you have any questions, please call Elizabeth Chinn at extension 6076.

Sincerely,

BENJAMIN B. LEE
Chief Planning Officer

BBL:lh

Attachments

cc: Managing Director

DGP Ref. No.: 90/CP-5(IC)

DEVELOPMENT PLAN COMMON PROVISIONS AMENDMENT
BEING CONSIDERED

Amendment Request: To amend Section 32-1.13., Amendment Procedures, of the Development Plan Common Provisions to establish procedures and guidelines to be used by the Department of General Planning in reviewing applications in the Annual Amendment Review for the development of private golf courses. The proposal would add the following new requirements:

(1) completed amendment applications for private golf course development need to be filed no later than July 31 of each year in order to be processed in the Annual Amendment Review for the next year;

(2) each application for a Development Plan amendment for any private golf course, including expansions or additions to existing courses, must include supplemental information responding to criteria related to social impact, economic impact, environmental quality, and other physical and infrastructure impacts;

(3) each application must also include a proposal for community benefits commensurate with the impact and magnitude of the proposed development; and

(4) the Chief Planning Officer's recommendation for approval shall be conditioned upon a unilateral agreement, to be executed at the time of rezoning, of the community benefits proposed.

The proposal also amends the Common Provisions by adding a new section which further defines and clarifies appropriate community benefits and outlines some guidelines to be used in the calculation of these benefits. Section 32-1.15., Private Golf Course Development, provides guidelines for appropriate benefits to be included by the applicant as part of an application for an amendment converting land to private golf course use.

Basis for Request: Ordinance No. 90-15, adopted in February 1990, improved the land use approval process for golf course development by establishing a process for a comprehensive evaluation of golf course proposals and some criteria on which approval may be based. The ordinance specified that:

> "Golf courses shall be permitted as a Plan Review Use in the P-2 Preservation District only when consistent with the City's development plans. Golf courses on P-2 zoned land shall be deemed consistent with the development plans only when situated on lands designated preservation, parks and recreation, or golf course on the development plan land use maps."

In the past two years, the Department of General Planning has received increased numbers of applications for land use amendments for the development of private golf courses and anticipates a continued high volume of applications as a result of Ordinance No. 90-15 and present market conditions.

This amendment would establish procedures and guidelines in Section 32-1.13. to be used in reviewing all private golf course projects as part of the Annual Amendment Review.

Ordinance No. 90-5, adopted by City Council in January 1990, amended the Common Provisions by changing the deadline to January 31 of each year for filing of completed applications for the Annual Amendment Review. This ordinance also shortened the review time available before the Chief Planning Officer submits a summary package on all amendments initiated for agency and public review. More lead time than currently available is needed to evaluate the multiple impacts of a golf course project and the community benefits proposed by the applicant to address these impacts and the burden placed upon a community because of the project.

The guidelines proposed in this amendment to the Common Provisions would provide a consistent basis for comparison of amendment applications submitted for the same Annual Amendment Review. The amendment proposes a July 31 deadline for Development Plan amendment applications involving golf courses in order to 1) comprehensively review community benefits to be provided by the applicants and 2) complete a review of the environmental assessment in order to inform the applicant in September whether to proceed with an environmental impact statement as part of the Annual Amendment Review process.

The Department of General Planning will also review the appropriateness of private golf course use of agricultural land and balance the need for public recreation needs, affordable housing and infrastructure improvements. Private golf courses remove land from agricultural production, have an impact on water use, and increase the cost of agricultural land that could otherwise be purchased for affordable housing. The increase in land value also impacts real property assessments and places an onerous burden on all residents.

Golf courses can also be a desirable land use by contributing to the economy and providing a recreation and open space resource. It is the balancing of these issues which the proposed guidelines will address in terms of applying an impact fee designed to provide community benefits commensurate with the burden placed upon the community. This approach effectuates the General Plan policy to "(S)eek public benefits from increases in the value of land owing to City and State developmental policies and decisions."

This amendment would add Section 32-1.15., which sets forth administrative guidelines for an impact fee, to be implemented at the time of zoning. These guidelines are designed to balance the government-created value provided through land use approvals with the obligation of the landowner to provide community benefits commensurate with the burden placed upon the community. These administrative guidelines are timely and a necessary step to further complement guidelines for evaluating golf course proposals in Ordinance No. 90-15.

ATTACHMENT I

DEVELOPMENT PLAN COMMON PROVISIONS

SECTION 32-1.13. AMENDMENT PROCEDURES

. . .

(c) Procedure.

(1) Amendments may be initiated for consideration by an interested party through the filing of a completed amendment application with the Department of General Planning. The Chief Planning Officer and City Council may similarly initiate for consideration amendments they wish to have studied.

(2) Any amendment which does not satisfy the criteria of Section 32-1.13(b) above, shall be included in the annual amendment review mandated by Section 5-403a of the charter and shall be processed in accordance with the following procedures:

(A) Except for amendments involving private golf courses, completed amendment applications for the annual review filed with the Department of General Planning no later than January 31 of each year shall be processed in the annual amendment review for that year. Applications filed after January 31 shall be processed in the next year's annual amendment review. Amendment applications for private golf courses filed with the Department of General Planning no later than July 31 of each year shall be processed in the annual amendment review for the next year.

(B) Annually, not later than February 22, the Chief Planning Officer shall submit a request in writing to pertinent agencies and neighborhood boards for their comments and recommendations on all amendments initiated for consideration in the annual amendment review. The agencies and boards shall within 60 days of receipt of the request submit their comments and recommendations in writing to the Chief Planning Officer.

(C) Annually, not later than July 1, the Chief Planning Officer shall submit reports to the City Council on the following:

(i) A report on all amendments to the development plans which the Chief Planning Officer intends to propose to the Planning Commission as part of the annual amendment review for that fiscal year.

(ii) A report on all amendments which the Chief Planning Officer believes are not suitable for proposal, along with the reasons therefore.

(D) Annually, not later than July 1, the Chief Planning Officer shall submit a report to the Planning Commission on all amendments to the development plans which are proposed by the Chief Planning Officer as part of the annual amendment review for that year.

(E) The City Council, upon consideration of the report submitted by the Chief Planning Officer pursuant to subsection (C)(ii) above, may propose by resolution any of the amendments covered in this report. Amendments proposed in this manner by August 15 shall be considered in the annual amendment review for that year. Amendments proposed after August 15 shall be considered in the annual amendment review for the subsequent year.

(F) Action by Planning Commission. The Planning Commission, upon receipt of a proposal from the Chief Planning Officer or the Council for an amendment or amendments to a development plan, shall hold a public hearing on the proposed amendment(s), and shall transmit its findings and recommendations thereon, through the Mayor, to the Council for its consideration and action. Such findings and recommendations on an annual amendment review shall be transmitted in time to be received by the City Council by October 1 of the year covered by that annual amendment review.

(G) City Council Action. All proposed amendments to the development plans received by the City Council from the Planning Commission by October 1 of each year shall be considered as part of the annual amendment review for the improvement and development of the City for that year. Proposals received after that date shall be held on file and considered in the annual amendment review for the following year, unless they meet the requirements for independent consideration.

(3) In addition to information requested on the standard application form, each application for a development plan amendment for any private golf courses, including expansions or additions to existing courses, shall include information which responds to criteria related to social impact, economic impact, environmental quality, and other physical and infrastructure impacts. The application shall also include a proposal for community benefits commensurate with the impact and magnitude of the proposed development. The community benefits required for a particular proposal shall be determined by the Chief Planning Officer in the best interests of the community. A recommendation for approval shall be conditioned upon a unilateral agreement of the community benefits proposed, to be executed at the time of rezoning.

(4)[(3)]For amendments which meet the requirements for independent consideration specified in Section 32-1.13(b):

(A) The Chief Planning Officer within 60 days, which may be extended with applicant's consent, of the date of filing of a completed application shall submit a report with the Chief Planning Officer's recommendation to the Planning Commission for its consideration and action.

(B) The Planning Commission, upon receipt of a proposal for an amendment or amendments to a development plan, shall within 30 days hold a public hearing on the proposed amendment(s), and shall, within 30 days after the close of the public hearing, transmit its findings and recommendation thereon, through the Mayor, to the Council for its consideration and action.

(5)[(4)]Authority

Nothing in this section shall be construed as an abridgement or delegation of the responsibility of the Chief Planning Officer, or of the inherent legislative power of the City Council to propose amendments of the development plans to the Planning Commission, pursuant to the charter and the above procedures, independent of any amendment application.

(6)[(5)]No application for Development Plan Land Use Map amendment shall be accepted for processing unless the applicant notifies, by mail, all owners, lessees, sub-lessees and residents of the affected property and of each abutting parcel.

. . .

SECTION 32-1.15. PRIVATE GOLF COURSE DEVELOPMENT

Impact fees shall be assessed for private golf course development and shall seek to balance the government-created value provided through land use approvals with the obligation of the landowner to provide community benefits commensurate with the burden placed upon the community. Social impacts, economic impacts, environmental quality, and other physical and infrastructure impacts shall be addressed.

Conversion of land to private golf course use shall be conditioned upon compensation in the form of individual or aggregate community benefits as determined by the Chief Planning Officer. Guidelines for appropriate benefits may include, but are not limited to, the following:

(1) Social Impact

(A) Provide affordable housing. Contribute land, units or cash. The number of units shall be in relationship to the land area of the proposed golf course, including expansions and additions to existing courses. The following guideline shall be used: for example, a 200-acre golf course may be comparable to six housing units per acre or 1,200 units. If 60% are affordable, as is the goal of Chapter 201E, that is the equivalent of 720 units. At $70,000 per lot and $70,000 per unit, the total value would be $100,800,000 (720 x $140,000).

(B) Reserve a minimum of 30 percent of the tee times for Oahu residents and/or provide public play at municipal rates.

(C) Provide for the relocation of existing uses and residents. Ensure adequate, affordable and convenient housing for employees.

(D) Provide other community benefits such as child care, park and ride, fire, police, community center or recreational facilities; elderly housing; job training; scholarships.

(2) Economic Impact

Provide a forecast of the impact of the project on the value of land in the area and indicate the impact on future real property taxes. Propose a plan which would compensate for any negative impact.

(3) Environmental Quality and Other Physical and Infrastructure Impacts

(A) Establish a groundwater monitoring plan and system in accordance with State Department of Health guidelines.

(B) Develop water facilities based on a comparative affordable housing development of the proposed golf course acreage; for example, the water demand for 720 affordable housing units may total .5 mgd. That demand may be satisfied by developing wells or reservoirs yielding .5 mgd to the Board of Water Supply or an equivalent cash payment.

(C) Promote water conservation by utilizing sewage effluent and non-potable water for irrigation in the following order or priority:

(i) Secondary-treated effluent from a municipal wastewater treatment plant. Contributions to the construction of treatment and delivery systems.

(ii) Secondary or tertiary-treated effluent from an existing private wastewater treatment plant.

(iii) Brackish groundwater or non-potable surface water.

(iv) Sewage effluent from an existing wastewater treatment plant, blended with potable water.

(D) Contribute to wastewater improvements based on a comparative affordable housing development of the proposed golf course acreage; for example, the sewerage requirements for 720 affordable units may total .5 mgd. That demand may be addressed by connecting existing housing to the City sewer system, contributions towards wastewater treatment plants or sewer upgrade, or an equivalent cash payment to the Department of Public Works.

(E) Design the golf course to maximize the use of natural drainage, to recharge the aquifer and to alleviate the need for stream channelization and other formal drainage systems in nearby areas.

(F) Utilize the course as a buffer between potentially incompatible uses, such as separating residential areas from sugar cane fields, or use land on which environmental hazards preclude more intensive uses (e.g. blast zones, aircraft accident potential zones, flood plains). In turn, provide buffers to safeguard surrounding inhabitants from errant golf balls.

(G) Preserve significant view planes and vistas, especially from the vantage point of major public thoroughfares and places.

(H) Integrate the golf course with a larger master-planned residential project (with 60% affordable housing) or resort development in order to maximize opportunities for optimum siting features.

(I) Protect and/or support existing wetlands and fish and wildlife habitats.

(J) Protect streams, rivers and coastal waters from runoff. Protect and preserve natural vegetation to the greatest extent practicable. Provide landscaping with indigenous flora appropriate to the setting and in recognition of water conservation principles.

(K) Provide for the employment of a well-qualified Golf Course Superintendent (preferably a Certified Golf Course Superintendent) to be responsible for sound management practices with regard to fertilizer and pesticide application. Provide monitoring and reporting of types and applications. Prepare contingency plans to rectify potentially harmful occurrences due to accidents, injudicious use or other management failures.

(L) Design for compatibility of the proposed golf course with both existing and planned surrounding uses.

(M) Provide a traffic impact study and mitigative measures such as contributions to the rapid transit program, road widening, turning lanes or signalization.

(N) Provide lands to the City that are suitable for use as public parks. The amount of land area dedicated to the City shall be a minimum of 10% of the total land area of the proposed golf course or 10% of the addition proposed to an existing course.

Appendix E

View Assessment

Michael S. Chu, Land Architect

View Assessment

Waikikian Hotel

TMK: 2-6-9: 2, 3, 10

prepared for JAMI
prepared by Michael S. Chu, Land Architect
Sept. 1990

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WAIKIKIAN HOTEL

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12	Building Section
13	Building Section

****

View Assessment, Waikikian Hotel

MICHAEL S. CHU, LAND ARCHITECT

1. PURPOSE OF ASSESSMENT

The purpose of this assessment is to evaluate the demolishing of the existing Waikikian Hotel, and its replacement with a new 349 ft. resort hotel structure; identify potential visual impacts which may effect existing public visual/scenic resources and/or open space resources; and to identify possible design measures which may mitigate undesirable impacts.

2. EXISTING CONDITIONS

2.1 Location

The subject property is located in the Primary Urban Center and is within the Waikiki District[1]. The 1.9 acre property is situated between the existing Ilikai Hotel and the Hawaiian Village complex at the Ewa end of Waikiki. It intersects Ala Moana Blvd. and the Ala Wai Yacht Harbor/Hilton Lagoon in a mauka and makai direction respectively.

2.2 Description of the District

As a district, Waikiki is visually characterized by its substantial urban development to include many highrise building along the shoreline and inland areas. Many buildings are 20 to 30+ stories in height, and collectively create a lateral skyline of structures across Waikiki. From mauka, areas such as Punchbowl and the Tantalus lookout, this visual appearance is a dominant feature and clearly distinguishes Waikiki from the overall view of Honolulu (see Site Photo A, Figure 8). From the Waikiki shoreline, the pedestrian environment is equally dominated by this urban form and mauka views of the Koolau Mountains are essentially masked by this skyline.

Open space generally occurs in a linear form such as along the shoreline, streets and landscaped yards, passageways between buildings, etc. These linear open space forms merge with larger public open spaces such as the grounds of Fort DeRussy or Gateway Park; or with private open spaces such as the random street front plazas or the Hilton Lagoon.

1* Section7.80, Waikiki District, LUO

The highrise towers at the Hawaiian Village, the tri-winged tower of the Ilikai plus the newly completed twin towers of the Hawaii Prince hotel typify the extent of development found along the makai side of Ala Moana Blvd. in the vicinity of the Waikikian Hotel site (see Site Photo B, Figure 8). These structures essentially separates any visual relationship between this coastal roadway and the shoreline.

The major public open space nodes[2] in the vicinity of the Waikikian Hotel include the grounds of Fort DeRussy, the Hilton Lagoon, the Ala Wai Yacht Harbor and the shoreline/beach. Of those listed above, Fort DeRussy is the only open space visible from the street (Ala Moana Blvd.).

Secondary open spaces flank the roadway. These spaces generally consist of planting medians in the R.O.W., landscaped front yards and plazas, and some lower plantings areas perched on roof decks. Collectively, these secondary open spaces are significant in softening the visual appearance of the built environment as seen from the roadway and pedestrian sidewalk system (Ala Moana Blvd.).

The shoreline area is quite different in its visual and open space character. Views are strongly oriented seaward and laterally along the shoreline to include panoramic views of Diamond Head and extend in the Ewa direction across the Kakaako peninsula. Merging with the shoreline is the large open space node created by the Ala Wai Yacht Harbor and the Hilton Lagoon. The harbor and the lagoon provide many additional viewing points from which to enjoy the panorama, and are themselves prominent view objects enjoyed from ground level and from apartment and hotel units above. This makai area is particularly enhanced as the surrounding buildings are set back a substantial distance from the shoreline and act to enframe the open space, creating a dramatic visual backdrop.

Lateral views from along the shoreline were evaluated to include public viewing points from Magic Island, Ala Wai Yacht Harbor and Waikiki Beach near Queen's Surf[3].

High quality lateral coastal views from the Magic Island peninsula across the harbor entrance and Waikiki Beach can be seen (see Site Photo F, Figure 8). This viewing angle

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2 Image of the City, Kevin Lynch

3 Public viewing points as indicated in the Oahu Coastal View Study, DLU, 1987

is often used as a photographed background and is representative of "high visual unity"[4] due to its striking contrast and composition beween the built Waikiki skyline and the ocean. From this location, views of the proposed Waikikian Hotel tower will be highly visible among the other highrise buildings.

Mauka views from the Ala Wai Yacht Harbor and the public shoreline are also enframed with the existing highrise buildings, and the proposed tower of the Waikikian Hotel will be highly visible from such locations. The mauka-makai orientation of the proposed hotel will be set between the existing building mass of the Ilikai and Hilton Lagoon Apartments (see Site Photo E, Figure 8). From this angle, the overall height (349 ft.) will be as prominent as the surrounding buildings.

Lateral views from the Diamond Head end of Waikiki Beach is also dominated by the built skyline. Visibility of the proposed Waikikian Hotel, however, is unlikely as highrise structures such as the Waikiki Sheraton and the mauka-makai orientation of the Hawaiian Village structures mask the far Ewa end of the Waikiki district (see Site Photo I, Figure 9).

2.3 Description of the Site

The site is in a long and narrow configuration (approximately 1000 ft. long in a mauka/makai direction and approximately 130 ft. at its widest points). The curvature of Ala Moana Blvd. places the mauka portion of the property directly into the line of sight upon crossing the Ala Wai Canel bridge.

The middle portion of the site is "sandwiched" between the 26 story Ilikai to the west and the Hawaiian Village complex (Hilton Garage and Convention Hall, 70 ft. ht.; Hilton Apartment Lagoon, 24 stories) to the east, creating a "canyon-like" effect (see Site Photo B, Figure 8).

The makai portions of the property taper and extend to a narrow sandy beach front adjoining the Hilton Lagoon (see Site Photo G, Figure 9).

The Ewa edge of the property is parallel and adjacent to an existing public right-of-way which provides direct vehicular and pedestrian access to the yacht harbor and the shoreline area.

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[4] Oahu Coastal View Study, DLU, 1987

The Diamond Head edge of the property parallels the Hawaiian Village complex and abuts their ballrom/garage structure and the grounds of the Hilton Lagoon Apartments.

On-site inspections of the subject property and surrounding environment were performed during the week of 13 Aug. 1990. Existing on-site improvements include, one 7 story concrete building, two 2 story wooden buildings and on site parking for approximately 28 cars. A total of 132 hotel units are provided with accessory retail and restaurant activities. The existing hotel grounds are heavily vegetated with mature tropical landscaping. Several large specimen Banyans, palms and other canopy trees are located on the property however none are included on the Register of Exceptional Trees[5] nor has literature research indicated any special or unique recognition of the landscape material presently found on the site.

Due to the narrow configuration of the property, sideyard fencing and the juxtaposition of the surrounding buildings (Ilikai and Hawaiian Village complex), roadway and pedestrian views of the shoreline form Ala Moana Blvd. do not presently exist. Rather visibility is limited to approximately 200 feet of the mauka portion of the site. Located at this mauka portion of the site is the 7 story concrete structure and the hotel lobby structure which arches upward and is a visually prominent architectural style contrasting the rectilinear concrete forms seen within the roadway view corridor.

The makai portions of the site consist of a swimming pool/deck and the open air Tahitian Lanai restaurant which opens out to adjoin the sandy beach surrounding the Hilton Lagoon. From this end of the site, attractive views of the lagoon/harbor open space can be seen.

2.4 Scenic and Open Space Resources

Based on literature research and on-site inspections, the following notations regarding public visual and open space resources which may be affected are described:

From Ala Moana Blvd.

Views

- Public views (vehicular and pedestrian) of the shoreline or other coastal resources from the nearest coastal highway are limited to a view corridor at the Ala Wai bridge and a narrow corridor of low quality at the the public right-of-way adjacent to the Waikikian Hotel site. Specific views of the shoreline are not available from Ala Moana Blvd. at the vicinity of the Waikikian Hotel.
- The Waikikian Hotel site is at a visually strategic location relative to the alignment of Ala Moana Blvd.

Open Space

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5 Register of Exceptional Trees, Act 105, HRS.

• The sense of open space is based on the Fort DeRussy node along the Ala Moana Blvd. corridor. Secondary open spaces and landscaped areas are important along Ala Moana Blvd. to soften the visual effect of the built environment. They consist of various roadway landscaping, front yards and upper level decks on adjacent buildings.

Coastal Features
• There are no natural coastal features located or visible in the vicinity of the Waikikian Hotel and Ala Moana Blvd., nor does the Waikikian Hotel contain any feature on its site. The Ala Wai Yacht Harbor and Hilton Lagoon may be considered important as manmade features.

From Makai Area

Views
• Views from all roadways within the Ala Wai Yacht Harbor and the shoreline provide visibility of the shoreline environment and the associated open space.
• Mauka views are halted by existing building masses at the Hawaiian Village complex and other highrise buildings located along Ala Moana Blvd.

Open Space
• The Waikikian Hotel site is at the fringe of the large urban open space consisting of the Hilton Lagoon, Ala Wai Yacht Harbor and the Waikiki/Ala Moana shoreline. Within the context of this urban environment, the existing strucutures compliment the visual setting through contrast and enclosure of the open space.

Coastal Features
• From the makai/shoreline area, the Hilton Lagoon and harbor are significant manmade coastal feature.
• Off-site coastal features include the Waikiki/Ala Moana shoreline, the Ala Wai Yacht Harbor and Diamond Head. Views of these features from adjacent apartment and hotel units were not studied in depth as such views are private and do not constitute public views. However significant encroachment into existing views from such units may be anticipated.

3. DESCRIPTION OF PROPOSED PROJECT

The applicant proposes to demolish the existing hotel and construct a new hotel. The new hotel will consist of a linear tower mounted on a 40 ft. pedestal (349 ft. total ht.). The 40 ft. pedestal will contain several levels of parking, hotel lobby, recreational deck and assorted retail activities (see Building Section, Figures 12 and 13). The tower, rising above the 40 ft. pedestal, will contain the hotel rooms and will be approximately 349 ft. in height. A smaller and separate ocean terrace will be located at the makai portion of the site (see Site Plan Figure 10).

The bulk of the architectural development will be located at the mauka portion of the site and will be oriented in a mauka-makai direction. The pedestal structure will be sited towards the mauka portion of the site and will laterally extend 440 ft.in a makai direction .

The hotel tower sitting atop the pedestal will laterally span approximately 250 ft. This structural mass will abut the eastern property line

The tower will be a "single loaded" structure with hotel units located only on the Diamond Head side of the building. The Ewa side of the building will consist of the circulation corridor per floor.

The makai portion of the site will be in private open space consisting of a pool and deck, small bungalows, and extensive landscaping. A four story Ocean Terrace structure contain addtional hotel units will occupy the far makai portion of the site.

Treatment along the public right-of-way will consist of a series of screening walls, public sidewalk system, and landscaping See Landscape Plan, Figure 11). All required yard setbacks are provided. No variances for the proposed site plan is anticipated.

4. SUMMARY OF APPLICABLE PLANS, POLICIES & ORDINANCES

4.1 General Plan, City and County of Honolulu

The Oahu General Plan contains several broad statements related to visual impact within the context of the built environment and urban design. Consideration of the Waikikian Hotel project relative to the Oahu General Plan are embodied within the following:

Physical Development and Urban Design
Objective D- To create and maintain attractive, meaningful, and stimulating environments throughout Oahu.
- Policy 4- Require the consideration of urban-design principles in all development projects.
- Policy 6- Provide special design standards and controls that will allow more compact development and intensive use of lands in the Primary Urban Center.

4.2 Development Plan

Development Plans, Common Provisions

The common provisions for all of Oahu's Development Plan Areas include the following relevant general urban design principles and controls (Section 32-1.4):

(1) Public Views
Public views include views along streets and highways, mauka-makai view corridors, panoramic and significant landmark views from public places, views of natural features, heritage resources and other landmarks, and view corridors between significant landmarks.

Such public views shall be protected by appropriate building heights, setbacks, design and siting controls established in the CZC. These controls shall be determined by the particular needs of each view and applied to public streets and to both public and private structures.

The design and siting of all structures shall reflect the need to maintain and enhance available views of significant landmarks. No development shall be permitted that will block important public views.

(3) Vehicular and Pedestrian Routes
Landscaping shall be provided along major vehicular arterials and collector streets as a means to increase the general attractiveness of the community and the enjoyment of vehicular travel for visitors and residents.

Development Plan, Primary Urban Center

The Special Provisions for the Primary Urban Center (PUC) provides several policy statements regarding views and urban design that are pertinent to the Waikikian Hotel site. These statements include the following:

(2) Public Views
In order to promote pleasing and attractive urban living environments, and to protect and enhance the remaining natural environment of urban areas, views of landmarks and the natural environment from public places may be identified and protected by the Department of Land Utilization. Important views to be protected include, but are not limited to the following:

Prominent views of historically and architecturally significant urban areas, places and buildings, such as the Hawaii Capital Complex, Thomas Square, Academy of Arts, and Chinatown area.

4.3 Land Use Ordinance, Waikiki Special District

The entire site is within the Resort Hotel Precinct[6] of the Waikiki Special District (see Figures 3, 4 and 5). Applicable objectives of the Waikiki Special District which pertain to view considerations include the following:

D. To encourage development that would improve and complement the public facilities and utilities in Waikiki and the physical and visual aspects of the urban design in the area.
L. To provide additional, property distributed open space and vistas.

4.4 Special Management Area

The entire site is within the Special Management Area[7] (see Figure 6). As an extension of the Hawaii Coastal Zone Management Act, the objectives and policies of the SMA are

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6 Exhibit 13, Waikiki Special District, Use Precincts
7 Chapter 33, Special Management Area for the City and County of Honolulu

contained in Chapter 205A, Hawaii Revised Statutes. Objectives of Chapter 205A pertaining to view assessment of the proposed Waikikian Hotel are as follows:

(3) Scenic and open space resources;
(A) Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.

Policies of Chapter 205A pertaining to view assessment of the proposed Waikikian Hotel are as follows:

(3) Scenic and open space resources;
(A) Identify valued scenic resources in the coastal zone management area;
(B) Insure that new developments are compatible with the visual environment by designing and locating such development to minimize the alteration of natural land forms and existing public views to and along the shoreline;
(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and
(D) Encourage those developments which are not coastal dependent to locate in inland areas.

4.5 Oahu Coastal View Study

This 1987 DLU study places the subject property within Section D of the Southshore Viewshed. In addition to describing this section as being highly urbanized, several significant public viewing points are identified (Point Panic, Magic Island, Ala Wai Yacht Harbor, Waikiki shoreline near Queen's Beach). No roadway views fronting the subject property are identified.

5. IDENTIFICATION OF PROBABLE IMPACTS

Based on the development proposal of the Waikikian Hotel, the following impacts related to views and open space may be anticipated. Recommendations for mitigative measures, where applicable, are provided.

- Due to the location of the project site and the roadway curvature, the facade of the hotel pedestal and tower at the mauka portion of the site will be prominent from the roadway view corridor at Ala Moana Blvd. (see Site Photos B and C, Figure 8).

  At this location, Ala Moana Blvd. does not provide any vehicular or pedestrian coastal views. Rather a continuous wall of buildings surround the roadway and provide little viewing opportunities. The proposed tower of the Waikikian Hotel will further add to the overall building mass in the area.

- The proposed development will heighten the "canyon-like" effect at the existing public right-of-way.

  The "canyon-like" effect is unavoidable given the proposed building height, placement of adjacent buildings and the narrow width of the public right of way.

Currently, the visual and physical quality of the right-of-way is poor. Opportunities for improving this area, pursuant to objectives of the SMA and the Waikiki District, are great. Ground level/pedestrian mitigation to this visual effect may be anticipated with the proposed landscape improvements to this area as illustrated through the project landscape plans (sse Figure 11).

- The proposed Ocean Terrace located at the makai portion of the site will be prominent from certain areas of the Ala Wai Yacht Harbor and the Hilton Lagoon.

  Visual impact may be reduced through architectural methods such as terracing the floors and use of inappropriate colors and materials, and landscaping to include screening and planting to visually reduce the building scale.

- Certain panoramic views from <u>private</u> hotel/apartment units may be affected by the proposed hotel structure.

  The requirement for preserving views as contained in the Development Plans Common Provisions and the Special Management Area are distinctly related to <u>public views</u>. Numerous examples of blockage of private views due to building placement can be cited in the area.

- Views from off-site public viewing points:

  (a) Magic Island- Lateral views Waikiki and Diamond Head from public viewing areas at Magic Island will not be adversely effected by the proposed project. Although the proposed structure will be visually prominent, it will be located within the existing skyline (see Site Photo F, Figure 8).

  (b) Waikiki Beach near Queen's Surf- Makai and lateral views from the Diamond Head side of Waikiki Beach will not be adversely effected as the proposed hotel structure will be located within the existing skyline and will therefore not be prominent from this area (see Site Photo I, Figure 9).

  (c) Ala Wai Yacht Harbor and shoreline- Coastal view will not be adversely affected as the projects site lies inland of the makai and lateral line of sight from the harbor and shoreline area (see Site Photo L, Figure 9).

  (d) Tantalus lookout- Makai views of Honolulu and the Waikiki skyline will not be adversely impacted as the proposed hotel structure will be visually insignificant within the overall pamorama from distant mauka areas (see Site Photo A, Figure 8).

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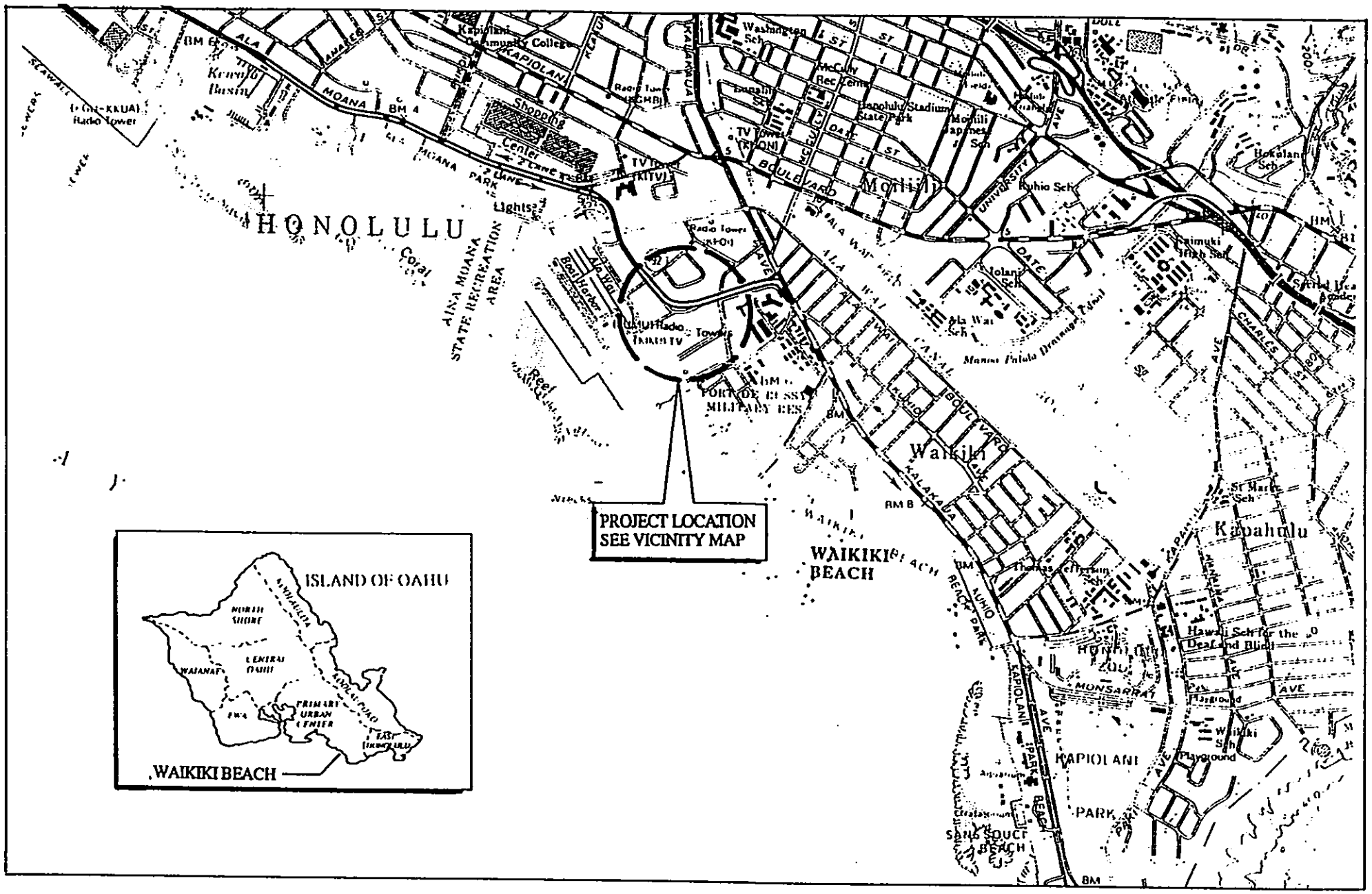
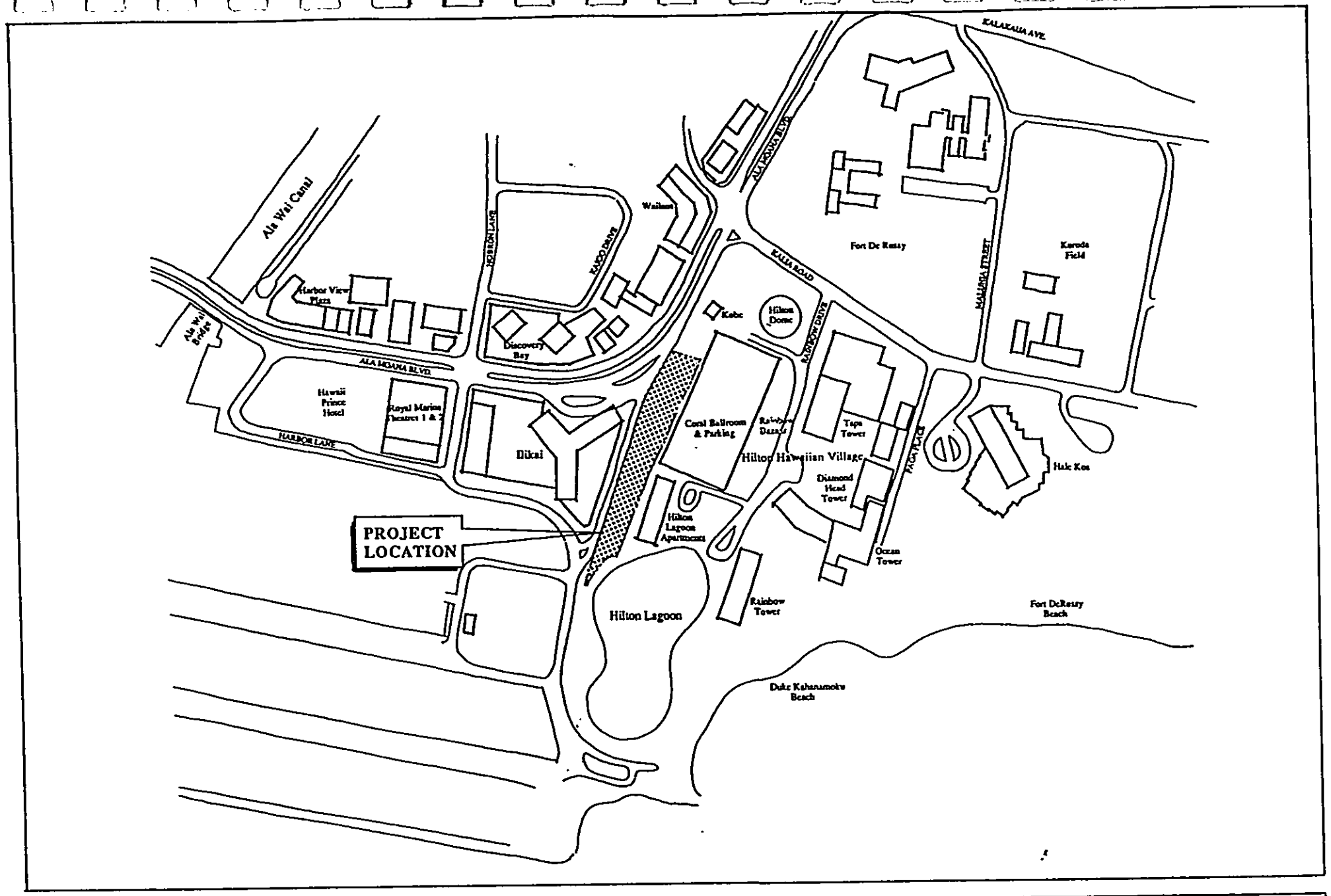


WAIKIKIAN HOTEL

Islandwide Location Map

VIEW ASSESSMENT
FIGURE
1



WAIKIKIAN HOTEL

Vicinity Map

VIEW ASSESSMENT
FIGURE
2

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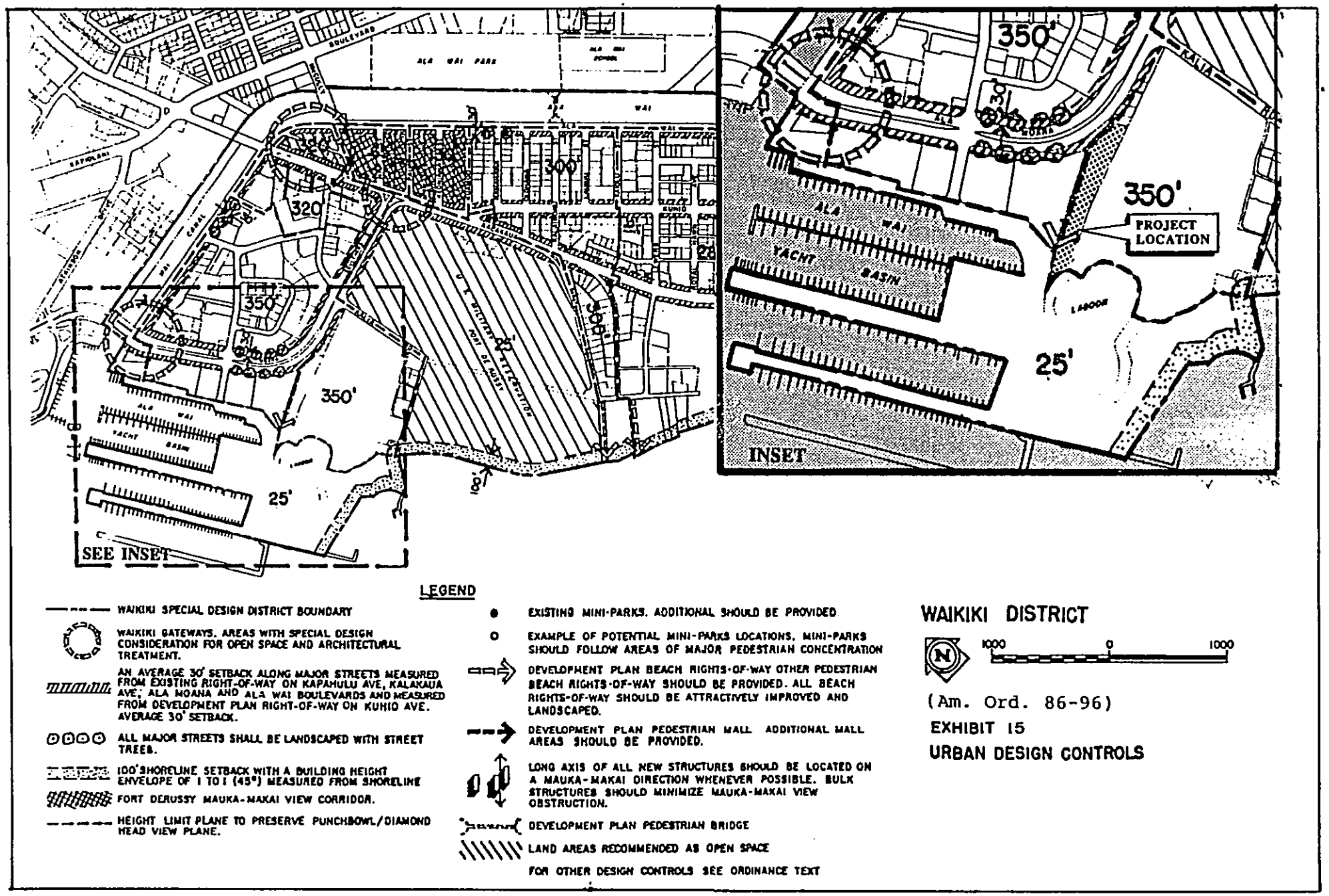

LEGEND

- WAIKIKI SPECIAL DESIGN DISTRICT BOUNDARY
- WAIKIKI GATEWAYS. AREAS WITH SPECIAL DESIGN CONSIDERATION FOR OPEN SPACE AND ARCHITECTURAL TREATMENT.
- AN AVERAGE 30' SETBACK ALONG MAJOR STREETS MEASURED FROM EXISTING RIGHT-OF-WAY ON KAPAHULU AVE, KALAKAUA AVE, ALA MOANA AND ALA WAI BOULEVARDS AND MEASURED FROM DEVELOPMENT PLAN RIGHT-OF-WAY ON KUHIO AVE. AVERAGE 30' SETBACK.
- ALL MAJOR STREETS SHALL BE LANDSCAPED WITH STREET TREES.
- 100' SHORELINE SETBACK WITH A BUILDING HEIGHT ENVELOPE OF 1 TO 1 (45°) MEASURED FROM SHORELINE
- FORT DERUSSY MAUKA-MAKAI VIEW CORRIDOR.
- HEIGHT LIMIT PLANE TO PRESERVE PUNCHBOWL/DIAMOND HEAD VIEW PLANE.
- EXISTING MINI-PARKS. ADDITIONAL SHOULD BE PROVIDED.
- EXAMPLE OF POTENTIAL MINI-PARKS LOCATIONS. MINI-PARKS SHOULD FOLLOW AREAS OF MAJOR PEDESTRIAN CONCENTRATION
- DEVELOPMENT PLAN BEACH RIGHTS-OF-WAY OTHER PEDESTRIAN BEACH RIGHTS-OF-WAY SHOULD BE PROVIDED. ALL BEACH RIGHTS-OF-WAY SHOULD BE ATTRACTIVELY IMPROVED AND LANDSCAPED.
- DEVELOPMENT PLAN PEDESTRIAN MALL ADDITIONAL MALL AREAS SHOULD BE PROVIDED.
- LONG AXIS OF ALL NEW STRUCTURES SHOULD BE LOCATED ON A MAUKA-MAKAI DIRECTION WHENEVER POSSIBLE. BULK STRUCTURES SHOULD MINIMIZE MAUKA-MAKAI VIEW OBSTRUCTION.
- DEVELOPMENT PLAN PEDESTRIAN BRIDGE
- LAND AREAS RECOMMENDED AS OPEN SPACE

FOR OTHER DESIGN CONTROLS SEE ORDINANCE TEXT

WAIKIKI DISTRICT

1000 0 1000

(Am. Ord. 86-96)

EXHIBIT 15

URBAN DESIGN CONTROLS

WAIKIKIAN HOTEL

Urban Design Controls, Waikiki District Map

VIEW ASSESSMENT
FIGURE
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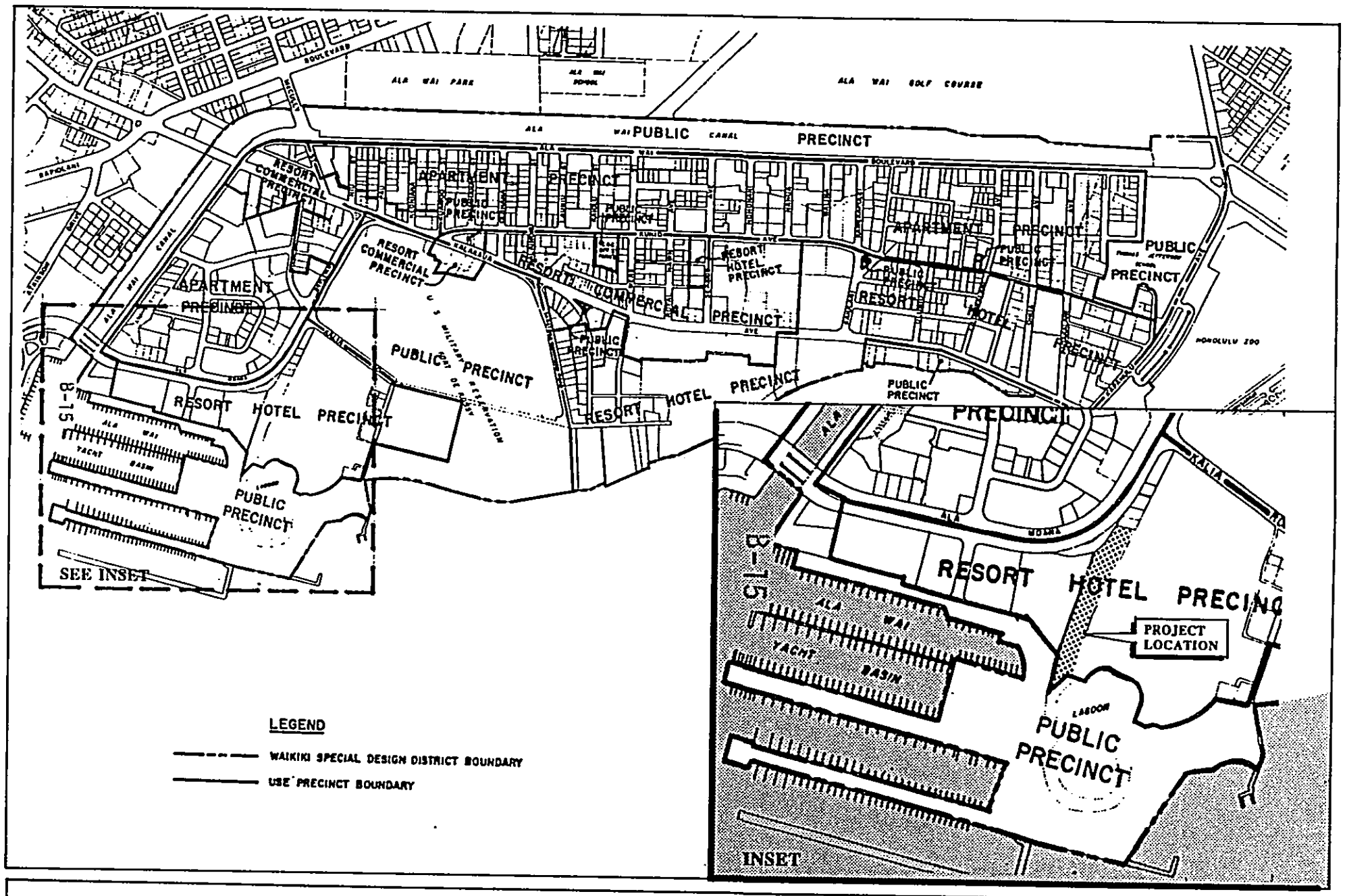

WAIKIKIAN HOTEL

Use Precincts, Waikiki District Map

VIEW ASSESSMENT
FIGURE
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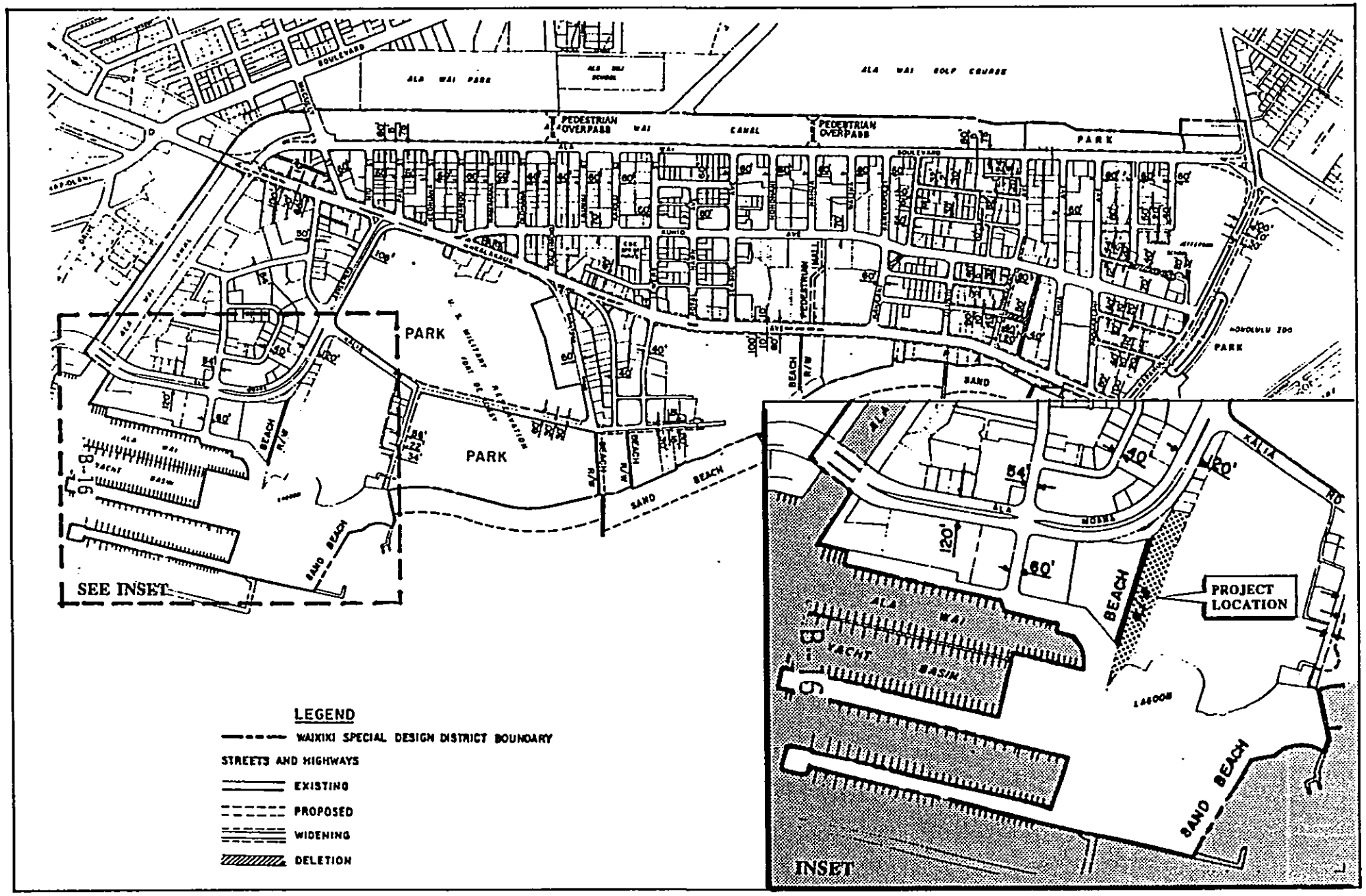

WAIKIKIAN HOTEL

Circulation Plan, Waikiki District Map

VIEW ASSESSMENT
FIGURE
5

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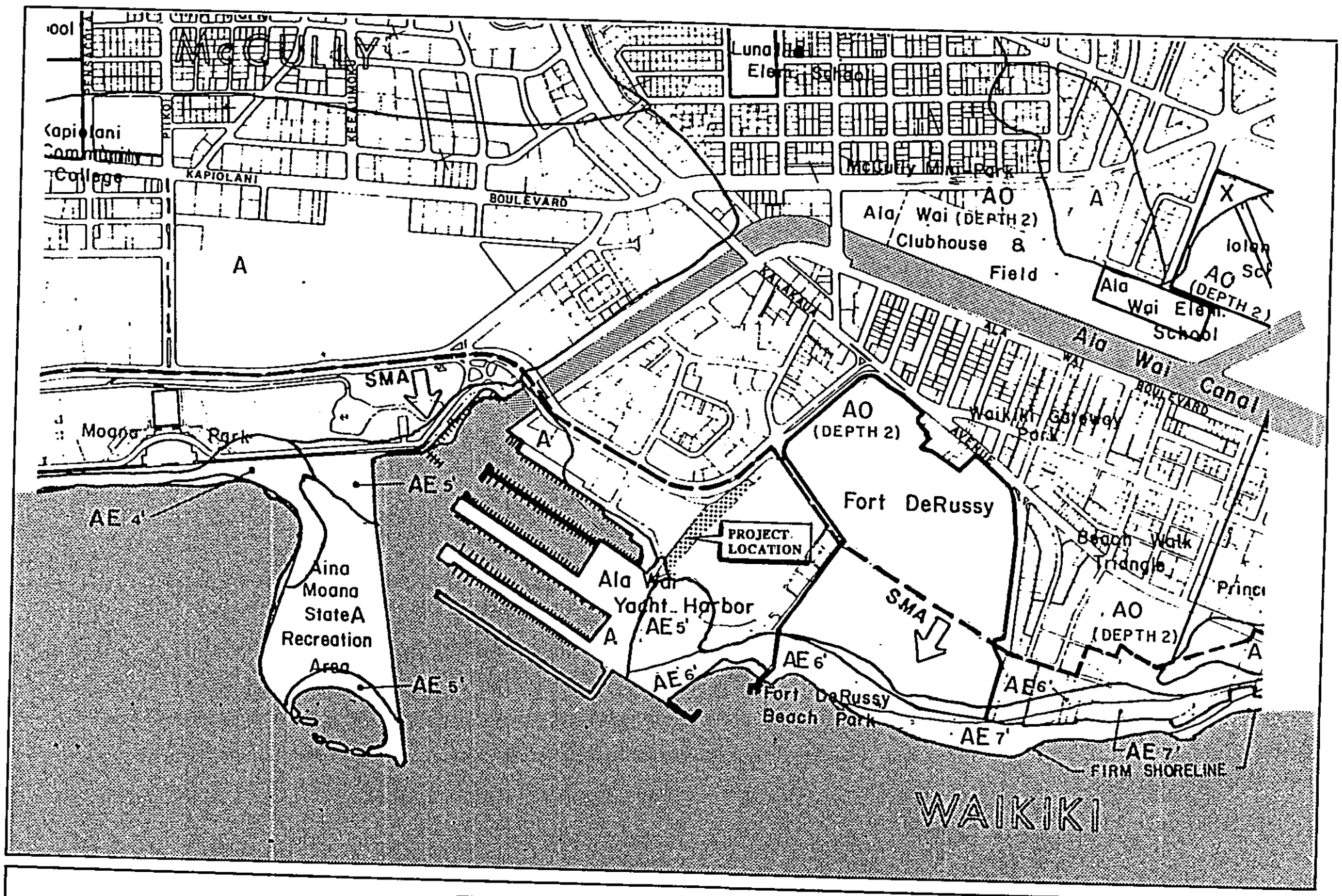

WAIKIKIAN HOTEL
Special Management Area Map

VIEW ASSESSMENT
FIGURE
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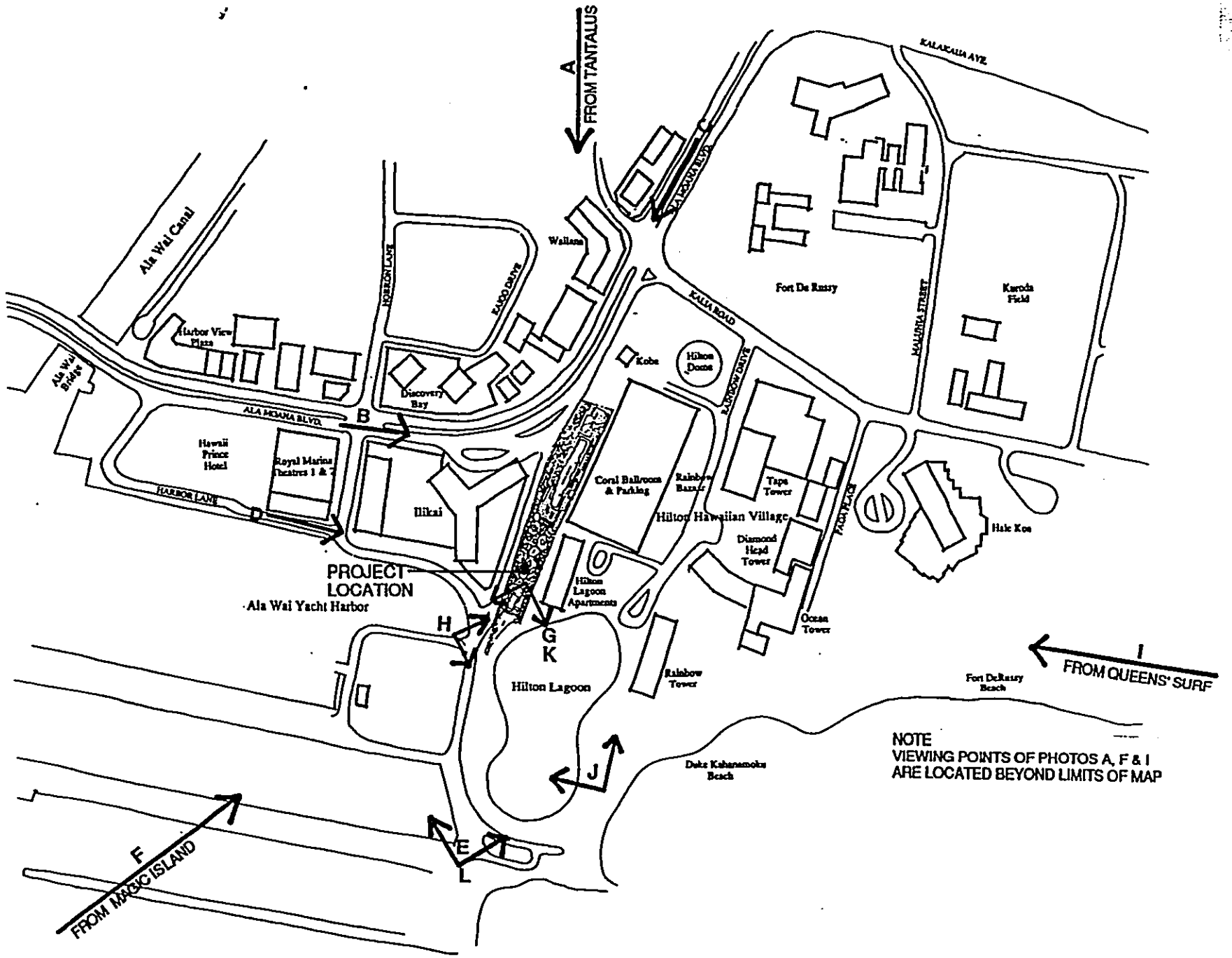

WAIKIKIAN HOTEL

Photo Location Map

VIEW ASSESSMENT
FIGURE
7

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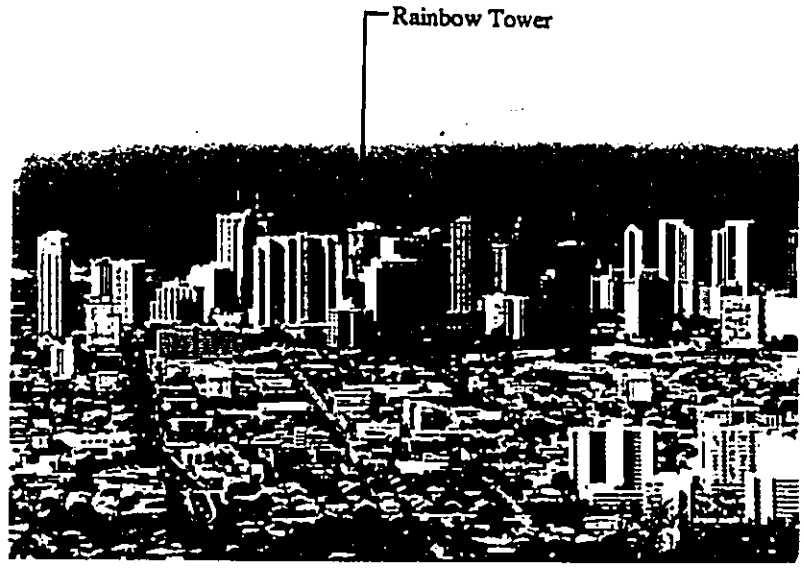
Photo A



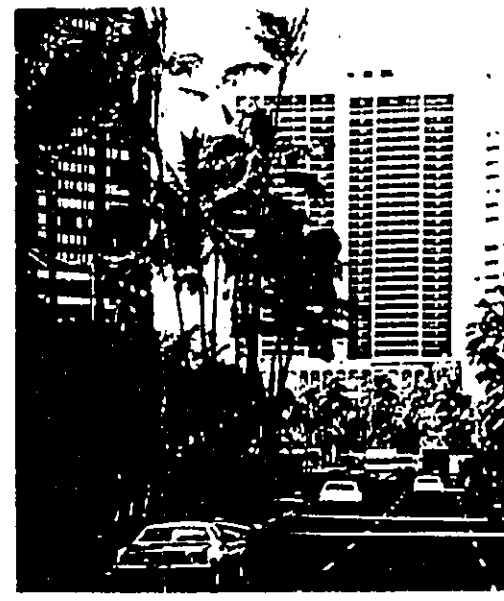


Photo A: Distant makai view from Tantalus lookout of the Waikiki skyline.

Photo B: View of Ala Moana Blvd. and the urban/highrise character of the Ewa end of Waikiki

Photo C: Roadway view of the urban character surrounding the project site. View is from Ala Moana Blvd. near Kalia Road.

Photo D: Lateral view of the Waikikan Hotel site and adjacent buildings as seen from Ala Wai Yacht Harbor opposite the Prince Hotel.

Photo E: Mauka view of the Waikikian Hotel site as seen from the Ala Wai Yacht Harbor roadway.

Photo F: Panoramic lateral view from Magic Island looking across Waikiki Beach towards Diamond Head.

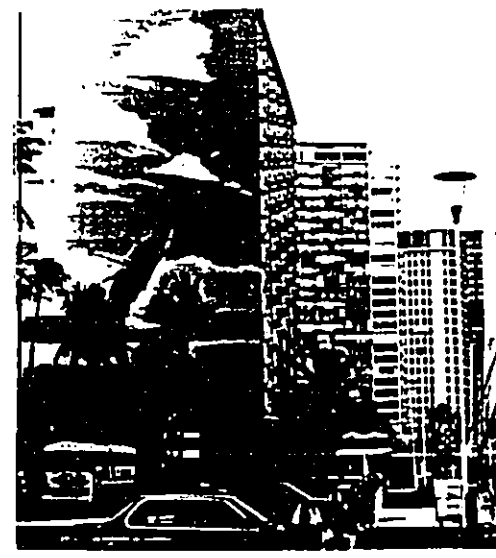


Photo F

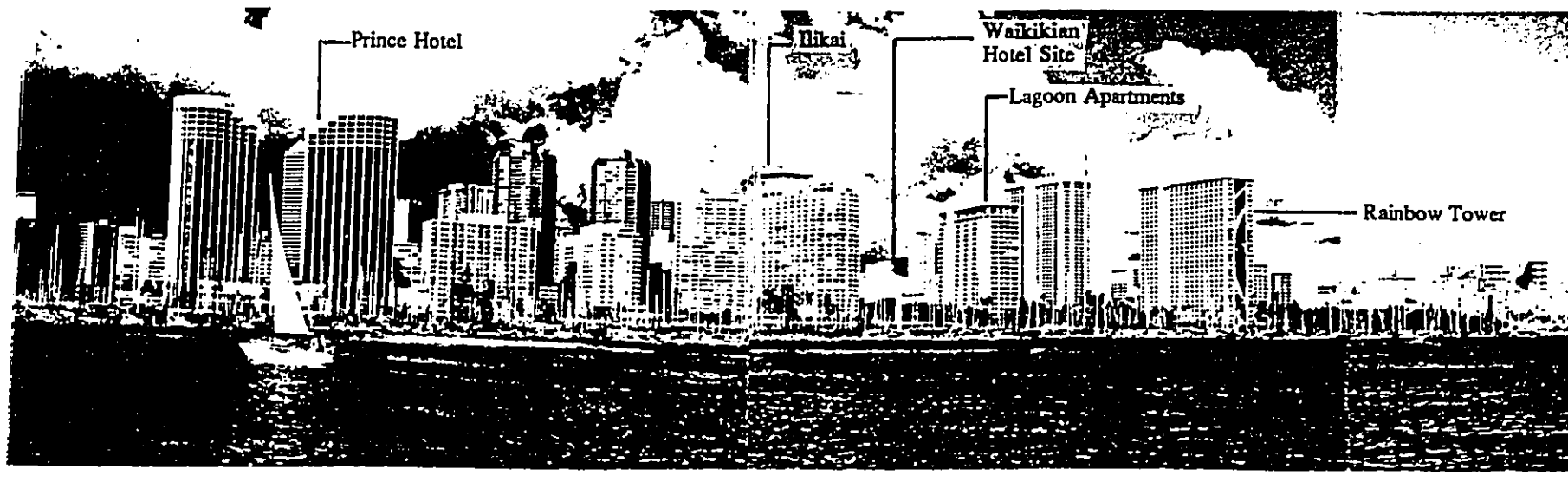


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Photo B

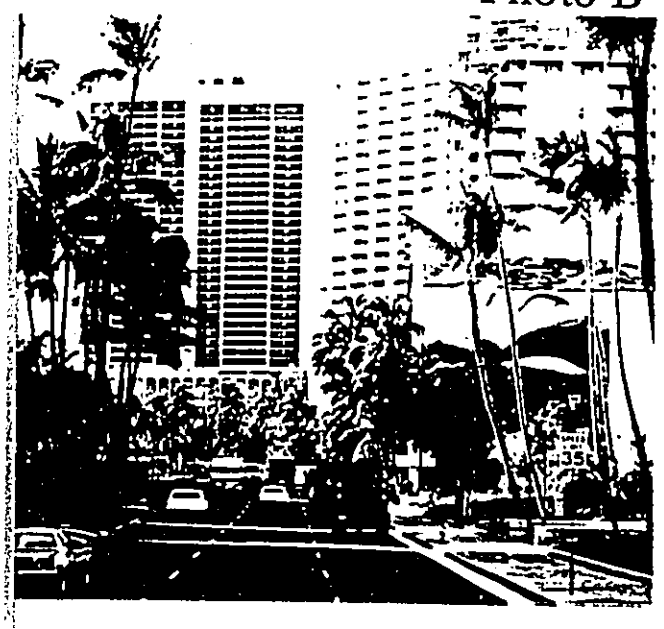
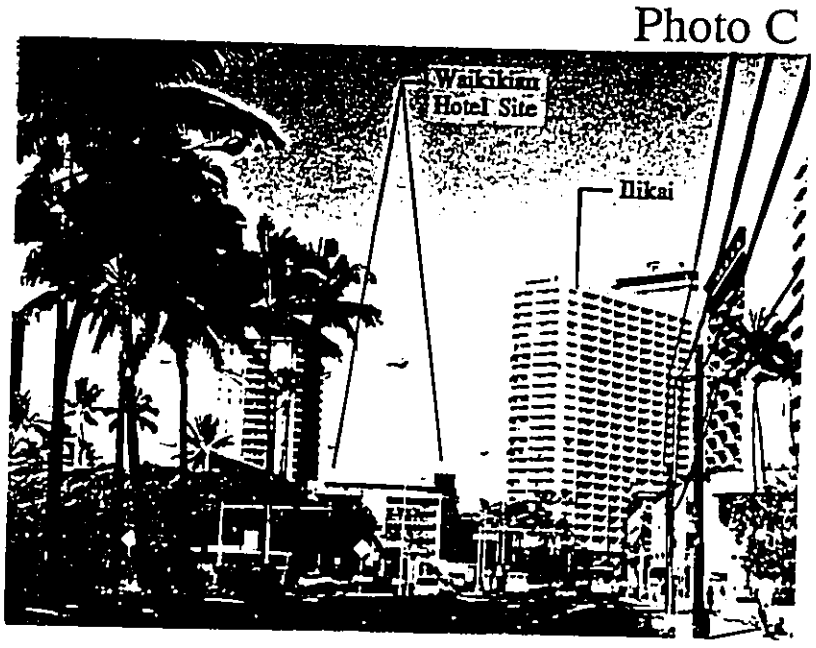


Photo C



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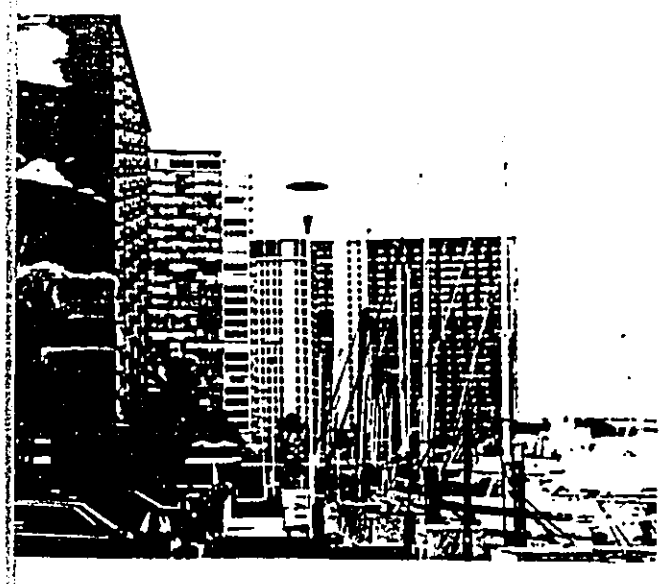

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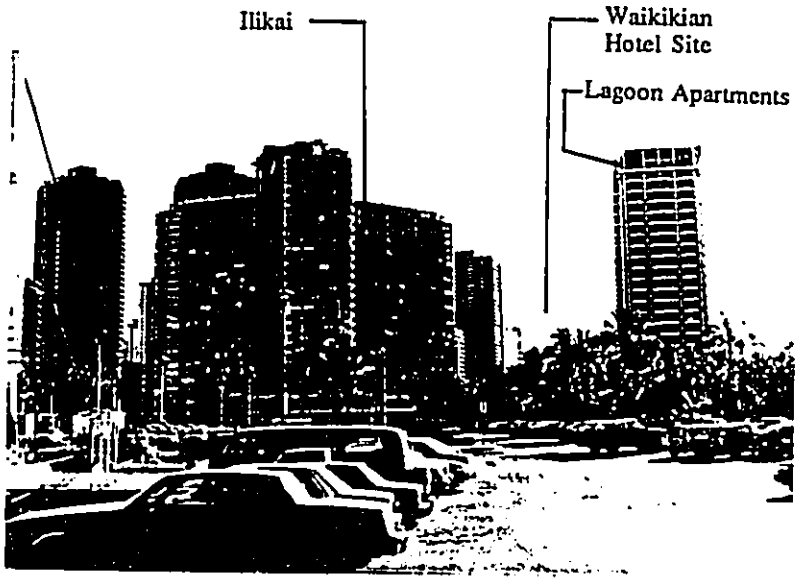
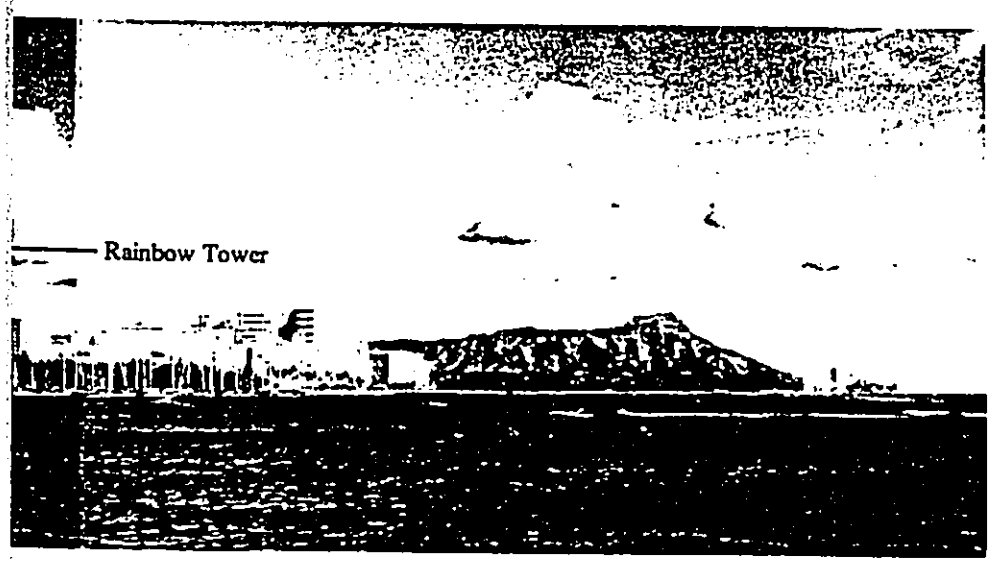




Site Photos
VIEW ASSESSMENT
FIGURE
8

Photo G: View of the manmade shoreline and Hilton Lagoon at the makai portion of the project site.

Photo H: Mauka view of the manmade shoreline and Hilton Lagoon from the Ala Wai Yacht Harbor roadway.

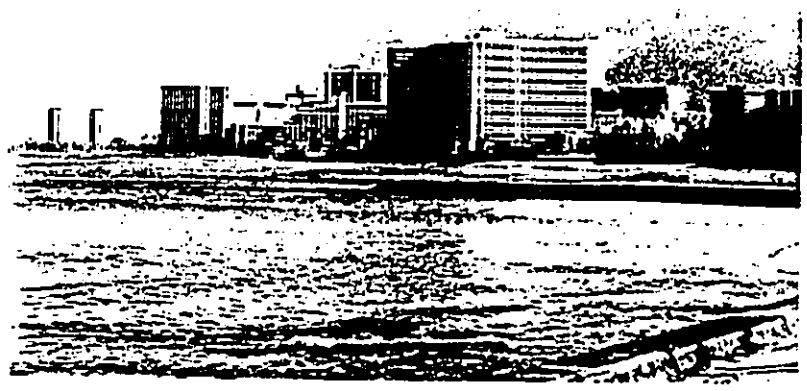
Photo I: Distant lateral view from the Queen's Surf area looking across Waikiki Beach.

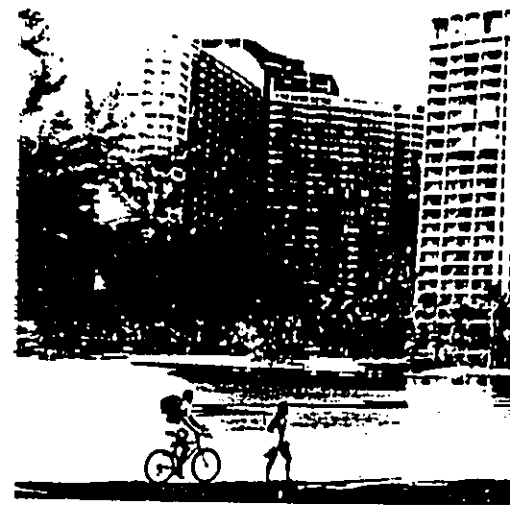
Photo J: Mauka view of Waikikian Hotel site and adjacent strucutures as seen from the public shoreline.

Photo K: Makai view from the sandy beach at the project site.

Photo L: Panoramic mauka view of the Waikiki skyline as seen from the Ala Wai Yacht Harbor.

Photo I





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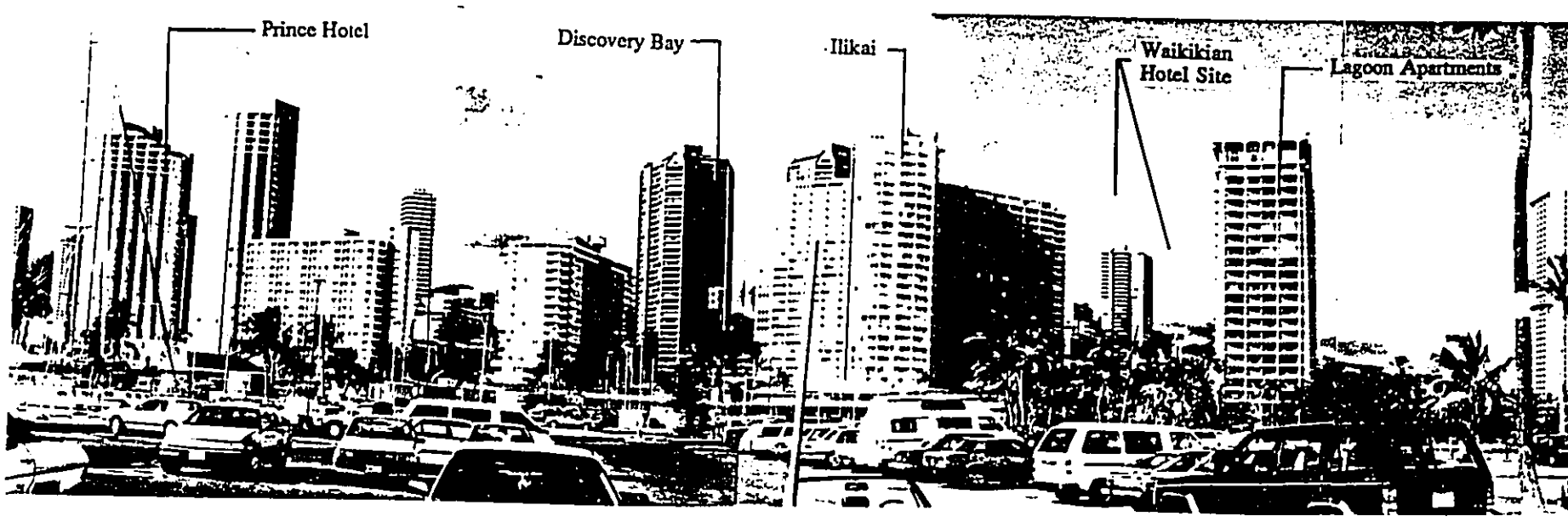

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Photo G

Photo H

Photo J

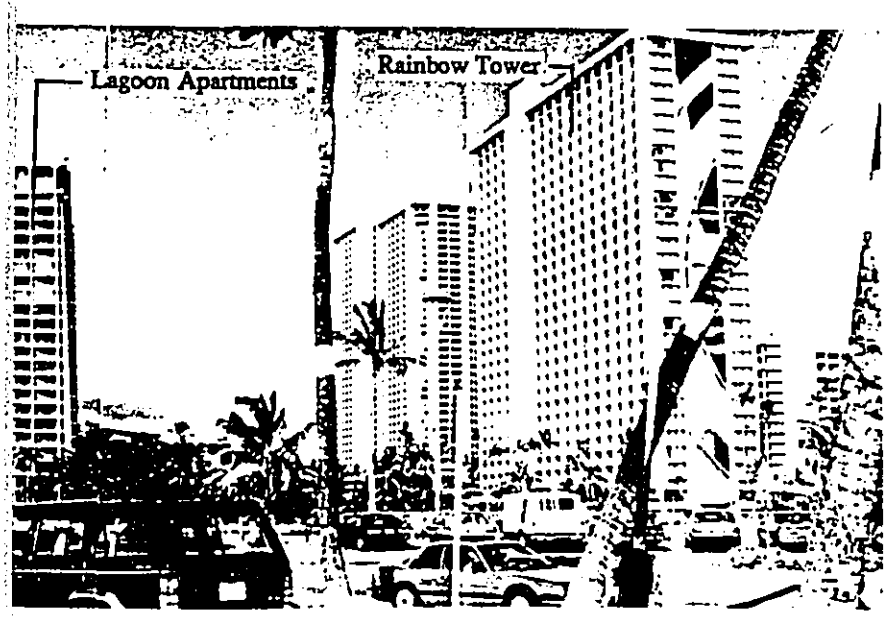

Photo K

Site Photos
VIEW ASSESSMENT
FIGURE
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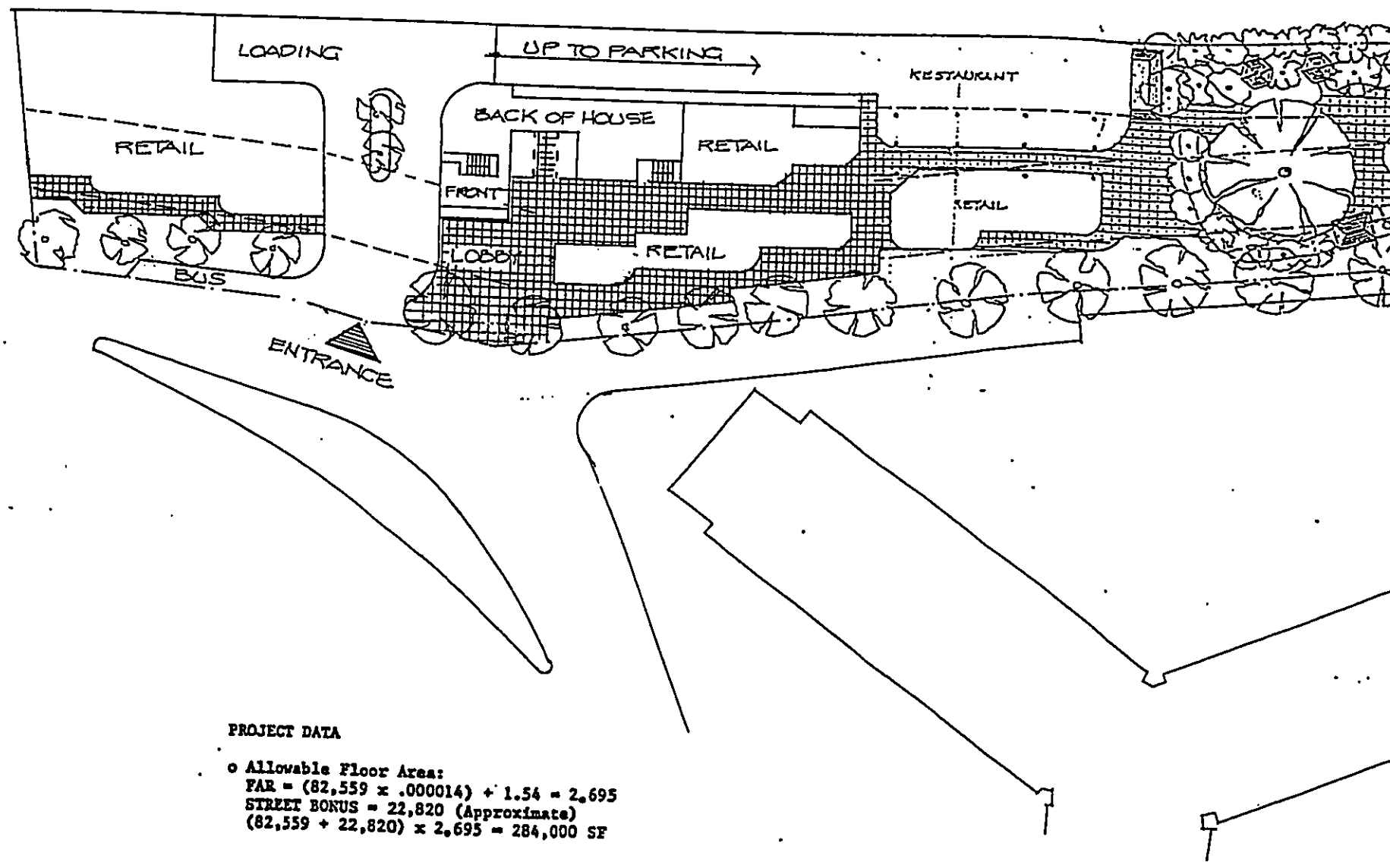


PROJECT DATA

- Allowable Floor Area:
  FAR = (82,559 x .000014) + 1.54 = 2.695
  STREET BONUS = 22,820 (Approximate)
  (82,559 + 22,820) x 2.695 = 284,000 SF

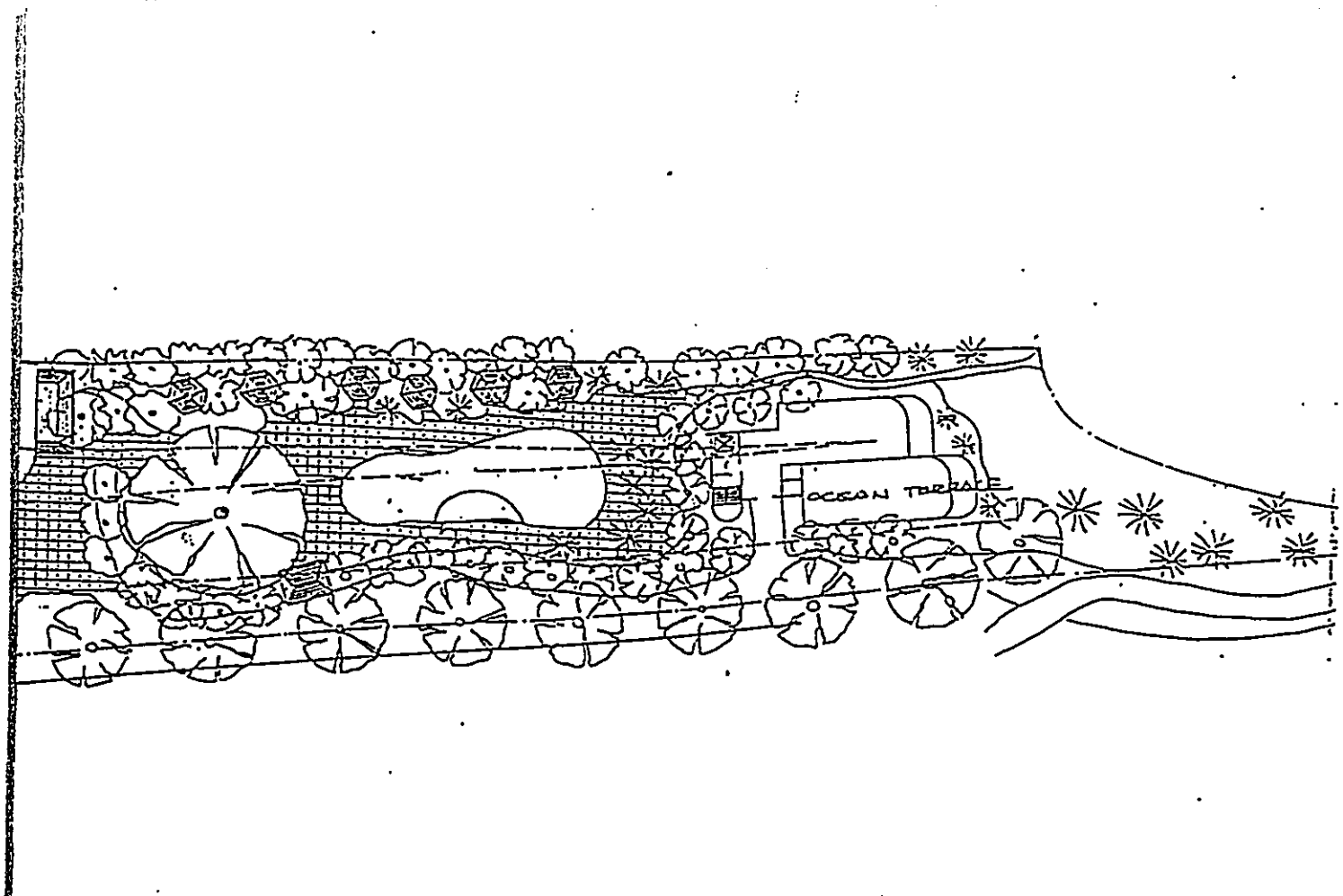
- FLOOR AREA:

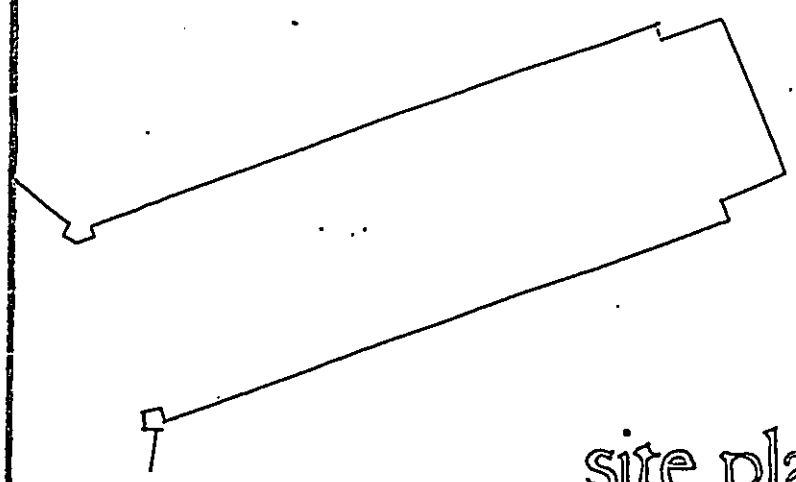
Guest Room	236,330
B.O.H/Public Space	
Mechanical	34,670
Commercial	12,000
TOTAL	283,000

- NOS. OF GUEST ROOM:
  256 Units (Hotel Tower)
  8 Units (Ocean Terrace)
  264 Units Total

- CARPARK:
  180 Car Park Stalls

- LOADING:
  5 Space Allowed





site plan

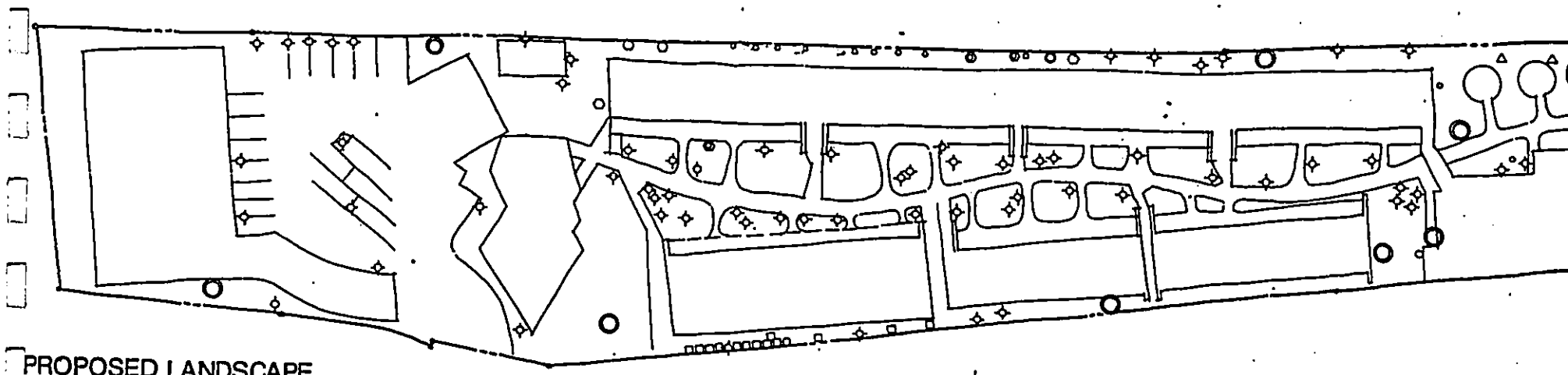
FIGURE 10

KOP HAWAII

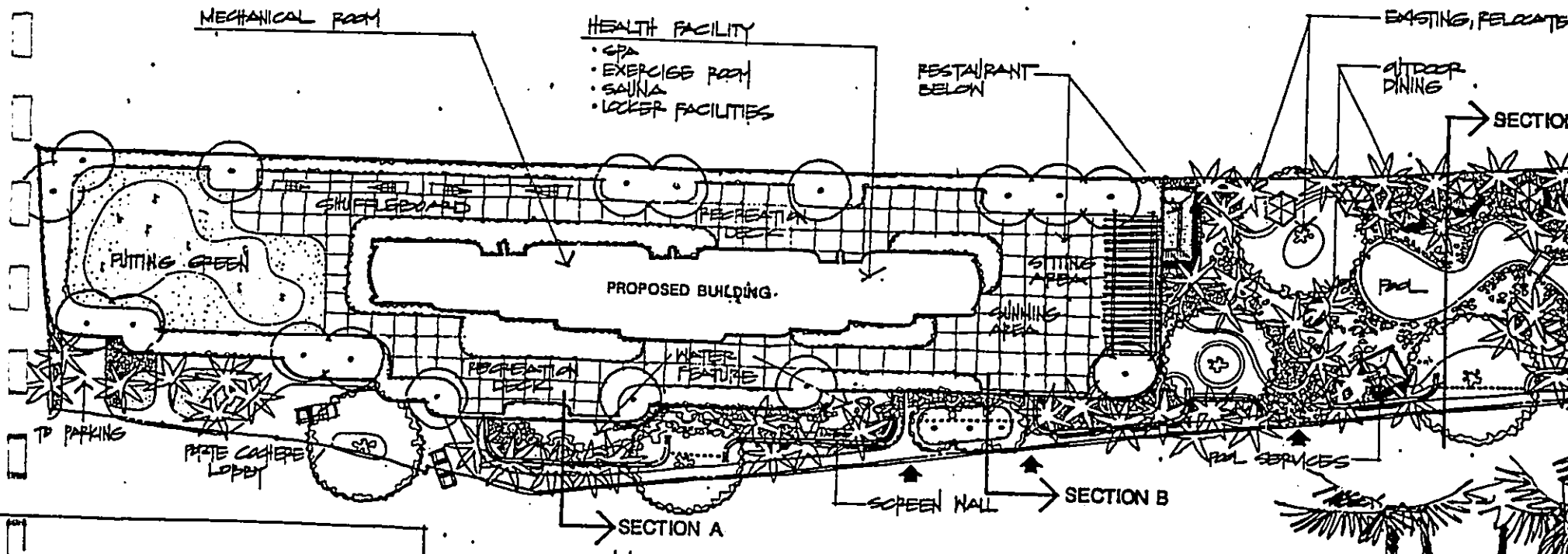
THE WAIKIKIAN HOTEL

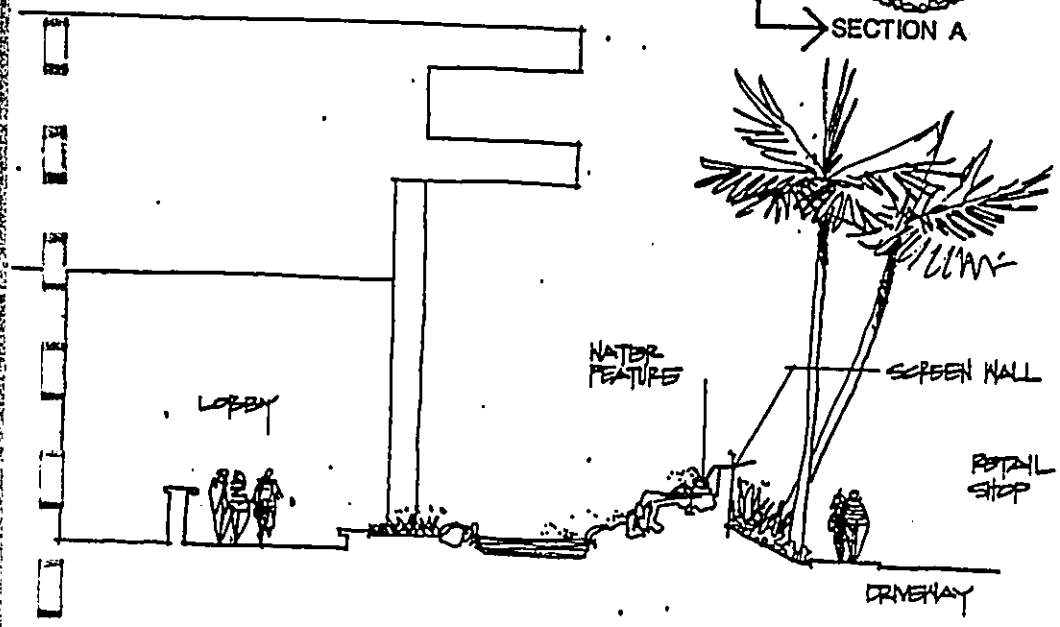
Honolulu, Hawaii

7 May 1990

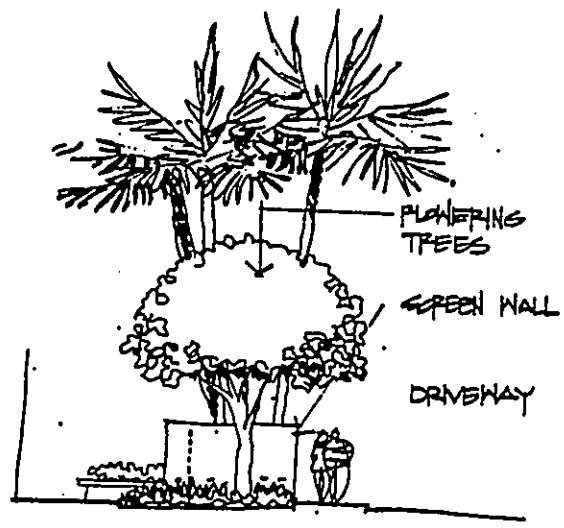


PROPOSED LANDSCAPE
SCALE: 1" = 30'-0"





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



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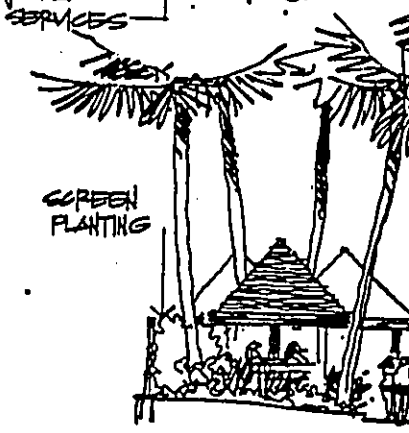

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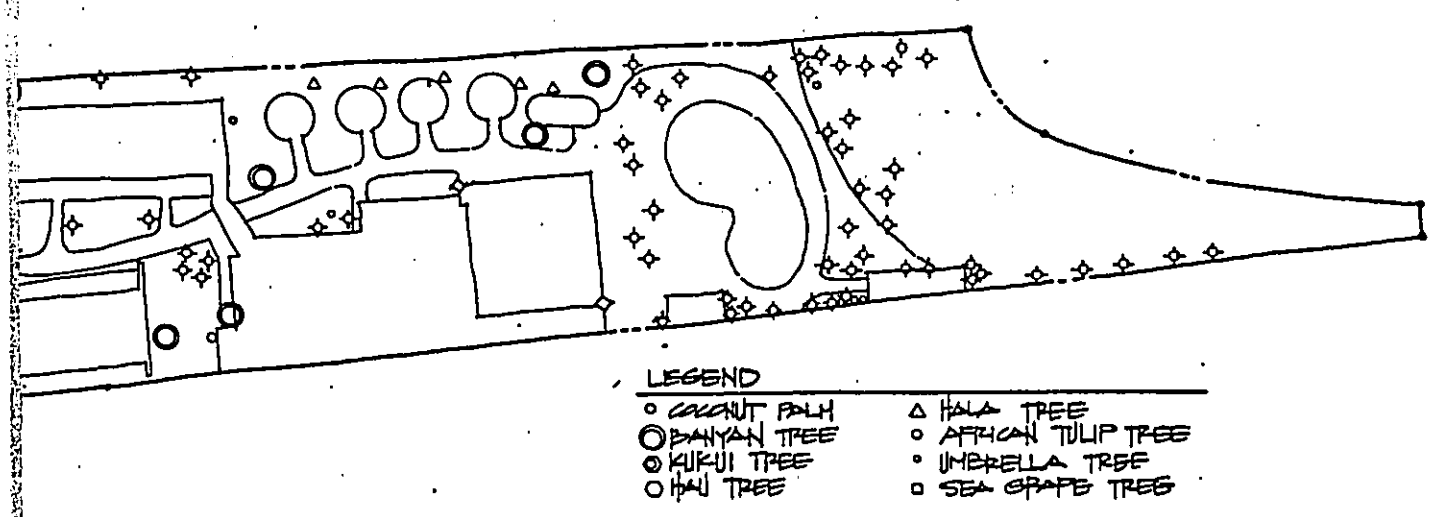
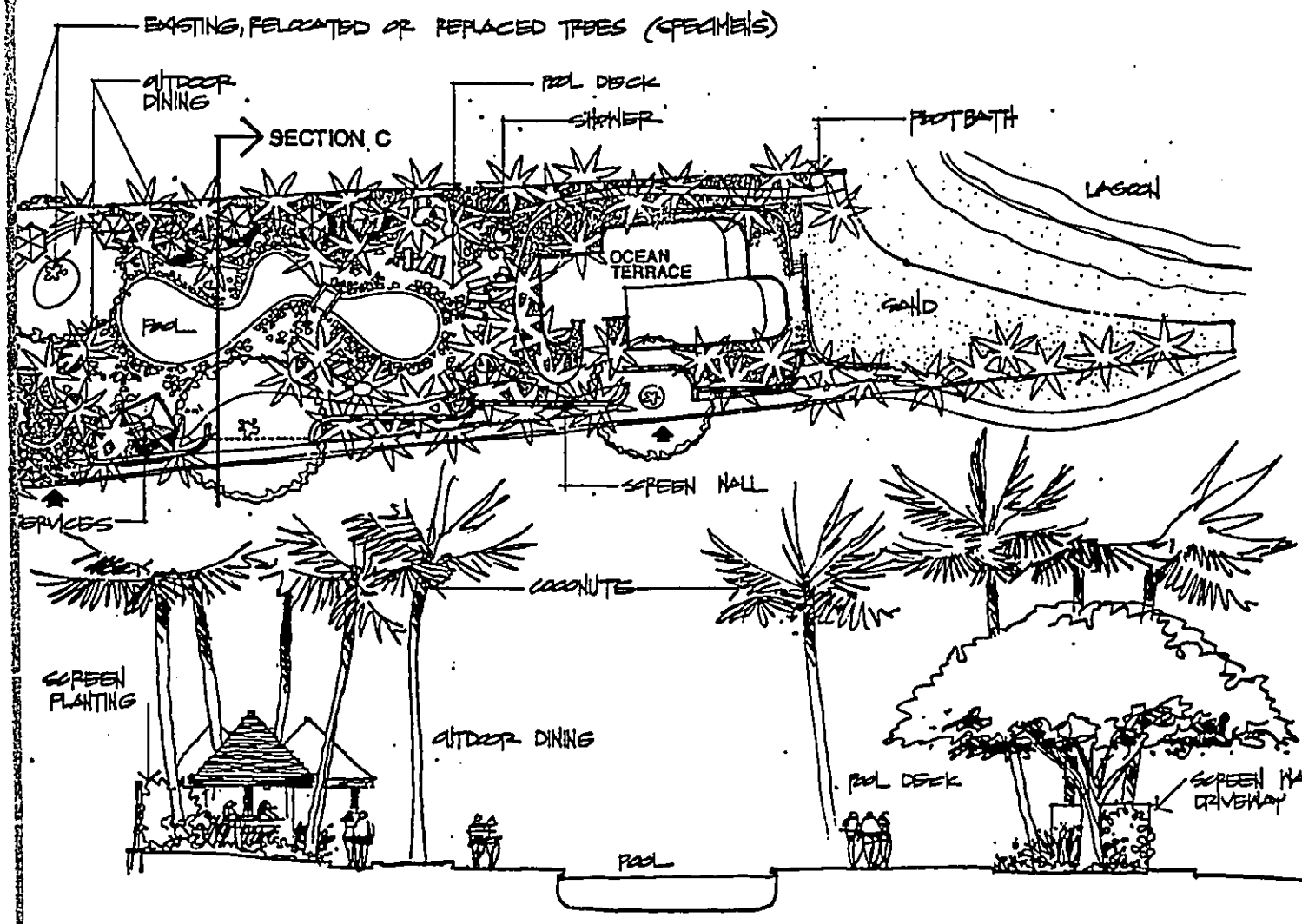




SECTION C
SCALE: 1/8" = 1'-0"

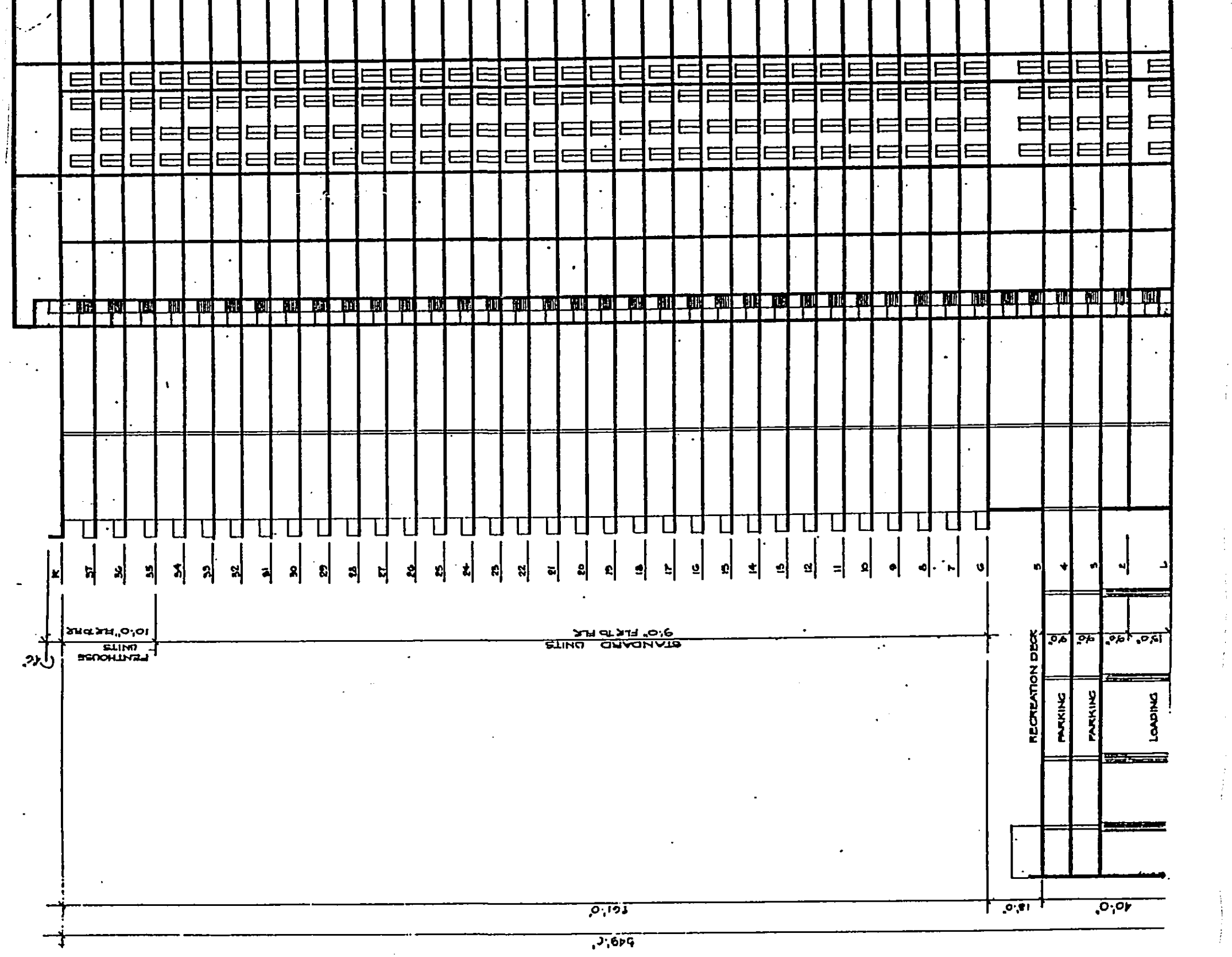
FIGURE 11

KOP HAWAII
Architecture
Planning
Interior Design

THE WAIKIKIAN HOTEL

Honolulu, Hawaii

L-1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11
10
9
8
7
6
5
4
3
2
1
10'-0" RET'D RR
PENTHOUSE UNITS
9'-0" FLR TO FLR
STANDARD UNITS
RECREATION DECK
PARKING
PARKING
LOADING
9'-0"
9'-0"
12'-0"
12'-0"
18'-0"
40'-0"
161'-0"
549'-6"

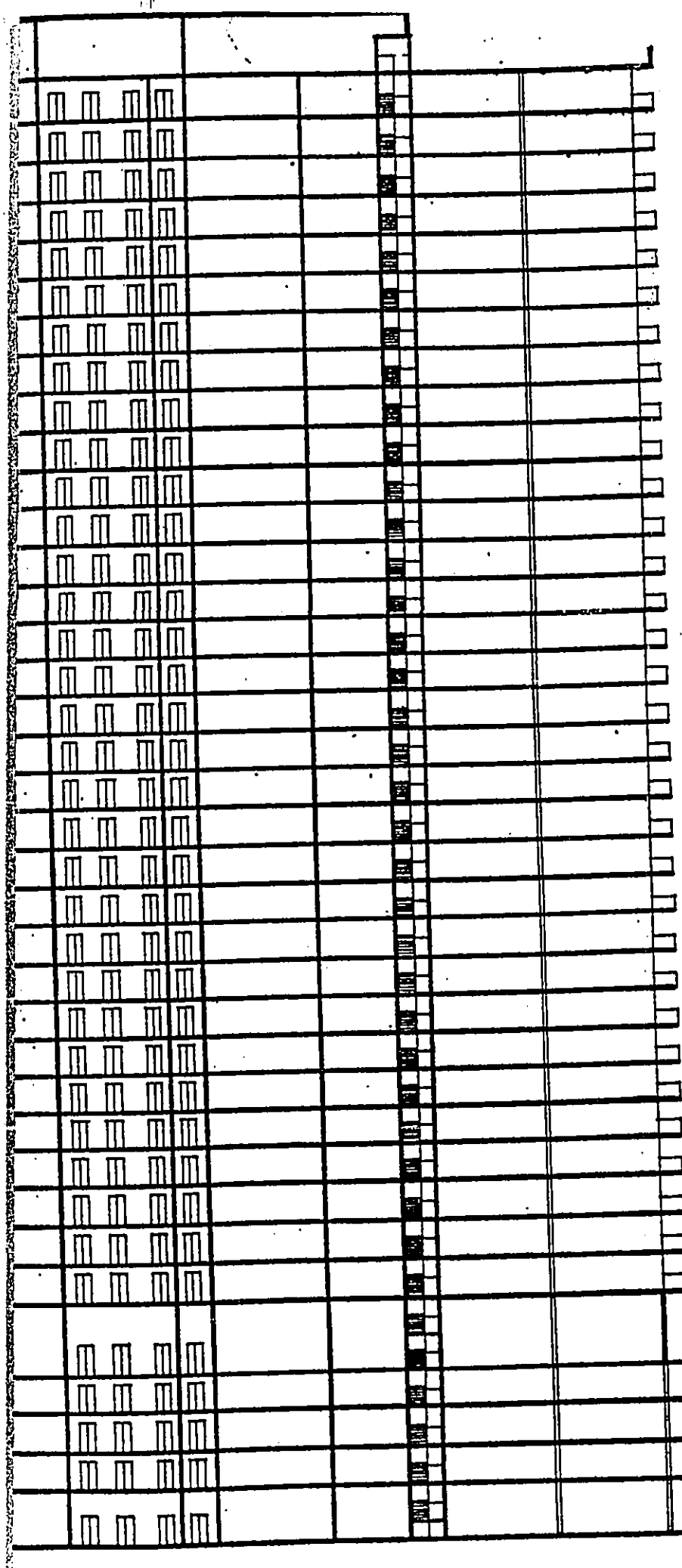
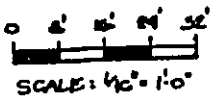


FIGURE 12

building section



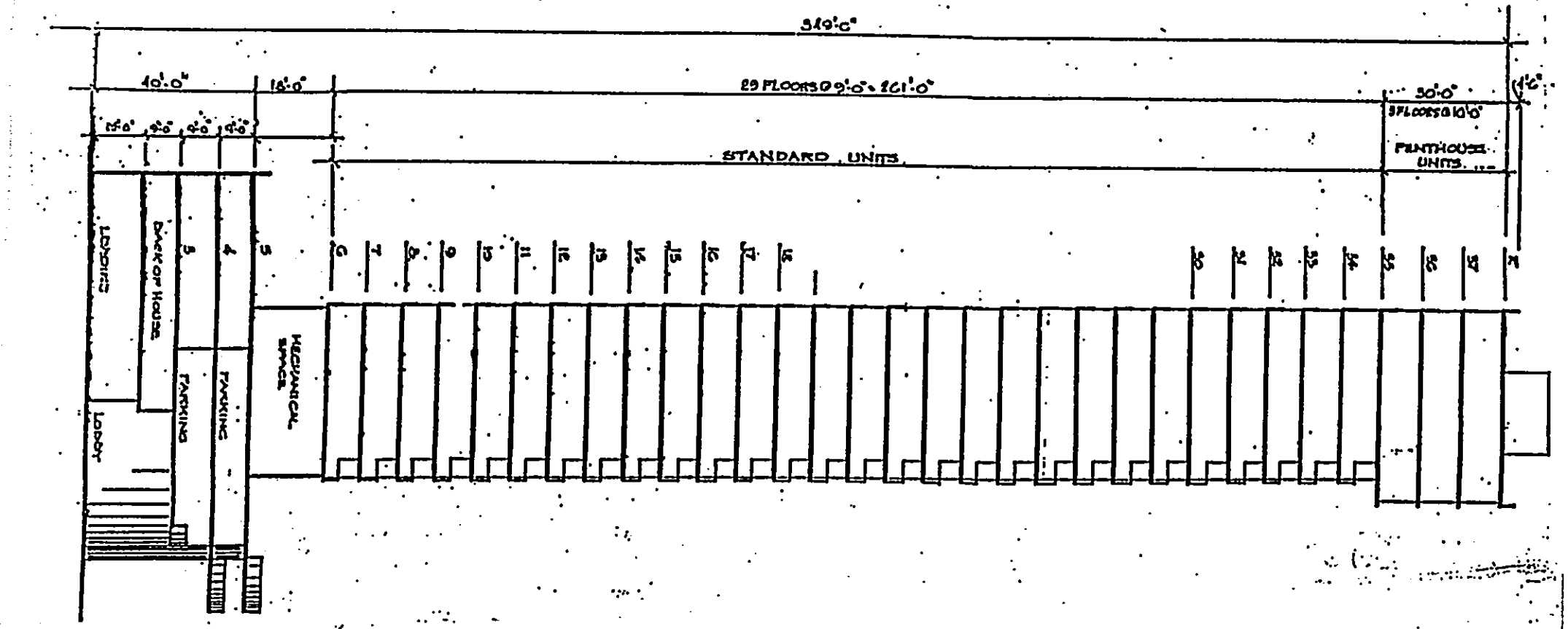

349'-6"
40'-0"
18'-0"
29 FLOORS @ 9'-0" = 261'-0"
30'-0"
3 FLOORS @ 10'-0"
1'-6"
STANDARD UNITS
PENTHOUSE UNITS
LOBBY
BACK OF HOUSE
PARKING
PARKING
MECHANICAL SPACE
LOBBY

FIGURE 13

building section

KOP HAWAII
Architecture
Planning
Interior Design

THE WAIKIKIAN HOTEL

Honolulu, Hawaii

7 May 1990

Appendix F

Pedestrian Level Wind Study

Rowan Williams Davies & Irwin Inc.

Rowan Williams
Davies & Irwin Inc.

PEDESTRIAN LEVEL WIND STUDY
WAIKIKIAN HOTEL
HONOLULU, HAWAII

Report 90-254F-1
August 14, 1990

Submitted to:
KOP HAWAII INC.
HONOLULU, HAWAII

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1. EXECUTIVE SUMMARY

Wind tunnel tests conducted on a scale model of the proposed Waikikian Hotel indicated that the wind environment in the area of: Ala Moana Boulevard; Hilton Lagoon and Beach; Ala Wai Yacht Harbor; Ilikian Hotel and the Public Right-of-Way, either remained similar to what currently exists or was slightly improved with the construction of the proposed development. Wind conditions at the west end of the proposed hotel's site was comparable to the existing conditions and the recreation deck was considered a windy area. It has been recommended that the wind environment in these areas, most notably the recreation deck, be examined through further wind tunnel testing to develop a landscape plan which affords suitable wind shelter.

2. INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by KOP Hawaii Inc. of Honolulu, Hawaii to conduct a pedestrian level wind study on the proposed Waikikian Hotel, located south of the Ilikia Hotel on the south side of the Ala Moana Boulevard and north of the Hilton Hawaiian Village, in the city of Honolulu. Pedestrian level wind issues are addressed in this report. The air quality and sun/shade studies conducted by RWDI are described in a separate report.

3. OBJECTIVE

The overall intent of the pedestrian level wind study is to determine, through the study of a scale model in a wind-tunnel, the level of wind activity anticipated to occur around the proposed project and how existing wind conditions are affected. The wind speeds recorded on and around the proposed development were then assessed to determine the acceptability with respect to the intended pedestrian use in various areas on and around the proposed building.

4. TEST METHODOLOGY

4.1 Test Model

To assess the pedestrian level wind environment, a 1:400 (approximately 1" = 32') scale model of the proposed project and surrounding buildings within a 1600 ft radius of the development site was constructed. The scale model of the existing buildings and the

proposed development identified in Figure 1, was constructed in accordance with plans prepared by KOP Hawaii Inc. in May 1990, Sanborn maps, photographs, and an area map supplied by KOP Hawaii Inc., and site photographs taken by RWDI in April of 1990.

4.2 Test Procedures and Data Analysis

The pedestrian level wind test model was placed in RWDI's boundary layer wind tunnel where wind blowing over the model simulates wind blowing over the actual site. Wind speeds were recorded for 16 wind directions (i.e. north, north-northeast ... north-northwest) at 51 sensors located on and around the study site. A more detailed description of the wind tunnel and wind simulation techniques is provided in Appendix A. The following test configurations were studied, noting that wind speed sensors located on the recreation deck of the proposed hotel could not be tested for existing site conditions.

A - Existing Site Conditions
B - With Proposed Waikikian Hotel Present

In order to determine the wind climate at each measurement location, the data from the wind tunnel were combined with long term wind statistics recorded at the nearest meteorological station to the site (i.e. Honolulu International Airport). In this way the wind speeds which will occur at each individual sensor location are predicted (refer to Appendix B for details of the analysis techniques). These predictions of the actual wind conditions at the site are then used to determine the comfort at each location.

For this study, wind data recorded over a 38 year period at the Honolulu International Airport were analyzed to determine the directions from which winds occur most often in the Honolulu area. Seasonal changes in wind speeds and directions were assessed by dividing the wind information into two seasons: summer and winter. The results of this analysis are presented in Figure 2.

The upper right wind rose in Figure 2 indicates that wind from the northeast and east-northeast has the greatest potential to affect the summer wind conditions since these directions are associated with stronger winds speeds (i.e. highest wind speeds on a weekly basis). During the winter months (lower wind roses in Figure 2), the winds most likely to affect the pedestrian level wind environment are also from the northeast and the east-northeast wind directions.

Wind comfort at an individual sensor location is assessed considering the activity planned for that location. Three levels of activity are examined, with appropriate wind speed ranges: **Sitting** (0 - 9 mph); **Standing** (0 - 14 mph) and **Walking** (0 - 19 mph). These wind speed ranges are based on current research and experience of RWDI and are part of our on-going research and development of these guidelines. The effects of wind can be summarized using the Beaufort Scale[1] as shown in Table 1. Also, the occurrence of winds which would be hazardous to pedestrians is examined by determining how often wind gusts in excess of 59 mph occur.

Beaufort Number	Description	Gust Wind Speed (mph)	Effect
0	Calm	0 - 1	Smoke rises vertically
1	Light Air	1 - 5	Direction of wind shown by smoke drift but not by wind vanes.
2	Light Breeze	5 - 11	Wind felt on face; leaves rustle; wind vane moves.
3	Gentle Breeze	11 - 17	Hair disturbed; clothes flap; wind extends light flag; leaves in constant motion.
4	Moderate Breeze	17 - 25	Raises dust and loose paper; hair disarranged; small branches are moved.
5	Fresh Breeze	25 - 34	Small trees in leaf begin to sway; force of wind felt on body.
6	Strong Breeze	34 - 44	Large branches in motion; umbrellas used with difficulty. Difficult to walk steady.
7	Near Gale	44 - 55	Whole trees in motion; inconvenience felt when walking.
8	Gale	55 - 66	Generally impedes progress, difficulty with balance in gusts.
9	Strong Gale	66 - 78	People blown over.

Modified Beaufort scale representing gust wind speeds recorded at the 6 ft. height over land.

Table 1: Modified Beaufort Wind Scale Based on Wind Gusts Measured at the Pedestrian Level (6 ft)

Research conducted on people's perception of the wind suggests that for winds to be acceptable for sitting, standing or walking, the wind should be within the corresponding gust wind speed ranges for 80% of the time or greater, or people using the area will complain.[2,3,4,5] These wind guidelines represent an average for the total population. Regional differences in wind climate and variations in age, health, clothing and other human factors can change an individual's perception of the wind climate.

The information presented in Tables 2 to 7 will assist in the planning of pedestrian activities for the development. An example of the use of these criteria is that the conditions in a parking lot during the wintertime may, for example, be in the 0 - 14 mph range for 80% of the time. The area is therefore judged comfortable for standing. As a pedestrian approaches a building, the gust wind speeds increase to a level above that is suitable for standing, but because they are within the walking wind speed range for more than 80% of the time (or 7 days/week x 80% = approx. 6 days/week), the conditions are acceptable for the planned activity (i.e. walking). Approaching the corner of the building, wind conditions comfortable for walking do not occur frequently enough for the area to be considered suitable for walking (e.g. acceptable 60% of the time which is considerably less than the desired 80%). Corrective measures should then be considered for improving the wind comfort of pedestrians when conditions fail the minimum 80% requirement.

5. TEST RESULTS

The results of the combined analyses of the wind tunnel test data with the seasonal wind data are presented in Tables 2 to 7. The locations of the wind speed sensors on and around the study site are shown in Figure 3. The tables indicate the percentage of time that a certain wind speed range is predicted to occur during a given season and can be used to determine when conditions will occur outside of the desired 80% acceptance level for sitting (lounging), standing or walking. If the percentage of time for a given sensor lies above the 80% level, the wind conditions would generally be regarded as acceptable by most people.

In addition to the data for each specific test location, an average percentage of time that a wind speed range is predicted to occur over the study area is shown for the summer and winter seasons (bottom of Tables 2, 4, 5 and 7). The average percent occurrence is a site-specific criterion which allows the identification of locations where pedestrians would tend to notice a deviation from the average wind conditions encountered on the site. In some instances, wind control measures may be considered in order to create a more desirable wind environment. In addition, on the right hand side of Tables 3, 4, 6 and 7, is a column which readily indicates if the proposed development had a positive or negative effect on the existing

wind environment. The value is expressed as the percentage difference in time that conditions would be considered suitable for walking (i.e. 0 - 19 mph). Note that a positive increase in the % of change implies an improvement to the local wind conditions with the addition of the development.

The information presented in the tables should be interpreted as described in the following example.

In the summer, Location 49, which is on the recreation deck is identified as suitable for walking since it exceeds the 80% threshold (Table 4). However, the activities planned would require conditions suitable for standing which occurs approximately 64% of the time which is below 80%, but comparable to the site average of 63%. These conditions would generally be unacceptable for leisure activities, however, the incorporation of landscaping or other wind control measures such as wind screens may improve the proposed conditions to the 80% threshold for standing.

Appendix C contains tables of "wind speed ratios" to indicate the relative strength of the wind at each location and "weighted values" which indicate the significant wind directions affecting each location. These tables are useful in determining the wind directions that have the most pronounced effect of wind comfort at each sensor location and can be used to better understand the wind directions affecting a specific area. The use and interpretation of the data is fully described in Appendix C.

Overall, the Waikikian Hotel had a positive wind impact in the study area as existing wind speeds were generally reduced in the hotel's presence. As a result, the following assessment of wind conditions in key areas on and around the study site has been presented in summary form. It is important to note that potentially hazardous winds gusting to 59 mph occurred infrequently (i.e. less than 0.1% of the time) which is within acceptable standards for wind comfort.

Ala Moana Boulevard (Locations 1 - 11 and 25)

Existing wind comfort levels were typically improved in the presence of the Waikikian Hotel. The average increase in comfortable wind conditions for walking with the hotel present was 4% of the time in the summer and 3% of the time in the winter.

Ilikia Hotel (Locations 12 and 13)

Existing wind speeds at the tennis court and outdoor swimming pool were reduced with the addition of the Waikikian Hotel. As the percentage of time that wind speeds suitable for walking only increased by 1% or 2% throughout the year, most people would not perceive a change to the wind climate at these leisure areas.

Ala Wai Yacht Harbor (Locations 14, 15 and 16)

The existing wind climate in this area would not be perceptibly altered by the addition of the proposed Waikikian Hotel. The percentage change in the walking category was typically 5% or less throughout the year, which would result in no appreciable change to existing pedestrian wind comfort or sailing conditions in the harbor.

Hilton Hotel Lagoon and Beach (Locations 17, 18, 19, 21, 27, 28 and 29)

The addition of the proposed hotel resulted in a negligible effect on existing wind comfort around the beach. The Waikikian Hotel had no noticeable impact on the existing sailing/wind surfing conditions on the Hilton Lagoon.

Rainbow Hotel (Locations 20, 22, 23, 24 and 26)

Existing wind conditions at these locations were typically improved throughout the year in the presence of the proposed hotel. Location 24 was the only exception; however, the slight change in wind comfort would not be perceptible to people.

Public Right-of-Way (Locations 30 - 33)

On average, the Waikikian Hotel slightly reduced existing wind speeds along the right-of-way. However, on an annual average basis, pedestrians would not tend to notice the relatively minor improvement to the wind conditions.

Entranceway to Waikikian Hotel (Locations 39 - 44)

Improved wind conditions at all of the entrance locations to the Waikikian Hotel, were noted during both the summer and winter, when the proposed building was present. Wind conditions suitable for walking during the summer and winter occurred on the street directly north of the study building, as well as, at Location 44 under the podium, for Test Condition

B. The remaining three locations under the podium (39, 42, 43) had conditions comfortable for standing. The proposed wind environment at all of these locations for both seasons were suitable for the intended pedestrian activities. These wind comfort levels are slightly conservative given the density of landscaping included on the model, which was less than what has recently been proposed for the entry area.

Leisure Area - West of Waikikian Hotel (Locations 34 - 38 & 51)

At the time of testing, an early conceptual landscape plan was available for reference. The landscaping included on the model was a good approximation for these tests and would provide conservative results, whereby the actual conditions on the site would be slightly more comfortable than what these tests show. This is common to scale model testing where it would be impractical to model every proposed or existing tree and shrub at the site.

The proposed wind conditions for both seasons at Location 36 and 38 improved from the existing wind environment. Slightly windier conditions were noted during the summer at the ocean terrace (Location 34) for the proposed configuration; however, people would not perceive a noticeable change. During the summer months, a wind environment comfortable for standing occurred at all locations except Locations 35, 38 and 51, where it was suitable for walking with the proposed hotel present. Locations 35 and 38 were marginally below the suggested 80% level.

When the Waikikian Hotel was present, the winter wind environment was generally comfortable for standing at all of these locations, except Location 51 (directly west of the study building), where conditions suitable for walking were noted. Wind conditions at Locations 34 and 35 were near the borderline of being acceptable for standing.

The final landscape plan should be reviewed by RWDI to assess if the wind protection afforded on the site by the proposed landscaping would be appropriate for the intended use of the area.

Podium Level Recreation Deck (Locations 45 - 50)

On the podium level of the proposed structure a wind environment suitable for walking occurred at Location 49 during the summer and winter, and Locations 47, 48 and 50 in the wintertime. Locations 48 and 50 are within 1% or 2% of the desired 80% level. The remaining Locations on the podium were uncomfortable and would not be suitable for a

lounging or sitting area. This wind environment would be more appropriate for a running track. Note that at the time of testing, landscaping had not been developed for the recreation deck. Further tests should be undertaken to develop a landscape plan and podium level leisure activity areas that take advantage of both wind control and solar exposure.

6. CONCLUSIONS AND RECOMMENDATIONS

The pedestrian level wind environment in the following areas, which are situated off the development site, was recorded both before and after the construction of the Waikikian Hotel: Ala Moana Boulevard; Ilikia Hotel; Ala Wai Yacht Harbor; Hilton Hotel Lagoon and Beach; Rainbow Hotel and Public Right-of-Way to the harbor. This study concluded that with the proposed hotel, the wind speeds in these areas typically remained the same as existing or were slightly reduced (i.e. more comfortable). This has been considered a positive environmental impact on the surroundings.

With the addition of the proposed hotel, wind conditions on the development site were typically comparable to those which exist. Potentially hazardous wind speeds occurred less than 0.1% of the time, which is within acceptable standards for wind comfort. The test results indicated relatively windy conditions at the site; however, the landscaping tested would be attributed to slightly conservative results. The recreation deck (podium level) was wind exposed and predominantly uncomfortable for leisure activities. We recommend that the landscape plan be reviewed and additional wind tunnel tests be undertaken to measure the effectiveness of the proposed landscaping. Alternative landscaping measures may be suggested as part of these further tests.

7. REFERENCES

1. G.C. Simpson — "The Velocity Equivalents of the Beaufort Scale". Air Ministry Prof. Notes, No. 44. London, Meteorological Office (1926).

2. J.C.R. Hunt, E.C. Poulton and J.C. Mumford — "The Effects of Wind on People; New Criteria Based on Wind Tunnel Experiments". Buildings and Environment, II (1976); pp. 15-28.

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4. T.V. Lawson and A.D. Penwarden — "The Effects of Wind on People in the Vicinity of Buildings". Proceedings of Wind Effects on Buildings and Structures, London (1975), pp. 605-622.

5. A.D. Penwarden and A.F.E. Wise — "Wind Environment around Buildings". Building Research Establishment Report, H.M.S.O. (1975).

LOCATION	ACTIVITY/WIND SPEED RANGE Sitting 0-9 mph %	Standing 0-14 mph %	Walking 0-19 mph %
1	23	42	66
2	40	71	93
3	32	59	85
4	45	76	94
5	22	41	64
6	28	50	73
7	32	59	84
8	30	54	79
9	25	47	72
10	36	65	89
11	22	40	62
12	43	72	93
13	35	60	83
14	40	72	93
15	34	63	85
16	32	61	86
17	38	68	90
18	46	78	94
19	40	69	89
20	44	75	94
21	27	52	77
22	42	73	93
23	34	61	85
24	26	46	70
25	33	59	83
26	26	47	72
27	38	68	89
28	23	44	69
29	24	45	70
30	56	87	98
31	31	55	79
32	26	47	70
33	23	41	64
34	52	82	97
35	44	74	94
36	36	64	87
37	52	82	97
38	28	51	75
39	29	51	76
40	25	47	71
41	28	53	79
42	36	65	88
43	29	54	80
44	26	47	72
Average	**33**	**59**	**82**

Note: All values are rounded to the nearest whole number

Table 2: Occurrence of Various Wind Speed Ranges - Summer - Existing Site Conditions

LOCATION	ACTIVITY/WIND SPEED RANGE Sitting 0-9 mph %	Standing 0-14 mph %	Walking 0-19 mph %	% of Change Relative to Existing (walking category)
1	24	45	69	+3
2	40	71	92	-1
3	31	58	84	-1
4	39	67	90	-4
5	23	43	67	+3
6	31	56	81	+8
7	36	66	89	+5
8	45	76	94	+15
9	36	65	88	+16
10	35	63	87	-2
11	22	40	63	+1
12	45	76	95	+2
13	33	59	84	+1
14	44	76	94	+1
15	36	65	86	+1
16	38	68	91	+5
17	35	65	89	-1
18	55	85	97	+3
19	49	79	96	+7
20	53	84	98	+4
21	29	54	80	+3
22	45	77	95	+2
23	36	63	87	+2
24	25	44	67	-3
25	36	63	87	+5
26	33	58	81	+9
27	36	66	88	+1
28	23	44	69	0
29	25	46	71	+1
30	48	80	96	-2
31	32	59	83	+4
32	29	53	77	+7
33	21	38	60	-4
34	49	80	96	-1
35	49	77	94	0
36	57	86	97	+10
37	57	87	98	+1
38	46	76	94	+19
39	54	84	96	+20
40	37	66	90	+19

Note: 1. All values are rounded to the nearest whole number.
2. "% of Change" column indicates positive and negative impacts relative to existing "walking" wind conditions.

Table 3: Occurrence of Various Wind Speed Ranges - Summer with Proposed Hotel

LOCATION	ACTIVITY/WIND SPEED RANGE Sitting 0-9 mph %	Standing 0-14 mph %	Walking 0-19 mph %	% of Change Relative to Existing (walking category)
41	42	72	92	+13
42	56	87	98	+10
43	53	84	98	+10
44	37	66	90	+18
45	22	42	67	N/A
46	19	36	58	N/A
47	27	49	74	N/A
48	25	49	74	N/A
49	35	64	87	N/A
50	24	43	67	N/A
51	30	56	81	N/A
Average	37	63	83	+5

Note: 1. All values are rounded to the nearest whole number.
2. "% of Change" column indicates positive and negative impacts relative to existing "walking" wind conditions.

Table 4: Occurrence of Various Wind Speed Ranges - Summer with Proposed Hotel

LOCATION	ACTIVITY/WIND SPEED RANGE		
	Sitting 0-9 mph %	Standing 0-14 mph %	Walking 0-19 mph %
1	36	54	73
2	50	74	91
3	44	67	85
4	54	78	92
5	41	59	75
6	46	65	81
7	45	68	86
8	45	66	83
9	40	61	79
10	50	73	90
11	38	55	72
12	55	76	91
13	45	66	83
14	47	72	89
15	44	68	86
16	43	67	86
17	46	70	87
18	51	76	91
19	53	76	90
20	55	78	93
21	40	61	80
22	49	73	89
23	47	69	86
24	44	62	79
25	49	70	87
26	42	60	78
27	47	70	87
28	38	57	75
29	39	58	77
30	59	83	95
31	44	63	81
32	43	61	78
33	42	58	74
34	64	86	97
35	57	80	94
36	51	72	89
37	63	85	96
38	47	66	82
39	47	66	82
40	41	61	79
41	43	64	83
42	49	73	89
43	45	66	84
44	44	63	80
Average	**46**	**68**	**85**

Note: All values are rounded to the nearest whole number

Table 5: Occurrence of Various Wind Speed Ranges - Winter - Existing Site Conditions

LOCATION	ACTIVITY/WIND SPEED RANGE Sitting 0-9 mph %	Standing 0-14 mph %	Walking 0-19 mph %	% of Change Relative to Existing (walking category)
1	37	56	75	+2
2	49	73	90	-1
3	45	67	85	0
4	53	75	90	+2
5	41	60	77	+2
6	46	67	85	+4
7	49	72	89	+3
8	53	77	92	+9
9	48	72	89	+10
10	51	73	90	0
11	38	56	73	+1
12	55	78	93	+2
13	46	67	84	+1
14	49	74	90	+1
15	46	69	86	0
16	46	70	88	+2
17	45	68	87	0
18	55	79	93	+2
19	59	81	94	+4
20	59	83	95	+2
21	41	62	81	+1
22	51	75	90	+1
23	49	71	88	+2
24	41	59	76	-3
25	50	71	87	0
26	45	66	83	+5
27	46	69	87	0
28	38	57	76	+1
29	40	59	78	+1
30	52	77	91	-4
31	47	68	85	+4
32	46	66	83	+9
33	37	54	71	+3
34	53	77	92	-5
35	57	79	93	-1
36	63	85	95	+6
37	67	89	98	+2
38	58	80	94	+12
39	60	83	95	+13
40	48	72	89	+10

Note: 1. All values are rounded to the nearest whole number.
2. "% of Change" column indicates positive and negative impacts relative to existing "walking" wind conditions.

Table 6: Occurrence of Various Wind Speed Ranges - Winter with Proposed Hotel

LOCATION	ACTIVITY/WIND SPEED RANGE Sitting 0-9 mph %	Standing 0-14 mph %	Walking 0-19 mph %	% of Change Relative to Existing (walking category)
41	53	77	92	+9
42	63	86	97	+8
43	61	84	96	+12
44	47	71	89	+5
45	37	56	75	N/A
46	35	52	70	N/A
47	42	62	80	N/A
48	39	59	79	N/A
49	44	68	86	N/A
50	43	61	78	N/A
51	46	67	85	N/A
Average	**48**	**70**	**85**	**+3**

Note: 1. All values are rounded to the nearest whole number.
2. "% of Change" column indicates positive and negative impacts relative to existing "walking" wind conditions.

Table 7: Occurrence of Various Wind Speed Ranges - Winter - Proposed

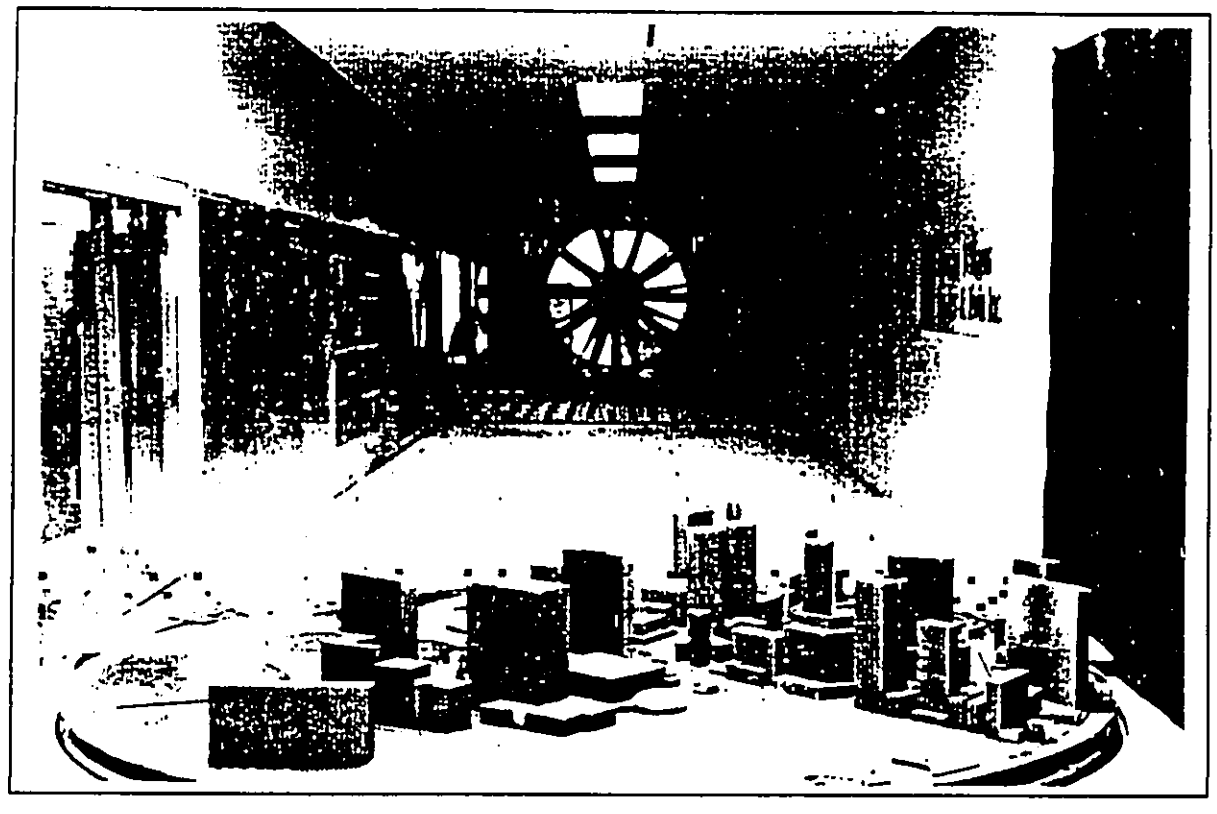
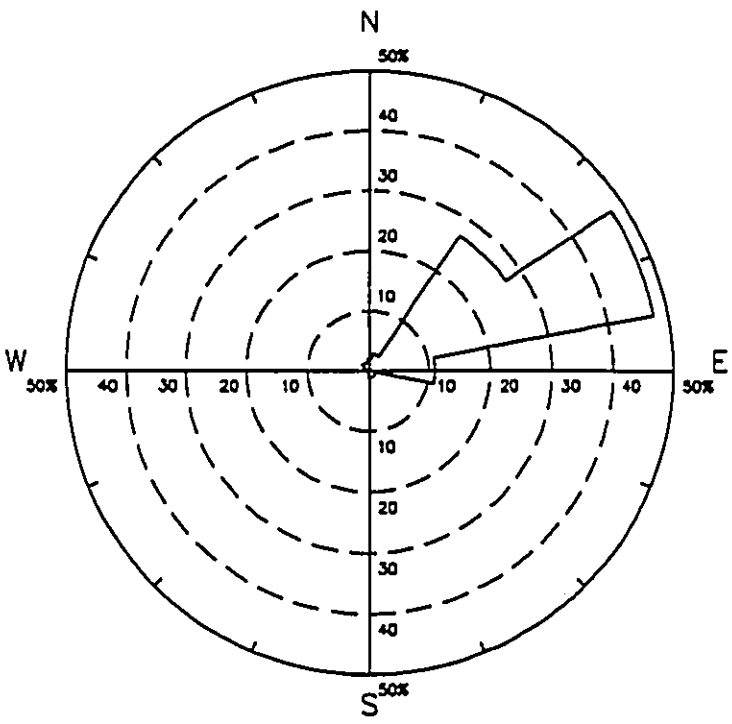
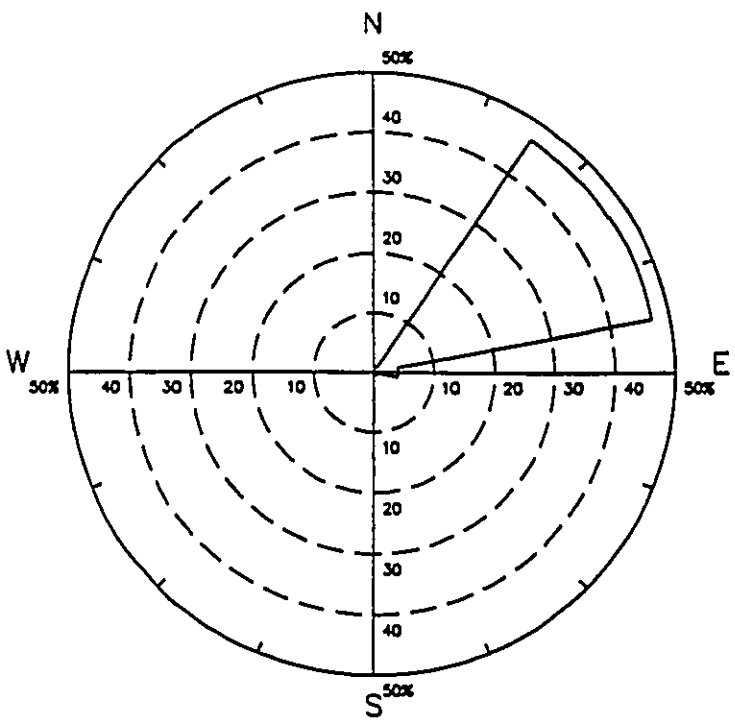


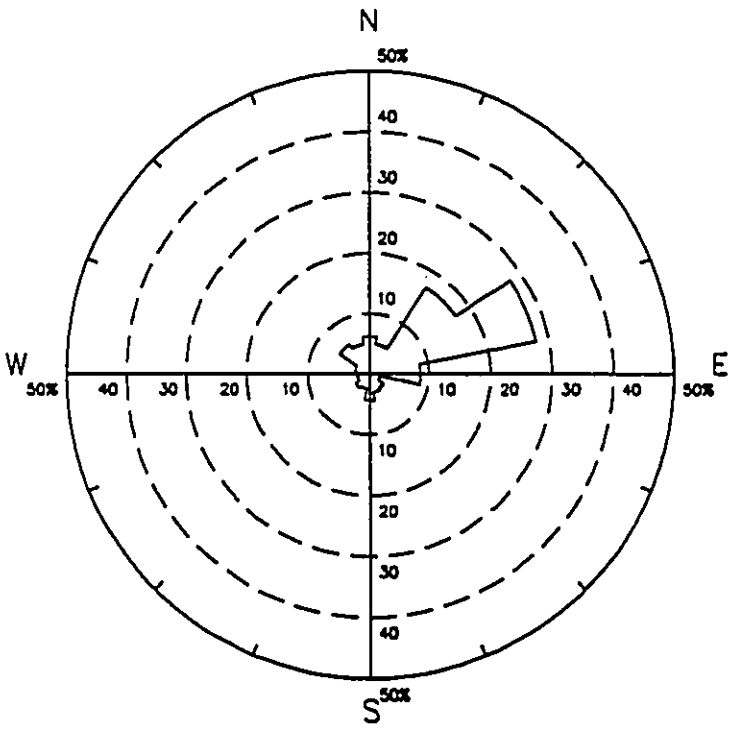
Figure 1: Microclimate Study Model
Waikikian Hotel, Honolulu, Hawaii



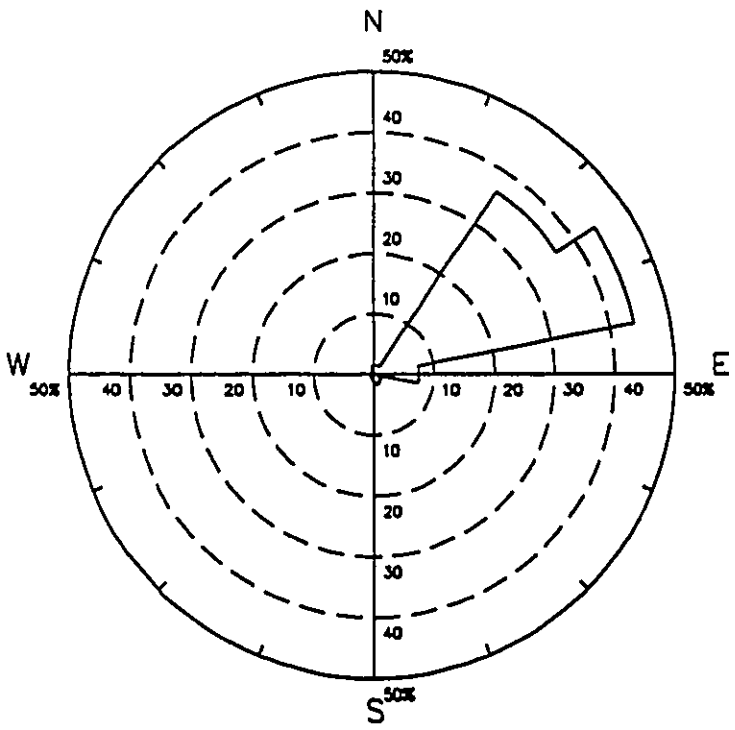
ALL SUMMER WINDS



WEEKLY SUMMER WINDS

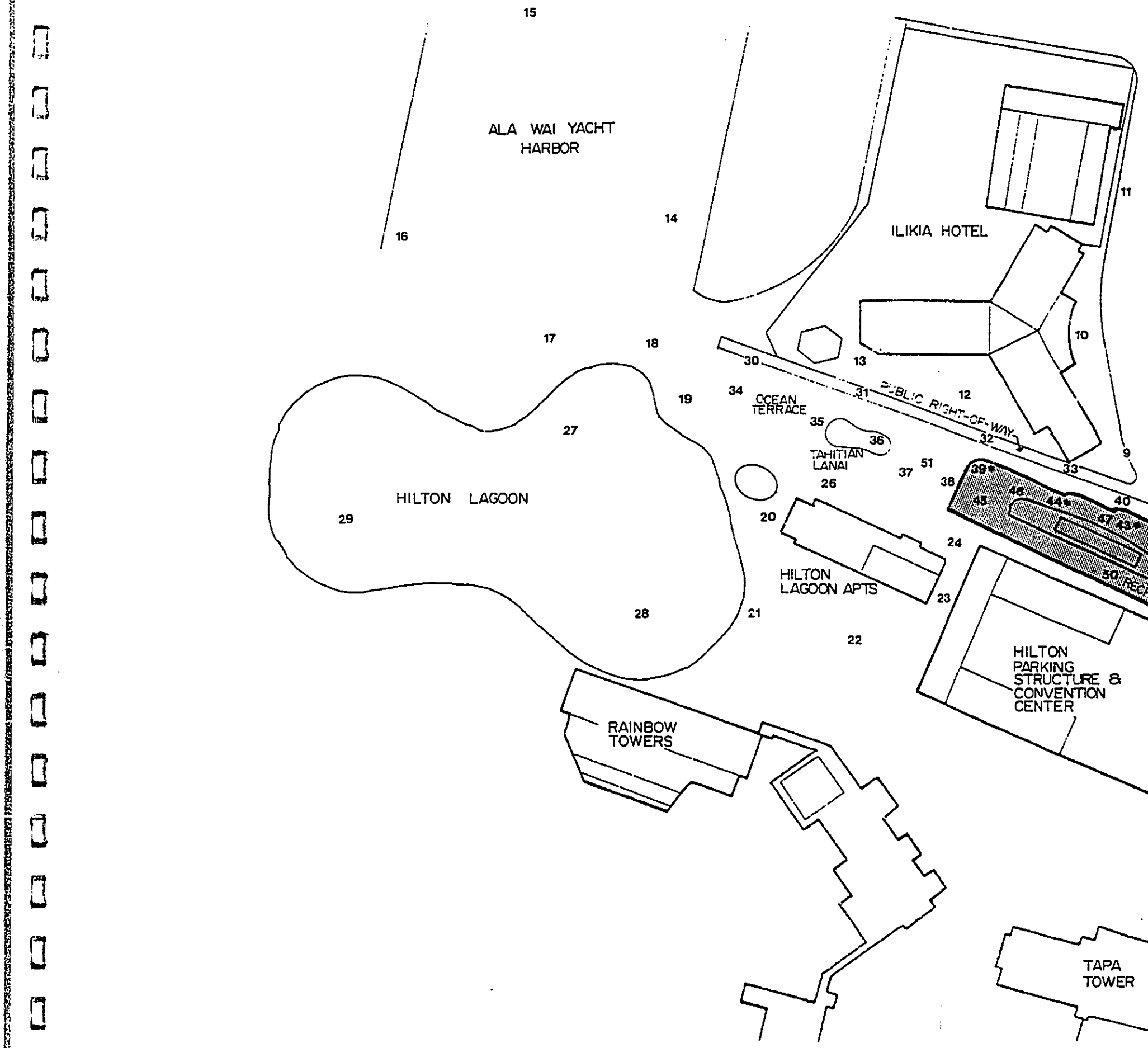


ALL WINTER WINDS



WEEKLY WINTER WINDS

Figure 2: Directional Distribution of Winds
Honolulu International Airport (1949 - 1987)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ILIKIA HOTEL
OCEAN TERRACE
PUBLIC RIGHT-OF-WAY
TAHITIAN LANAI
HILTON LAGOON
HILTON LAGOON APTS
HILTON PARKING STRUCTURE & CONVENTION CENTER
RAINBOW TOWERS
TAPA TOWER
15
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TAHITIAN LANAI
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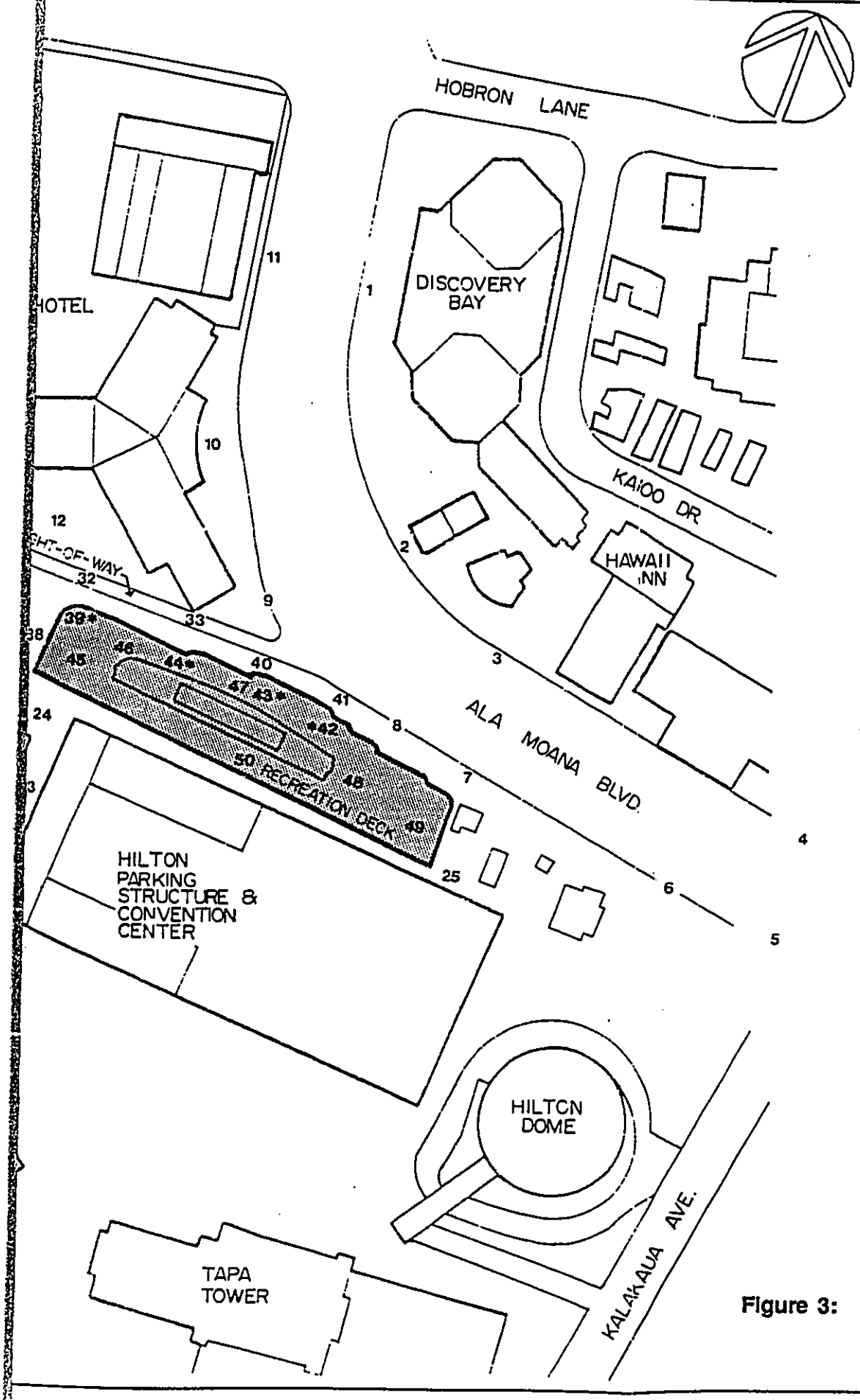


Figure 3: Location of Wind Speed Sensors
Approx. Scale 1"

APPENDIX A

WIND TUNNEL SIMULATION OF THE ATMOSPHERIC BOUNDARY LAYER

In the lowest layer of the atmosphere the wind is slowed down by the drag effect of the numerous features on the earth's surface such as vegetation, the ground roughness and man made structures. Within this atmospheric boundary layer the mean wind speed (mean implying an averaging time of about one hour) generally increase with height until the top of the layer is reached, at which point surface drag no longer plays a role. The height of the boundary layer is variable but, at least in strong winds, the best estimate is that it is about 600m or 2000ft (References 1 and 2).

In wind tunnel tests, it is important to simulate the mean wind speed profile, the wind's turbulence intensity and the length scale of turbulence within the atmospheric boundary layer. Figure 1 shows the boundary layer wind tunnel at the Guelph laboratory of Rowan Williams Davies & Irwin Inc. The model to be tested is mounted near the centre of the 2.4m (8 ft.) diameter turntable, 13m (42 ft.) downwind of the entrance to the working section. All major features and structures within the radius covered by the turntable are modelled in detail thereby assuring their effect on the wind flows around the site being studied is accurately simulated. Upstream of the turntable the terrain roughness is modelled by generalized roughness distributed over the working section's floor. In addition, specially designed turbulence generators are installed at the start of the working section. By varying the floor roughness and turbulence generators the effects of various types of terrain roughness upwind of the turntable can be reproduced at model scale. A detailed explanation of these techniques is given in Reference 3.

In strong winds, the mean speed profile in the atmospheric boundary layer is found to be well represented by the power law expression:

$$U = U_g (Z/Z_g)^{\alpha}$$

where

U = mean wind speed
U_g = gradient wind speed (value of U at the top of the boundary layer)
Z = height above ground
Z_g = depth of boundary layer
α = constant.

The exponent, α varies with terrain roughness. The following are representative values:

Type of Terrain	α
Open country with some vegetation	0.14
Suburban areas	0.25
Heavily built city cores	0.33

Figure 2 shows wind speed profiles generated in the boundary layer wind tunnel and compares them with the above power law expression. The wind tunnel speed profile can be seen to follow the power law relation well for each type of the boundary layer.

The wind turbulence intensity may be quantified by defining it as the ratio u′/U where u′ = root-mean-square of the velocity fluctuations in the direction of the mean wind velocity. The turbulence intensity increases as the terrain roughness increases and is generally greater near to the ground. Figure 3 shows the measured turbulence intensities for each of the simulated atmospheric boundary layers described above. Some full scale data are included for comparison (obtained from Ref. 4).

The integral scale of the turbulence, which can be thought of as an average size of turbulence eddy, is on the order of 150m (500 ft.) high up in the planetary boundary layer but decreases significantly near to the ground. For a 1:400 scale model of the appropriate integral scale of the wind tunnel turbulence should therefore be about 0.375m (1.25 ft.) in the upper part of the boundary layer. One way of measuring the integral scale is to measure the power spectrum, S, of longitudinal turbulence and comparing it in non-dimensional form with the theoretical von Karman spectrum,

$$\frac{nS}{u'^2} = \frac{4\,(nL/U)}{[1 + 70.78\,(nL/U)^2]^{5/6}}$$

which has been found to agree well with full scale spectra obtained in high winds. The measured spectrum is plotted against nL/U, the value of L being adjusted until a best fit to the von Karman expression is obtained. This value of L is then the integral scale of the turbulence in the wind tunnel. Figure 4 shows a typical comparison between the measured spectrum in the wind tunnel and the von Karman spectrum, and indicates the equivalent full scale value of L obtained. It corresponds well to typical full scale values and the shape of the wind tunnel turbulence spectrum closely follows the von Karman curve.

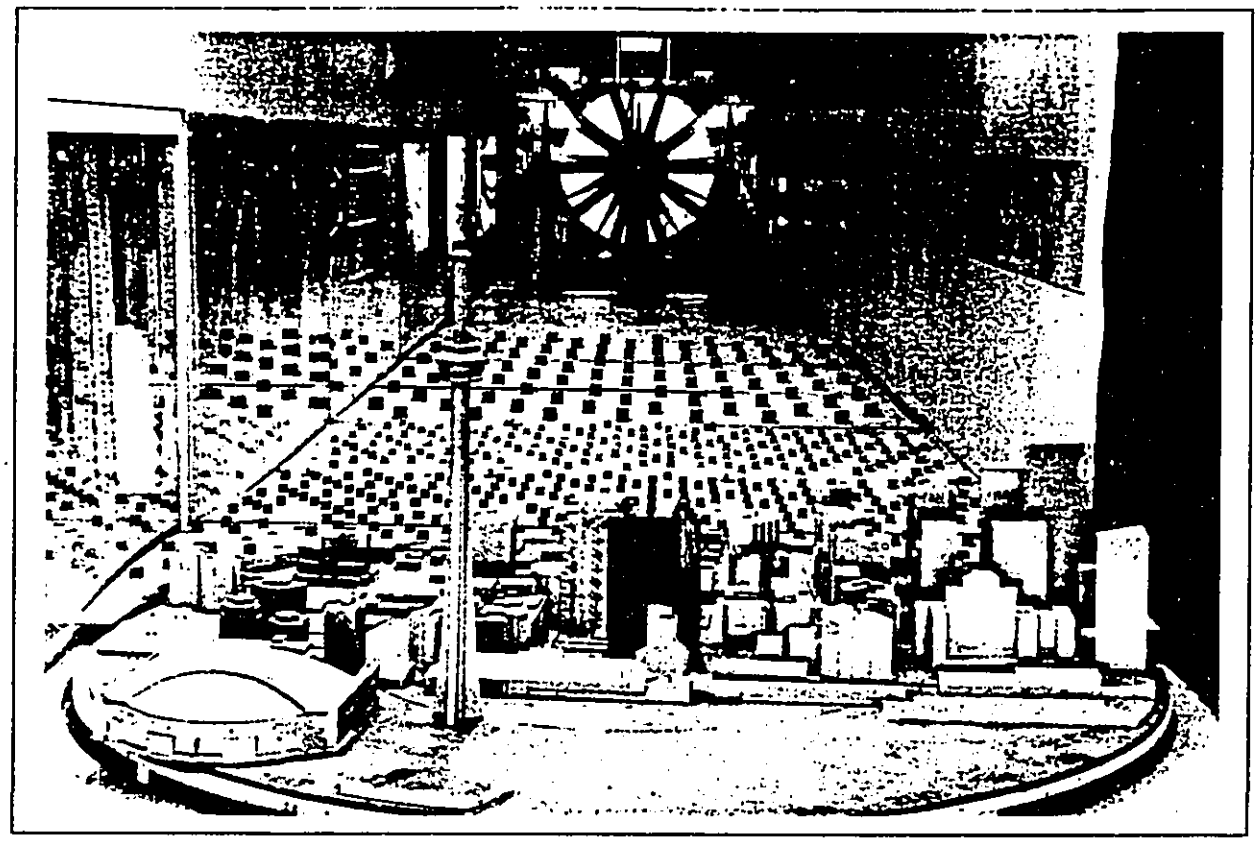
References

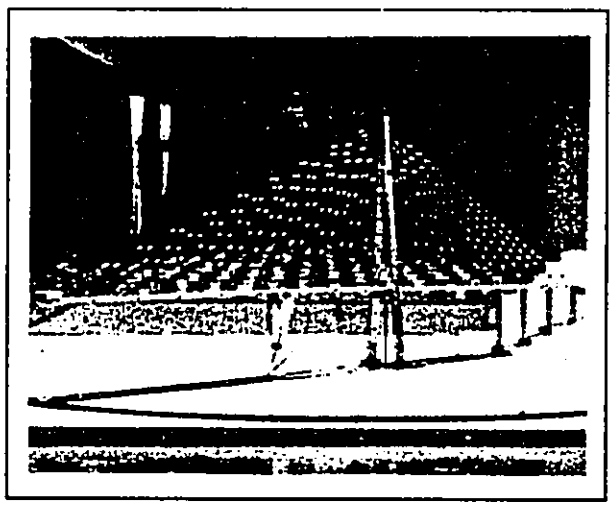
1. Counihan, J. — Adiabatic Atmospheric Boundary Layer: A Review of Data from the Period 1880-1972", Atmospheric Environment, V. 9, No. 10, pp. 871-905, 1975.

2. Snyder, W. H. — "Guideline for Fluid Modeling of Atmospheric Diffusion", U.S. Environmental Protection Agency, Report 600/8-81-009, 1981.

3. Irwin, P. A. — "Design and Use of Spires for Natural Wind Simulation", National Research Council of Canada, N.A.E. Report LTR-LA-233, 1979.

4. Engineering Sciences — "Characteristics of Atmospheric Turbulence Data Unit Near the Ground: Part III, Variations in Space and Time for Strong Winds," Engineering Sciences Data Item Number 750001, London, England, 1975.





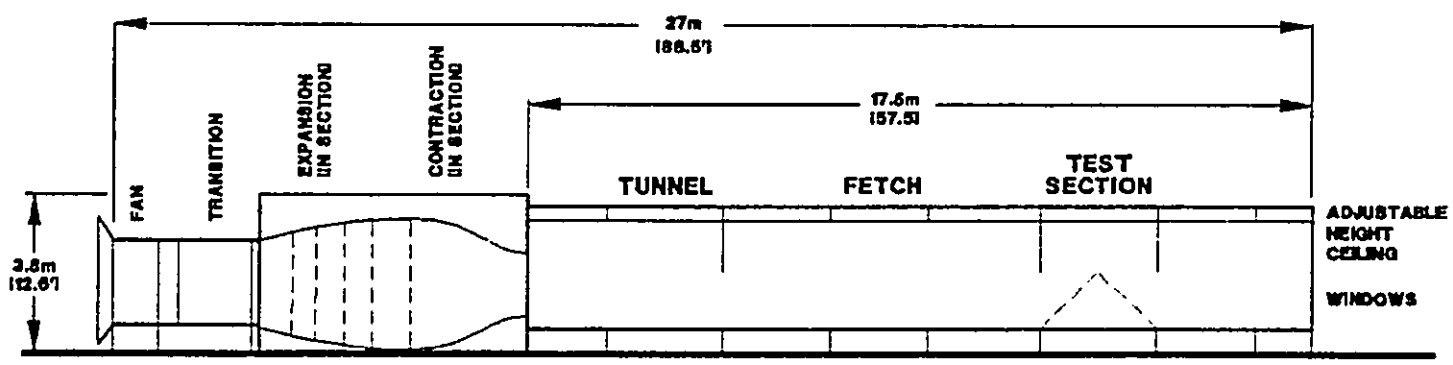
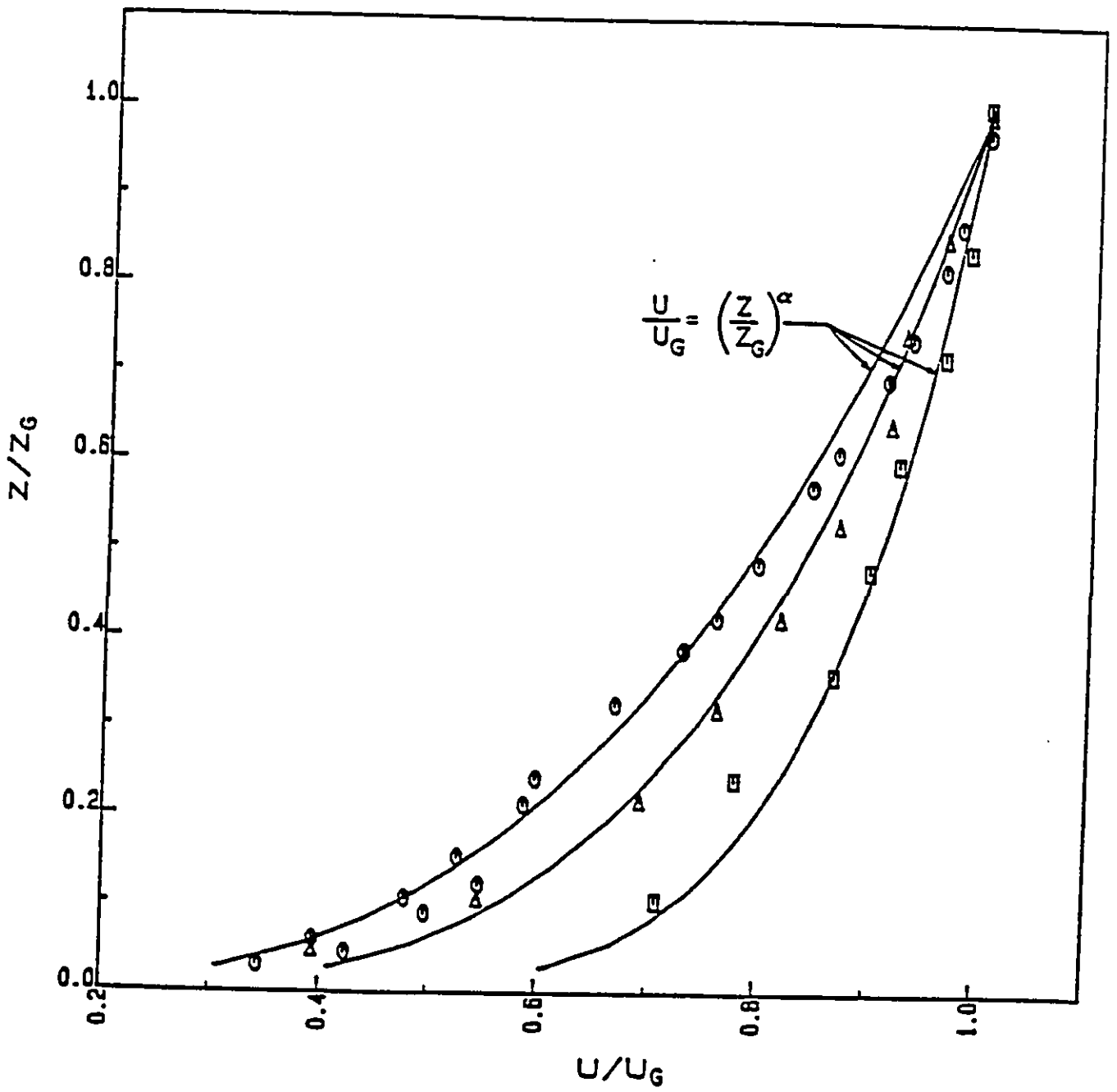
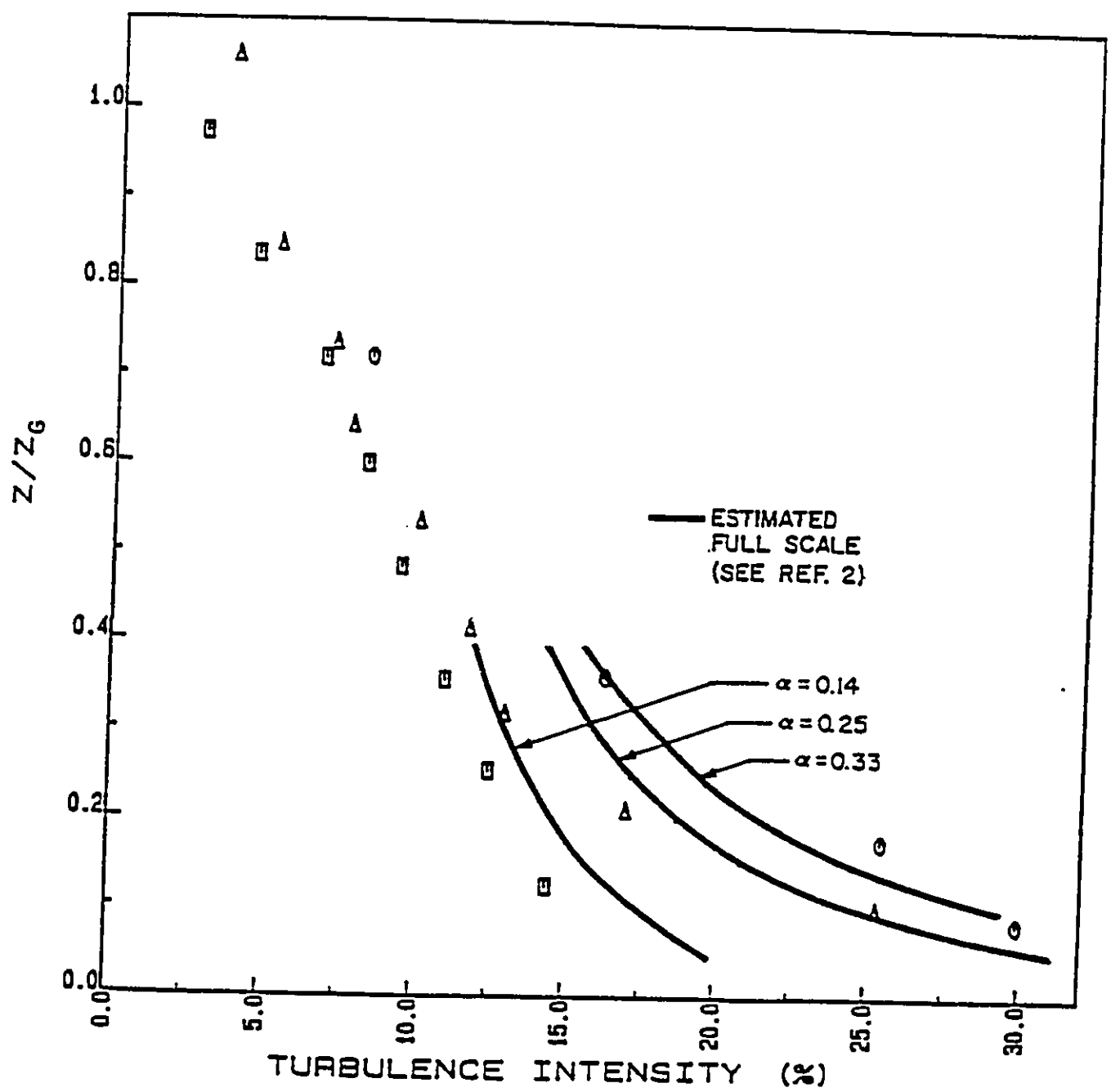


Figure 1: Guelph Boundary Layer Wind Tunnel Facility



SYMBOL	α	Z_G
○	.33	600m (2000ft)
△	.25	600m (2000ft)
□	.14	600m (2000ft)

Figure 2: Simulated Mean Wind Speed Profile



WIND SIMULATION DATA

SYMBOL	α	Z_G
⊙	.33	600m (2000 ft)
△	.25	600m (2000 ft)
□	.14	600m (2000 ft)

Figure 3: Simulated and Full Scale Longitudinal Turbulence Intensity Profiles

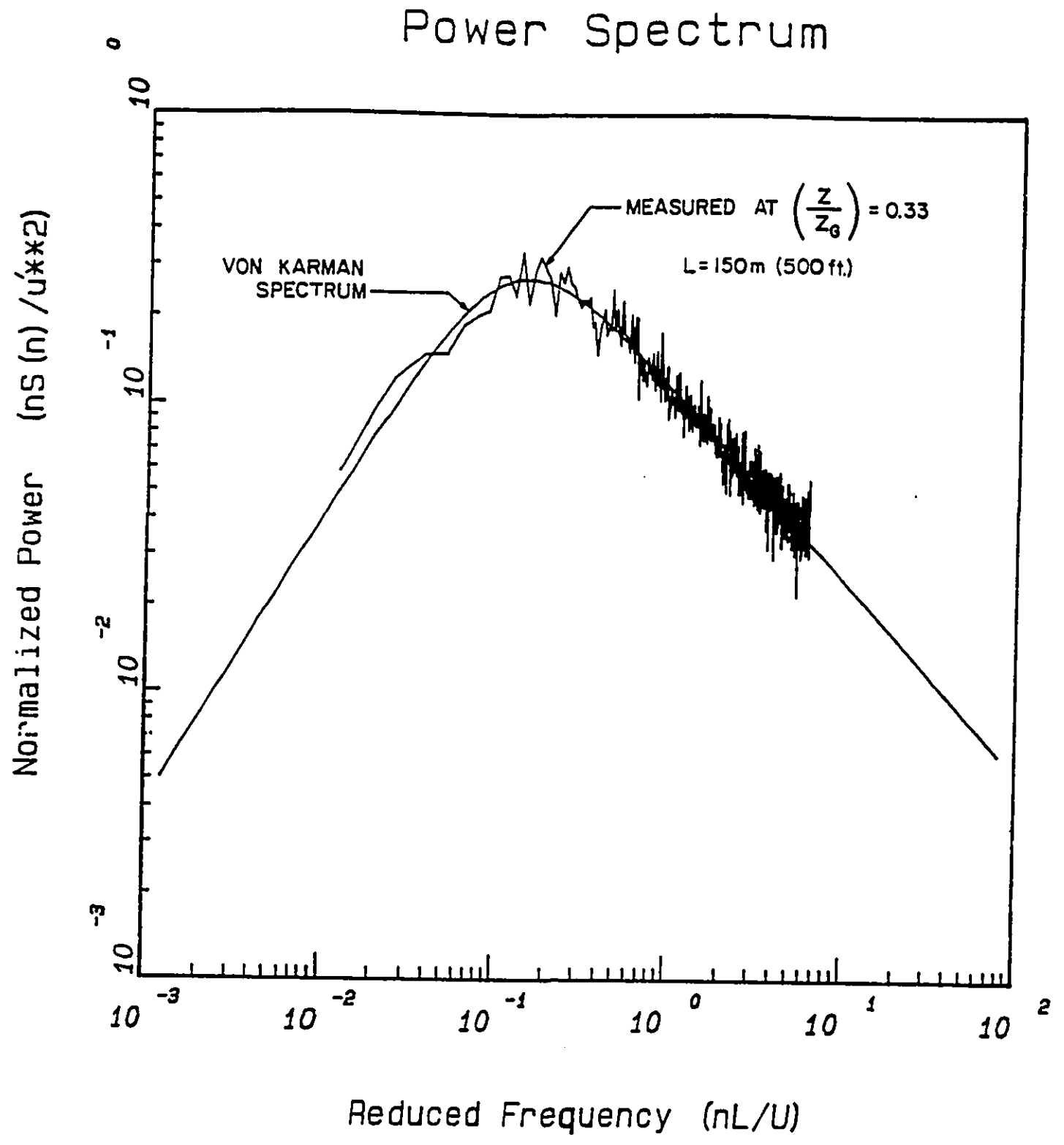


Figure 4: Typical Spectrum of the Longitudinal Wind Velocity Component Measured Over the Test Site for $\alpha = 0.33$

APPENDIX B

PEDESTRIAN LEVEL WIND STUDIES
TECHNIQUES

Techniques

In pedestrian level wind studies the wind speeds at the 6 foot (2 metres) height are measured at a number of locations around a model of the study building and its surroundings. The model tests take place in a simulation of the natural wind that is generated in Rowan Williams Davies & Irwin Inc.'s (RWDI) boundary layer wind tunnel. Wind profiles appropriate to the upwind fetch (i.e. open country, suburban or city core) for each tested wind azimuth are used.

To measure the wind speed an omnidirectional wind sensor of the type described in Reference 1 is installed at each measurement location. This is a pressure device, axisymmetric about its vertical axis, that provides a pressure difference related to the magnitude of the instantaneous local wind speed by a calibration formula. It provides speed data that are essentially identical to those obtained using hot-wire or hot film anemometers. However, it has the advantage of being a simpler, more robust device and consequently it is feasible to use a greater number of measurement locations by this method.

In the tests the time history of each wind sensor's output is recorded in digital form for a period equivalent to approximately one hour at full scale, the signal being digitized at a rate of 300 points per second. An example of a typical time history of wind speed is shown in Figure 1. It consists of a mean value, U, about which the instantaneous value fluctuates as gusts come and go. For simplicity in pedestrian level wind studies it is desirable to characterize a given wind condition by a single speed and since people tend to be sensitive to wind gusts rather than the mean speed, it is the gust speed, U, that is used in the present study. The gust speed, U, is determined by dividing the recorded wind speed history into ten equal intervals (each equivalent to approximately six minutes duration at full scale), finding the maximum speed for each interval and then computing the average of the ten maxima. The gust speed is then expressed as a fraction of the gradient wind speed, U_G, above the planetary boundary layer. This is done for a series of selected wind directions.

In order to deduce the frequency of occurrence of various wind speeds at full scale the wind data on U/U_G are then combined with a mathematical model of the gradient wind's probability distribution. This probability distribution is described by the Weibull formula which is found to give a good description of meteorological data. The Weibull formula is

$$P(U_G) = A_\theta \, e^{-(U_G/C_\theta)^{K_\theta}}$$

where

Θ = wind direction measured clockwise from true north;

P = probability (i.e. fraction of time) that the gradient wind exceeds the speed U_G and is, at the same time, blowing from a 22.5 degree sector centered on Θ;

A_θ = fraction of time the wind blows from the 22.5 degree sector centered on Θ;

and

C_θ and K_θ = constants for the sector.

The long term wind data for the region, usually from nearby airports, are analyzed in order to determine appropriate values of A_θ, C_θ and K_θ. The probability, P_{30}, of exceeding a selected gust speed of say, 30 mph (48 km/h), at a particular location is then

$$P_{30} = \Sigma_\theta \, P_\theta \, (U_1)$$

where $U_1 = 30/(U/U_G)$. The summation is over all angle sectors and the ratio U/U_G is provided by the wind tunnel data for each sector. For colder climate areas where there is an appreciable difference in seasonal mean temperatures, the analysis of long term meteorological data is divided into the summer and winter seasons. Seasonal changes in the prevailing winds can be accounted for with this method of analysis and then can be applied to comfort criteria appropriate for each season.

References:

1. Irwin, P.A. "A Simple Omnidirectional Sensor for Wind Tunnel Studies of Pedestrian Level Winds", Journal of Wind Engineering and Industrial Aerodynamics, 7, (1981), pp. 219-239.

APPENDIX C

PEDESTRIAN LEVEL WIND TEST DATA

The wind speed ratios presented in this appendix are a ratio of the wind speed at a sensor location (6 feet above the ground) to the typical mean wind speed found at a level of 6 feet in a suburban area. To better understand this, consider the wind speed ratios presented for Location 1 in Table C-1. The test data for Location 1 indicate that a mean wind speed ratio of 1.4 occurs for wind blowing from the east-northeast (ENE). This ratio indicates that for a east-northeast wind, the wind speed 6 feet above the ground would be 1.4 times that typically recorded in a suburban area.

The second wind speed ratio given in the tables presents the average of 10 maximum gust speeds (GUST) recorded during the tests. This ratio can be interpreted in a similar manner as described above for mean wind speed ratios (i.e. gusts up to 3.0 times the typical suburban mean wind speed will occur for east-northeast winds).

The next two columns for each location present a *weighting factor* for the summer (SUM) and the winter (WINT). These factors are a measure of how each wind direction affects the overall comfort level at each location. The weighting factor is derived from an analysis of the wind tunnel test data (gust wind speed ratios) and the wind records obtained from the local weather station. It is dependent upon each of the following:

i) the gust wind speed ratio measured at the sensor.
ii) the frequency of occurrence of the wind direction being examined.
iii) the strength of the wind for the wind direction being examined.

The weighting factors are expressed as a percentage. For instance, the summer weighting factor for Location 1 and a wind angle of ENE is presented as 84. This indicates that wind from the east-northeast accounts for 84% of the occurrences of high monthly gust wind speeds during the summer. The weighting factor allows one to look at each sensor location and immediately determine the wind direction(s) having the greatest impact on the general wind comfort level. For example, the most important wind direction for Location 1 during the summer is east-northeast (84%).

The wintertime weighting factors differ slightly from the summer values, due to a seasonal change in the prevailing wind directions and speed. As seen for Location 1, the east-northeast wind direction is again most critical (53%), followed by the west-southwest winds (10%).

EXISTING SITE CONDITIONS

LOCATION 1

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.6	3.1	2	2
NE	.9	2.2	3	4
ENE	1.4	3.0	84	53
E	1.7	3.0	9	9
ESE	1.8	2.8	0	1
SE	1.8	2.9	1	1
SSE	1.8	3.4	0	4
S	.9	2.9	0	1
SSW	1.7	3.3	0	1
SW	2.4	4.1	0	7
WSW	2.2	4.5	1	10
W	1.3	3.3	0	2
WNW	1.8	3.1	0	1
NW	1.4	2.7	0	0
NNW	2.0	3.0	0	1
N	1.9	3.1	0	2

LOCATION 2

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.8	1.9	1	0
NE	.8	1.9	42	17
ENE	.6	1.9	39	12
E	.7	1.9	4	2
ESE	1.3	2.6	2	2
SE	1.5	2.8	5	8
SSE	1.3	2.6	0	5
S	1.2	2.7	0	5
SSW	1.3	2.5	0	2
SW	1.3	2.6	0	3
WSW	2.3	4.0	2	22
W	1.8	3.6	0	11
WNW	1.6	3.1	0	3
NW	1.5	2.6	0	2
NNW	1.4	2.5	0	2
N	1.2	2.4	0	3

LOCATION 3

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.3	2.9	8	8
NE	.9	2.2	43	24
ENE	.7	2.1	22	12
E	1.4	2.5	18	13
ESE	1.9	3.3	3	5
SE	1.5	3.1	4	7
SSE	1.0	2.7	0	4
S	1.2	2.9	0	5
SSW	2.1	3.7	1	8
SW	1.7	3.2	0	5
WSW	.9	2.3	0	0
W	.7	2.0	0	0
WNW	.8	2.0	0	0
NW	.6	2.0	0	0
NNW	1.0	2.6	0	2
N	1.1	2.9	1	5

PROPOSED SITE CONDITIONS

LOCATION 1

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.6	3.0	3	3
NE	1.0	2.3	10	8
ENE	1.4	2.8	76	43
E	1.7	2.8	8	7
ESE	1.8	2.9	1	1
SE	1.6	2.8	1	1
SSE	1.0	2.6	0	1
S	1.6	3.5	0	5
SSW	1.5	3.2	0	1
SW	2.1	4.0	0	7
WSW	2.1	4.4	1	12
W	1.4	3.4	0	3
WNW	1.8	3.0	0	1
NW	1.5	2.7	0	0
NNW	2.0	3.2	0	2
N	1.9	3.2	0	4

LOCATION 2

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	1.8	0	0
NE	1.0	2.1	66	28
ENE	.7	1.8	12	4
E	.7	2.1	7	4
ESE	1.5	2.7	2	3
SE	1.7	3.0	5	8
SSE	1.1	2.8	1	7
S	.9	2.2	0	1
SSW	1.3	2.6	0	1
SW	1.5	3.0	0	5
WSW	2.3	4.1	2	20
W	1.8	3.6	0	10
WNW	1.5	3.1	0	2
NW	1.3	2.6	0	2
NNW	1.5	2.6	0	2
N	1.0	2.2	0	1

LOCATION 3

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.1	2.7	6	5
NE	.8	2.1	28	17
ENE	.7	2.2	32	17
E	1.4	2.6	23	17
ESE	2.0	3.2	2	4
SE	1.7	3.1	4	7
SSE	1.9	3.5	3	14
S	1.8	3.6	1	14
SSW	1.1	2.5	0	1
SW	.9	2.1	0	0
WSW	.9	2.3	0	0
W	.7	2.0	0	0
WNW	.7	1.9	0	0
NW	.8	2.2	0	0
NNW	1.0	2.2	0	0
N	.9	2.3	0	1

TABLE C-1

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 4

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.5	0	0
NE	.6	1.5	9	4
ENE	.7	1.8	30	10
E	1.1	2.4	40	22
ESE	1.3	2.6	2	3
SE	1.2	2.8	5	8
SSE	1.2	3.3	6	18
S	1.2	3.0	1	12
SSW	1.3	3.6	2	13
SW	.8	2.1	0	1
WSW	.7	1.8	0	0
W	.7	1.8	0	0
WNW	.9	1.9	0	0
NW	.6	2.3	0	1
NNW	.9	2.5	0	3
N	1.0	2.2	0	2

LOCATION 5

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.8	2.0	0	0
NE	1.2	2.9	42	36
ENE	1.3	2.9	56	51
E	1.5	2.7	1	3
ESE	1.5	2.7	0	1
SE	1.2	2.6	0	1
SSE	1.4	3.4	0	5
S	1.1	3.2	0	2
SSW	1.6	3.4	0	2
SW	.7	2.2	0	0
WSW	.7	1.8	0	0
W	1.1	2.5	0	0
WNW	1.6	2.7	0	0
NW	1.3	2.4	0	0
NNW	1.0	2.0	0	0
N	.9	1.8	0	0

LOCATION 6

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	1.8	0	0
NE	.7	2.0	4	7
ENE	1.2	2.8	90	72
E	1.6	2.7	5	8
ESE	1.6	2.6	0	1
SE	1.4	2.7	1	2
SSE	1.2	3.0	0	4
S	1.0	2.2	0	0
SSW	1.5	3.8	0	6
SW	.7	1.9	0	0
WSW	.6	1.8	0	0
W	1.1	2.7	0	1
WNW	1.1	2.4	0	0
NW	1.1	2.3	0	0
NNW	1.1	2.2	0	0
N	.6	1.8	0	0

PROPOSED SITE CONDITIONS

LOCATION 4

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.5	0	0
NE	.7	1.6	5	5
ENE	.7	2.1	68	38
E	1.1	2.4	20	17
ESE	1.2	2.4	1	2
SE	1.1	2.6	3	5
SSE	1.3	3.3	3	16
S	1.4	3.2	1	14
SSW	1.0	2.2	0	1
SW	1.1	2.1	0	1
WSW	.7	1.6	0	0
W	.5	1.5	0	0
WNW	.8	1.9	0	0
NW	.8	2.0	0	0
NNW	.9	2.3	0	2
N	.7	1.9	0	1

LOCATION 5

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	2.0	0	0
NE	1.1	2.8	49	41
ENE	1.3	2.8	48	45
E	1.5	2.7	2	5
ESE	1.3	2.6	0	1
SE	1.1	2.6	0	1
SSE	1.2	3.0	0	3
S	1.0	2.8	0	1
SSW	1.4	3.0	0	1
SW	.9	2.1	0	0
WSW	.7	1.7	0	0
W	.9	2.2	0	0
WNW	1.6	2.6	0	0
NW	1.5	2.9	0	1
NNW	1.3	2.6	0	0
N	1.1	2.4	0	1

LOCATION 6

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	1.7	0	0
NE	.8	2.1	20	17
ENE	1.1	2.3	58	42
E	1.5	2.7	20	20
ESE	1.7	2.7	1	2
SE	1.4	2.4	1	2
SSE	1.0	2.8	0	5
S	1.3	2.7	0	4
SSW	.9	2.5	0	1
SW	.7	1.7	0	0
WSW	.7	2.0	0	0
W	1.0	2.4	0	1
WNW	1.2	2.3	0	0
NW	1.5	2.7	0	1
NNW	1.5	3.0	0	4
N	1.1	2.3	0	1

TABLE C-2

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 7

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.9	2.3	1	1
NE	.6	2.3	56	39
ENE	1.1	2.1	25	21
E	1.5	2.5	14	15
ESE	1.1	2.3	0	1
SE	.9	2.4	1	2
SSE	.8	2.2	0	1
S	.8	2.1	0	1
SSW	1.2	2.8	0	2
SW	.9	2.3	0	1
WSW	1.3	2.9	0	3
W	1.1	2.7	0	2
WNW	1.6	3.3	0	3
NW	1.6	2.8	0	2
NNW	1.5	2.7	0	2
N	1.2	2.4	0	2

LOCATION 8

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.0	1.8	0	0
NE	.7	2.0	8	8
ENE	1.1	2.5	74	53
E	1.3	2.8	13	19
ESE	.7	2.0	0	0
SE	.7	2.0	0	0
SSE	.9	2.4	0	2
S	1.3	2.9	0	4
SSW	2.1	3.4	0	5
SW	1.6	2.6	0	1
WSW	1.4	2.9	0	3
W	1.1	2.9	0	2
WNW	1.2	2.5	0	1
NW	1.2	2.3	0	0
NNW	1.1	2.2	0	0
N	1.2	2.4	0	2

LOCATION 9

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.3	2.5	1	1
NE	1.0	2.6	43	33
ENE	.9	2.6	53	42
E	.9	2.3	1	1
ESE	1.1	2.8	1	1
SE	1.3	2.8	1	2
SSE	2.2	3.5	0	9
S	1.1	2.7	0	1
SSW	.8	1.9	0	0
SW	.9	1.9	0	0
WSW	1.4	2.8	0	1
W	1.5	3.0	0	2
WNW	1.6	2.9	0	1
NW	1.4	2.8	0	1
NNW	1.7	2.9	0	2
N	1.7	3.0	0	3

PROPOSED SITE CONDITIONS

LOCATION 7

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.9	1.8	0	0
NE	.6	2.1	52	30
ENE	.8	1.9	25	14
E	1.2	2.2	10	9
ESE	1.2	2.7	2	3
SE	1.0	2.3	1	2
SSE	1.9	3.7	7	23
S	.8	2.1	0	1
SSW	1.8	2.9	0	3
SW	1.5	2.6	0	3
WSW	1.3	2.4	0	2
W	1.0	2.4	0	1
WNW	1.5	2.7	0	1
NW	1.5	2.4	0	1
NNW	1.7	2.7	0	3
N	1.4	2.3	0	2

LOCATION 8

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.9	2.3	5	3
NE	.7	2.0	61	28
ENE	.7	1.6	3	1
E	1.1	2.2	16	10
ESE	1.2	2.4	1	2
SE	1.5	3.3	8	15
SSE	1.1	2.6	0	7
S	1.4	2.4	0	3
SSW	2.3	3.4	1	9
SW	2.0	3.2	0	9
WSW	1.5	2.7	1	4
W	1.0	2.5	0	2
WNW	1.1	2.1	0	0
NW	1.1	2.0	0	0
NNW	1.3	2.5	0	2
N	1.2	2.2	0	2

LOCATION 9

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.2	2.2	1	1
NE	1.0	2.5	93	65
ENE	.7	1.9	3	4
E	.6	2.0	1	2
ESE	.8	2.1	0	0
SE	1.1	2.7	2	4
SSE	1.2	2.6	0	4
S	.9	1.9	0	0
SSW	1.0	2.1	0	0
SW	.9	1.9	0	0
WSW	1.3	2.6	0	2
W	1.5	2.9	0	3
WNW	1.7	3.0	0	2
NW	1.3	2.5	0	1
NNW	1.8	3.3	0	7
N	1.5	2.6	0	4

TABLE C-3

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 10

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.5	1.8	0	0
NE	.7	2.2	60	41
ENE	.5	2.0	23	18
E	.9	2.3	12	13
ESE	.8	2.2	1	1
SE	.8	2.2	1	1
SSE	1.2	3.0	1	11
S	.8	2.0	0	1
SSW	.8	1.9	0	0
SW	.7	1.8	0	0
WSW	1.3	2.7	0	4
W	1.4	2.8	0	4
WNW	1.3	2.5	0	1
NW	1.2	2.6	0	2
NNW	1.2	2.4	0	2
N	.7	1.8	0	0

LOCATION 11

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.	3.1	1	2
NE	.6	2.4	6	
ENE	1.3	3.1	79	61
E	1.7	3.3	13	16
ESE	1.8	3.2	1	1
SE	1.5	2.7	0	0
SSE	1.3	2.7	0	1
S	.7	2.0	0	0
SSW	1.5	2.7	0	0
SW	1.4	2.8	0	0
WSW	2.4	3.9	0	4
W	1.9	4.0	0	4
WNW	1.4	2.8	0	0
NW	1.1	2.1	0	0
NNW	1.6	2.6	0	0
N	1.6	2.8	0	1

LOCATION 12

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.4	1.3	0	0
NE	.6	1.6	8	5
ENE	1.0	1.9	55	22
E	1.1	2.2	22	14
ESE	1.1	2.8	3	4
SE	1.1	2.5	3	4
SSE	1.9	3.3	5	18
S	1.4	3.2	2	14
SSW	1.2	2.6	0	2
SW	1.2	2.7	0	4
WSW	1.1	2.9	1	7
W	1.3	2.5	0	3
WNW	1.4	2.7	0	2
NW	.9	1.8	0	0
NNW	.7	1.5	0	0
N	.5	1.3	0	0

PROPOSED SITE CONDITIONS

LOCATION 10

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	2.1	1	1
NE	.8	2.2	59	45
ENE	.8	2.1	33	31
E	.7	2.2	6	9
ESE	.8	2.3	1	1
SE	.7	1.9	0	0
SSE	.4	1.3	0	0
S	.7	1.7	0	0
SSW	.9	2.0	0	0
SW	.8	1.9	0	0
WSW	1.3	2.7	0	4
W	1.3	2.8	0	4
WNW	1.3	2.6	0	1
NW	1.2	2.3	0	1
NNW	1.1	2.3	0	1
N	.6	1.8	0	0

LOCATION 11

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
[illegible]	1.4	3.0	2	2
NE	.9	2.6	22	20
ENE	1.2	3.0	63	49
E	1.6	3.2	12	14
ESE	1.8	3.3	1	2
SE	1.5	2.6	0	1
SSE	.4	1.6	0	0
S	1.2	2.6	0	0
SSW	1.5	2.7	0	0
SW	1.2	2.6	0	0
WSW	2.3	4.0	0	6
W	1.9	4.0	0	5
WNW	1.2	2.8	0	0
NW	1.3	2.2	0	0
NNW	1.5	2.4	0	0
N	1.6	2.9	0	1

LOCATION 12

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.6	0	0
NE	.7	1.7	24	10
ENE	1.0	1.8	41	12
E	1.0	2.0	12	6
ESE	1.0	2.0	1	1
SE	1.2	2.8	6	10
SSE	1.6	3.4	9	21
S	1.1	3.0	2	13
SSW	1.2	2.3	0	1
SW	1.2	2.5	0	3
WSW	1.3	3.0	1	9
W	1.5	2.7	0	4
WNW	1.6	2.7	0	2
NW	.7	1.9	0	0
NNW	1.0	2.5	0	3
N	.5	1.3	0	0

TABLE C-4

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 13

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.3	1.4	0	0
NE	.4	1.6	1	1
ENE	1.0	2.3	48	16
E	1.4	2.9	41	23
ESE	1.7	3.3	2	4
SE	1.6	3.2	4	6
SSE	1.0	2.7	0	2
S	1.7	3.4	1	8
SSW	1.6	3.0	0	1
SW	2.4	3.7	0	8
WSW	2.7	3.7	1	8
W	2.9	4.2	0	10
WNW	2.3	4.7	0	6
NW	1.1	3.5	0	5
NNW	.8	2.1	0	0
N	.7	1.9	0	0

LOCATION 14

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.2	3.0	15	9
NE	.5	1.7	11	3
ENE	.7	1.8	15	2
E	.6	2.2	14	4
ESE	1.6	3.4	4	6
SE	1.6	3.5	9	13
SSE	2.0	4.4	19	31
S	2.2	3.2	1	9
SSW	1.6	2.6	0	1
SW	1.7	2.6	0	2
WSW	1.4	2.5	0	1
W	1.6	2.6	0	2
WNW	1.8	2.9	0	2
NW	1.5	2.8	0	2
NNW	1.5	2.8	0	2
N	1.2	3.2	2	9

LOCATION 15

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	2.9	3	4
NE	.9	2.8	92	59
ENE	.7	1.8	0	0
E	.6	2.1	0	1
ESE	1.0	2.7	1	1
SE	1.1	2.4	0	1
SSE	2.2	4.2	4	19
S	2.1	3.1	0	4
SSW	1.8	2.9	0	1
SW	1.6	2.7	0	1
WSW	1.8	2.8	0	1
W	1.8	2.8	0	1
WNW	1.6	2.8	0	1
NW	1.5	2.6	0	0
NNW	1.7	2.9	0	2
N	1.3	2.8	0	3

PROPOSED SITE CONDITIONS

LOCATION 13

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.4	0	0
NE	.9	1.9	14	6
ENE	1.0	2.3	74	25
E	1.0	2.1	2	1
ESE	.7	1.6	0	0
SE	1.1	3.2	4	6
SSE	2.0	3.7	4	15
S	1.3	3.2	1	7
SSW	1.4	2.9	0	1
SW	2.1	3.5	0	7
WSW	2.7	3.6	1	8
W	2.7	4.1	0	10
WNW	2.0	4.4	0	6
NW	1.1	3.4	0	4
NNW	.8	1.9	0	0
N	.2	1.4	0	0

LOCATION 14

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.3	2.8	14	8
NE	.6	1.9	42	12
ENE	.5	1.6	3	0
E	.8	2.0	8	2
ESE	1.2	2.8	2	3
SE	1.3	3.2	7	10
SSE	1.9	4.0	14	25
S	2.2	3.5	4	15
SSW	1.5	2.5	0	1
SW	1.4	2.5	0	1
WSW	1.4	2.5	0	1
W	1.6	2.6	0	2
WNW	1.8	2.8	0	1
NW	1.7	3.0	0	3
NNW	1.6	3.2	1	7
N	1.1	3.0	2	8

LOCATION 15

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.8	2.7	2	2
NE	.6	2.7	90	57
ENE	.3	1.7	0	0
E	.6	2.4	3	5
ESE	1.1	2.9	1	2
SE	1.0	2.7	1	2
SSE	2.1	4.0	3	17
S	2.0	3.0	0	4
SSW	1.7	2.7	0	1
SW	1.6	2.6	0	1
WSW	1.6	2.6	0	1
W	1.8	2.7	0	1
WNW	1.6	2.7	0	1
NW	1.5	2.6	0	1
NNW	1.7	2.8	0	1
N	1.3	2.9	0	3

TABLE C-5

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 16

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.2	2.9	9	8
NE	.8	2.1	43	22
ENE	.8	2.1	32	14
E	1.0	2.3	7	5
ESE	1.1	2.4	1	1
SE	1.5	3.0	4	6
SSE	2.3	3.2	1	10
S	2.3	3.2	1	9
SSW	2.0	2.9	0	2
SW	2.0	2.9	0	4
WSW	1.8	2.9	0	3
W	1.6	2.6	0	2
WNW	1.9	2.9	0	2
NW	1.6	2.7	0	2
NNW	1.9	2.8	0	3
N	1.5	2.9	1	6

LOCATION 17

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.0	2.6	5	4
NE	.9	2.2	59	24
ENE	.6	1.7	2	0
E	1.2	2.4	12	6
ESE	1.1	2.7	1	2
SE	1.2	2.7	2	3
SSE	2.4	4.5	15	29
S	2.4	3.4	1	10
SSW	2.1	3.1	0	3
SW	1.7	2.8	0	3
WSW	1.9	2.9	0	3
W	1.8	3.0	0	3
WNW	2.0	3.1	0	2
NW	1.7	2.8	0	2
NNW	1.7	2.9	0	2
N	1.3	2.8	1	4

LOCATION 18

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	2.3	5	2
NE	.5	2.0	65	19
ENE	.6	1.5	2	0
E	.7	1.8	2	0
ESE	.7	2.1	1	0
SE	.7	2.2	1	1
SSE	1.4	3.8	12	22
S	2.3	4.0	8	25
SSW	1.6	2.6	0	1
SW	1.1	2.2	0	1
WSW	1.4	2.4	0	1
W	1.9	2.8	0	3
WNW	2.3	3.4	0	3
NW	1.8	3.2	0	5
NNW	1.9	3.2	0	6
N	1.7	3.3	3	11

PROPOSED SITE CONDITIONS

LOCATION 16

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.3	2.8	11	8
NE	.6	1.7	8	4
ENE	.6	2.0	43	14
E	1.1	2.4	21	11
ESE	1.2	2.8	2	3
SE	1.6	3.1	6	10
SSE	2.3	3.2	2	11
S	2.2	3.0	1	8
SSW	2.0	2.9	0	3
SW	1.8	2.9	0	4
WSW	1.9	2.9	1	4
W	1.5	2.6	0	2
WNW	1.9	2.9	0	2
NW	1.7	2.7	0	2
NNW	1.9	2.9	0	4
N	1.4	3.0	1	7

LOCATION 17

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.1	2.4	3	1
NE	.6	2.0	34	13
ENE	.6	1.9	15	4
E	1.2	2.5	24	12
ESE	1.2	2.6	1	1
SE	1.3	2.7	2	3
SSE	2.5	4.5	16	30
S	2.4	3.4	1	11
SSW	1.8	2.9	0	2
SW	1.6	2.7	0	2
WSW	1.9	2.9	0	3
W	1.8	3.0	0	3
WNW	2.0	3.0	0	2
NW	1.7	2.8	0	2
NNW	1.7	3.0	0	4
N	1.3	2.8	1	4

LOCATION 18

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.9	2.3	11	3
NE	.2	1.4	5	0
ENE	.4	1.5	7	0
E	.9	2.1	30	4
ESE	.9	2.4	2	1
SE	.9	3.0	9	9
SSE	1.4	3.4	12	16
S	2.4	4.0	13	28
SSW	1.7	2.7	1	2
SW	1.1	2.2	0	1
WSW	1.6	2.6	1	2
W	1.9	2.7	0	3
WNW	2.2	3.2	0	3
NW	2.0	3.4	2	9
NNW	2.0	3.3	2	9
N	1.6	3.0	4	9

TABLE C-6

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 19

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.6	0	0
NE	.9	2.7	99	69
ENE	.7	1.7	0	1
E	.6	1.7	0	0
ESE	.7	2.0	0	0
SE	.8	1.8	0	0
SSE	1.5	3.5	1	13
S	1.7	3.5	1	13
SSW	1.5	2.7	0	1
SW	1.3	2.2	0	0
WSW	1.4	2.4	0	1
W	1.3	2.1	0	0
WNW	.9	2.4	0	0
NW	.9	2.1	0	0
NNW	.8	2.1	0	0
N	.5	1.7	0	0

LOCATION 20

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.5	1.4	0	0
NE	.7	1.9	48	26
ENE	.8	1.8	34	17
E	.7	1.8	3	2
ESE	.9	2.8	3	5
SE	1.0	2.6	4	7
SSE	1.2	2.8	1	11
S	1.5	3.0	2	14
SSW	1.1	2.6	0	3
SW	.7	1.8	0	0
WSW	1.1	2.1	0	1
W	1.4	2.6	0	4
WNW	1.4	2.9	0	3
NW	1.0	2.5	0	2
NNW	.8	2.1	0	1
N	.7	1.8	0	1

LOCATION 21

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.8	1.8	0	0
NE	1.4	2.8	75	45
ENE	1.1	2.2	5	4
E	1.4	2.8	9	9
ESE	2.3	4.1	3	6
SE	2.0	3.7	4	9
SSE	1.4	3.1	0	4
S	1.1	2.9	0	2
SSW	2.0	3.9	0	6
SW	2.2	3.2	0	3
WSW	2.1	2.9	0	1
W	2.5	3.2	0	2
WNW	2.1	3.1	0	1
NW	1.6	3.7	0	5
NNW	1.2	3.0	0	2
N	.6	2.2	0	0

PROPOSED SITE CONDITIONS

LOCATION 19

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.4	1.4	0	0
NE	.5	1.4	3	2
ENE	.6	1.9	79	31
E	.7	1.8	5	3
ESE	1.1	2.4	2	3
SE	.7	2.1	2	2
SSE	1.0	2.8	3	13
S	1.5	3.4	5	25
SSW	1.4	2.4	0	2
SW	1.2	2.3	0	2
WSW	1.6	2.5	1	4
W	1.7	2.6	0	4
WNW	.7	2.2	0	1
NW	.6	1.7	0	0
NNW	1.0	2.3	0	3
N	.1	1.4	0	0

LOCATION 20

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.5	1.4	0	0
NE	.5	1.4	12	4
ENE	.5	1.7	59	14
E	.7	1.8	10	4
ESE	1.0	2.8	5	7
SE	1.0	2.6	7	10
SSE	1.0	2.3	1	6
S	1.6	3.1	5	20
SSW	1.1	2.5	0	3
SW	.7	1.8	0	0
WSW	1.4	2.3	1	3
W	1.7	2.7	0	7
WNW	1.7	3.2	0	5
NW	1.0	2.6	0	5
NNW	1.1	2.5	0	5
N	.2	1.6	0	1

LOCATION 21

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.8	2.0	0	0
NE	1.1	2.4	45	23
ENE	1.0	2.2	21	9
E	1.4	2.7	17	11
ESE	2.4	4.2	5	8
SE	2.2	3.8	7	13
SSE	1.4	3.2	0	7
S	1.2	2.9	0	3
SSW	1.9	3.8	1	6
SW	2.2	3.1	0	3
WSW	2.2	3.0	0	2
W	2.6	3.4	0	4
WNW	2.1	3.2	0	1
NW	1.8	3.8	0	6
NNW	1.0	2.7	0	1
N	.6	2.0	0	0

TABLE C-7

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 22

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.4	1.5	0	0
NE	.7	1.9	34	9
ENE	.7	1.7	7	1
E	1.0	2.5	35	12
ESE	1.0	2.4	1	1
SE	1.8	3.4	9	13
SSE	1.7	3.4	6	14
S	1.2	2.7	0	4
SSW	2.1	3.6	1	8
SW	1.6	2.7	0	2
WSW	1.5	2.6	0	2
W	2.5	3.4	0	7
WNW	2.8	3.9	0	5
NW	2.4	4.0	2	14
NNW	1.4	3.2	0	6
N	.6	2.2	0	1

LOCATION 23

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.1	1.4	0	0
NE	.3	2.0	28	17
ENE	.1	2.2	64	32
E	.1	2.2	4	3
ESE	.5	2.1	0	0
SE	1.2	2.6	2	3
SSE	1.3	3.0	0	7
S	1.7	2.9	0	6
SSW	1.6	3.3	0	5
SW	1.8	3.1	0	5
WSW	1.5	3.2	1	6
W	1.6	3.4	0	7
WNW	1.9	3.9	0	5
NW	1.2	2.3	0	0
NNW	1.3	2.2	0	0
N	.9	1.8	0	0

LOCATION 24

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.7	0	0
NE	1.1	2.4	23	21
ENE	1.4	2.7	55	45
E	2.0	3.1	21	24
ESE	1.4	2.6	0	1
SE	1.0	2.2	0	0
SSE	1.2	2.6	0	1
S	.9	2.0	0	0
SSW	1.0	2.3	0	0
SW	1.6	2.4	0	0
WSW	2.2	3.0	0	1
W	2.5	3.4	0	3
WNW	2.5	3.9	0	3
NW	1.0	2.5	0	0
NNW	.9	1.8	0	0
N	.7	1.5	0	0

PROPOSED SITE CONDITIONS

LOCATION 22

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.6	0	0
NE	.4	1.6	10	2
ENE	.7	1.7	10	1
E	.9	2.4	37	9
ESE	.9	2.3	1	1
SE	1.9	3.5	10	13
SSE	2.8	4.3	19	27
S	1.0	2.6	0	2
SSW	2.0	3.5	1	6
SW	1.5	2.8	0	3
WSW	1.7	2.6	1	2
W	2.6	3.6	0	8
WNW	2.8	4.0	0	5
NW	2.3	4.2	2	15
NNW	1.4	3.0	0	4
N	.9	2.1	0	1

LOCATION 23

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.4	1.5	0	0
NE	.2	1.8	10	7
ENE	.1	2.2	81	39
E	.1	2.1	5	4
ESE	.5	2.3	1	1
SE	1.0	2.5	2	3
SSE	1.5	2.7	0	5
S	1.6	3.0	0	7
SSW	1.4	2.7	0	2
SW	1.5	2.8	0	4
WSW	1.7	3.3	1	8
W	1.9	3.8	0	10
WNW	2.3	4.4	0	7
NW	.9	2.4	0	1
NNW	.8	1.9	0	0
N	.6	1.6	0	0

LOCATION 24

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	1.6	0	0
NE	1.4	2.4	11	11
ENE	1.7	2.8	62	44
E	2.2	3.3	25	25
ESE	1.7	3.1	1	1
SE	1.3	2.5	0	0
SSE	1.7	3.1	0	3
S	1.8	4.0	1	10
SSW	.7	2.1	0	0
SW	1.7	2.4	0	0
WSW	1.8	2.7	0	0
W	2.5	3.4	0	2
WNW	2.5	3.9	0	2
NW	1.0	2.5	0	0
NNW	1.1	2.3	0	0
N	.5	1.5	0	0

TABLE C-8

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 25

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.8	1.9	0	0
NE	.5	2.1	23	22
ENE	1.1	2.4	75	61
E	.9	2.1	2	4
ESE	.7	2.0	0	0
SE	.6	1.8	0	0
SSE	.6	1.4	0	0
S	.7	1.9	0	0
SSW	1.6	3.0	0	3
SW	1.0	2.0	0	0
WSW	1.3	2.6	0	2
W	.9	2.3	0	1
WNW	1.2	2.5	0	1
NW	1.1	2.5	0	1
NNW	1.1	2.3	0	1
N	1.1	2.6	0	4

LOCATION 26

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.3	1.4	0	0
NE	1.3	2.8	61	39
ENE	1.3	2.6	36	25
E	1.4	2.4	1	2
ESE	1.4	2.4	0	0
SE	1.3	2.3	0	0
SSE	.7	2.3	0	0
S	.9	2.8	0	2
SSW	3.0	4.3	1	8
SW	3.2	4.4	0	12
WSW	2.5	3.5	0	4
W	2.0	3.2	0	2
WNW	1.9	3.5	0	2
NW	1.7	3.4	0	2
NNW	.7	2.1	0	0
N	.4	1.6	0	0

LOCATION 27

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.7	0	0
NE	1.0	2.3	61	25
ENE	.4	1.7	2	0
E	1.0	2.5	17	9
ESE	1.0	2.7	1	2
SE	1.2	2.8	3	3
SSE	1.8	4.2	10	23
S	2.8	4.2	6	24
SSW	2.1	3.0	0	2
SW	1.8	2.8	0	2
WSW	1.6	2.5	0	1
W	1.8	2.8	0	2
WNW	2.1	3.1	0	2
NW	1.5	2.7	0	1
NNW	1.5	2.7	0	1
N	1.3	2.7	0	3

PROPOSED SITE CONDITIONS

LOCATION 25

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.5	0	0
NE	.5	1.8	9	5
ENE	.9	2.2	59	23
E	1.0	2.5	18	11
ESE	.8	1.8	0	0
SE	.9	2.3	1	1
SSE	2.4	3.9	8	21
S	2.3	3.8	3	19
SSW	2.5	4.1	2	13
SW	1.4	2.1	0	0
WSW	1.0	1.8	0	0
W	.7	1.8	0	0
WNW	1.0	2.2	0	0
NW	1.2	2.1	0	0
NNW	1.2	2.2	0	0
N	.9	2.0	0	1

LOCATION 26

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.4	1.7	0	0
NE	.7	1.7	1	1
ENE	1.1	2.5	71	38
E	1.4	2.8	24	19
ESE	1.8	3.0	2	3
SE	1.4	2.6	1	2
SSE	1.5	2.7	0	3
S	1.0	2.6	0	1
SSW	2.7	4.0	1	9
SW	2.9	4.1	0	13
WSW	2.2	3.2	0	4
W	2.1	3.1	0	3
WNW	1.9	3.4	0	2
NW	1.1	2.9	0	1
NNW	1.2	2.6	0	1
N	.1	1.5	0	0

LOCATION 27

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.8	0	0
NE	.8	2.3	54	22
ENE	.6	1.8	2	0
E	1.1	2.7	25	13
ESE	1.1	2.6	1	1
SE	1.3	3.0	3	5
SSE	1.9	4.4	11	25
S	2.8	4.1	4	20
SSW	2.0	2.9	0	1
SW	1.6	2.6	0	1
WSW	1.6	2.5	0	1
W	1.8	2.8	0	2
WNW	2.0	3.0	0	1
NW	1.7	2.8	0	1
NNW	1.8	3.1	0	3
N	1.5	2.6	0	2

TABLE C-9

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 28

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	1.8	0	0
NE	1.5	2.9	62	40
ENE	1.4	2.7	34	23
E	1.1	2.5	1	2
ESE	1.2	2.8	1	1
SE	1.4	2.9	1	2
SSE	1.5	3.4	0	5
S	1.3	3.3	0	3
SSW	3.6	4.9	1	12
SW	2.8	3.9	0	6
WSW	1.9	2.9	0	1
W	1.3	2.3	0	0
WNW	.9	2.6	0	0
NW	1.8	3.7	0	3
NNW	.8	2.8	0	1
N	.9	2.4	0	1

LOCATION 29

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	1.8	0	0
NE	1.4	2.9	71	49
ENE	1.3	2.5	13	13
E	1.4	3.0	10	12
ESE	2.0	3.8	2	4
SE	2.0	3.6	3	7
SSE	2.5	3.4	0	6
S	2.3	3.2	0	3
SSW	2.0	2.9	0	1
SW	1.9	2.9	0	1
WSW	1.6	2.6	0	0
W	1.8	2.8	0	1
WNW	2.1	3.1	0	1
NW	1.6	2.5	0	0
NNW	1.7	2.6	0	0
N	1.2	2.4	0	0

LOCATION 30

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	2.1	8	3
NE	.4	1.4	13	2
ENE	.5	1.5	19	1
E	.7	1.9	21	4
ESE	1.3	2.9	5	6
SE	1.6	3.4	14	23
SSE	1.0	3.1	11	18
S	1.0	2.2	0	3
SSW	.6	1.6	0	0
SW	1.1	2.1	0	1
WSW	1.2	2.2	1	2
W	1.2	2.1	0	1
WNW	1.4	2.9	0	3
NW	1.6	3.4	2	14
NNW	1.4	2.8	1	6
N	1.1	2.6	2	7

PROPOSED SITE CONDITIONS

LOCATION 28

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.8	0	0
NE	1.4	2.8	58	37
ENE	1.4	2.6	36	24
E	1.1	2.6	2	3
ESE	1.4	3.3	1	2
SE	1.5	3.2	2	3
SSE	1.4	3.3	0	5
S	1.3	3.2	0	3
SSW	3.5	4.7	1	10
SW	2.8	3.9	0	7
WSW	1.9	2.9	0	1
W	1.3	2.3	0	0
WNW	.8	2.3	0	0
NW	1.3	3.7	0	3
NNW	.9	2.6	0	0
N	.8	2.3	0	0

LOCATION 29

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.6	0	0
NE	1.4	2.9	68	47
ENE	1.2	2.4	9	10
E	1.5	3.1	16	18
ESE	2.1	4.0	2	5
SE	2.1	3.7	3	7
SSE	2.4	3.3	0	5
S	2.2	3.1	0	3
SSW	1.9	2.9	0	1
SW	1.9	3.0	0	1
WSW	1.6	2.5	0	0
W	1.8	2.8	0	1
WNW	2.1	3.0	0	1
NW	1.6	2.4	0	0
NNW	1.6	2.5	0	0
N	1.2	2.3	0	0

LOCATION 30

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.8	2.1	4	1
NE	.6	1.8	36	6
ENE	.6	1.6	11	0
E	.7	1.6	0	0
ESE	.7	2.2	1	1
SE	1.4	3.4	10	13
SSE	1.9	3.8	15	21
S	2.4	3.9	9	22
SSW	1.8	2.8	0	2
SW	1.0	2.0	0	0
WSW	1.4	2.3	0	1
W	1.8	2.6	0	2
WNW	2.0	3.5	0	3
NW	2.1	3.7	2	10
NNW	1.8	3.6	2	10
N	1.5	3.0	3	7

TABLE C-10

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 31

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.4	0	0
NE	.7	1.8	2	2
ENE	1.1	2.5	51	23
E	1.9	3.1	40	27
ESE	1.8	3.5	2	4
SE	1.7	3.1	2	4
SSE	1.8	3.4	1	8
S	.9	2.4	0	1
SSW	1.5	2.4	0	0
SW	2.3	3.2	0	3
WSW	2.8	3.6	1	6
W	3.1	4.1	0	9
WNW	2.5	4.9	0	6
NW	2.3	3.8	0	6
NNW	1.4	2.8	0	1
N	.8	1.7	0	0

LOCATION 32

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	2.0	0	0
NE	1.0	2.1	3	4
ENE	1.5	2.8	77	53
E	1.8	3.1	17	18
ESE	1.4	2.7	0	1
SE	1.4	2.9	1	2
SSE	2.7	4.0	1	12
S	1.2	2.6	0	1
SSW	1.3	2.5	0	0
SW	2.1	3.2	0	2
WSW	2.7	3.7	0	5
W	2.4	3.3	0	2
WNW	1.6	2.6	0	0
NW	.7	1.8	0	0
NNW	.7	1.4	0	0
N	.5	1.7	0	0

LOCATION 33

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.4	0	0
NE	1.4	2.7	28	21
ENE	1.7	2.9	43	31
E	1.9	3.5	27	25
ESE	.6	2.4	0	0
SE	.7	2.4	0	0
SSE	1.1	3.0	0	2
S	2.5	4.3	1	11
SSW	3.3	4.3	0	6
SW	2.5	3.6	0	3
WSW	1.5	2.7	0	0
W	.8	2.0	0	0
WNW	1.2	2.7	0	0
NW	.5	1.6	0	0
NNW	.7	1.5	0	0
N	.7	1.6	0	0

PROPOSED SITE CONDITIONS

LOCATION 31

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.5	1.3	0	0
NE	1.2	2.3	57	32
ENE	1.1	2.2	36	20
E	1.1	2.1	1	1
ESE	.5	1.6	0	0
SE	.8	2.9	2	4
SSE	1.3	3.0	0	6
S	.8	2.3	0	1
SSW	1.3	2.2	0	0
SW	2.0	3.2	0	5
WSW	2.7	3.6	1	10
W	2.9	4.1	0	11
WNW	1.9	4.0	0	5
NW	1.2	2.9	0	2
NNW	.7	1.7	0	0
N	.1	1.9	0	0

LOCATION 32

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	1.6	0	0
NE	1.2	2.2	21	17
ENE	1.5	2.5	62	41
E	1.6	2.7	12	13
ESE	1.4	2.5	1	1
SE	1.1	2.6	1	2
SSE	1.7	3.9	3	17
S	1.0	2.4	0	1
SSW	1.2	2.0	0	0
SW	1.7	2.8	0	2
WSW	2.3	3.3	1	5
W	1.8	2.7	0	1
WNW	.9	2.0	0	0
NW	.9	2.6	0	1
NNW	.6	1.5	0	0
N	.7	1.6	0	0

LOCATION 33

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.9	1.9	0	0
NE	1.5	2.7	20	19
ENE	1.9	3.2	73	57
E	2.2	3.1	6	9
ESE	2.0	3.1	1	1
SE	1.4	2.8	0	1
SSE	1.4	3.2	0	2
S	1.8	3.4	0	3
SSW	3.4	4.5	0	6
SW	2.5	3.3	0	1
WSW	1.9	3.1	0	1
W	.7	1.6	0	0
WNW	1.5	3.0	0	0
NW	1.1	2.5	0	0
NNW	1.1	2.7	0	0
N	1.0	2.2	0	0

TABLE C-11

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 34

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.4	1.3	0	0
NE	.5	1.4	8	8
ENE	.3	1.7	69	47
E	.6	2.0	22	22
ESE	.6	1.6	0	0
SE	.7	1.8	1	2
SSE	.8	2.1	0	7
S	.8	1.9	0	3
SSW	.6	1.5	0	0
SW	.1	1.3	0	0
WSW	.6	1.4	0	0
W	.5	1.6	0	0
WNW	.9	1.9	0	1
NW	1.0	2.3	0	4
NNW	1.0	2.3	0	5
N	.7	1.6	0	1

LOCATION 35

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.4	1.5	0	0
NE	.6	1.8	30	24
ENE	.6	1.9	63	45
E	1.0	1.8	2	3
ESE	1.2	2.2	1	2
SE	1.2	2.4	3	6
SSE	1.0	2.4	0	7
S	.9	2.1	0	2
SSW	1.2	1.9	0	0
SW	1.4	2.2	0	2
WSW	1.6	2.3	0	3
W	1.1	1.8	0	1
WNW	1.0	2.3	0	1
NW	1.0	2.3	0	2
NNW	.6	1.9	0	1
N	.5	1.3	0	0

LOCATION 36

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.5	1.3	0	0
NE	.9	1.9	20	15
ENE	1.1	2.2	62	39
E	1.5	2.4	15	15
ESE	1.3	2.4	1	1
SE	1.4	2.5	2	3
SSE	1.4	2.6	0	5
S	1.0	2.1	0	1
SSW	1.7	2.4	0	1
SW	1.8	2.4	0	1
WSW	1.9	2.5	0	2
W	1.7	3.1	0	6
WNW	1.7	3.9	0	6
NW	1.1	2.9	0	4
NNW	.5	1.3	0	0
N	.1	1.9	0	1

PROPOSED SITE CONDITIONS

LOCATION 34

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	1.9	2	0
NE	.5	1.3	2	0
ENE	.5	1.8	49	4
E	.7	1.7	1	0
ESE	.7	1.9	1	0
SE	1.1	3.4	11	14
SSE	1.6	3.6	12	18
S	2.2	3.7	7	19
SSW	1.6	2.4	0	1
SW	.9	1.9	0	0
WSW	1.4	2.3	0	1
W	1.8	2.7	0	2
WNW	2.2	3.6	0	4
NW	2.2	3.7	2	12
NNW	2.0	3.6	2	12
N	1.7	3.2	4	11

LOCATION 35

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.3	1.6	0	0
NE	.6	1.5	8	4
ENE	.2	1.9	77	26
E	.1	1.2	0	0
ESE	.5	1.5	0	0
SE	1.0	3.0	7	13
SSE	1.2	3.0	3	14
S	.6	2.0	0	1
SSW	.8	1.7	0	0
SW	1.3	2.0	0	1
WSW	1.9	2.6	1	4
W	2.1	3.1	0	8
WNW	1.9	4.0	0	7
NW	2.1	3.8	2	17
NNW	1.3	2.5	0	3
N	.9	1.9	0	1

LOCATION 36

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.5	1.3	0	0
NE	.9	1.8	73	25
ENE	.6	1.3	1	0
E	.6	1.9	13	5
ESE	.5	1.4	0	0
SE	.9	2.4	4	5
SSE	1.4	3.0	6	17
S	.8	2.0	0	1
SSW	1.4	2.0	0	0
SW	1.7	2.5	0	4
WSW	2.4	3.3	1	15
W	2.5	3.6	1	14
WNW	1.9	3.8	0	8
NW	.9	2.4	0	2
NNW	.6	1.4	0	0
N	.5	1.4	0	0

TABLE C-12

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 37

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.1	1.2	0	0
NE	.6	1.4	9	8
ENE	.6	1.7	38	24
E	1.1	2.2	41	33
ESE	1.2	2.5	3	5
SE	1.3	2.5	5	10
SSE	1.5	2.6	1	12
S	.6	1.7	0	1
SSW	1.3	2.0	0	1
SW	1.5	2.1	0	2
WSW	.7	1.6	0	0
W	.8	1.5	0	0
WNW	1.0	1.6	0	0
NW	.3	1.3	0	0
NNW	.4	1.6	0	0
N	.1	1.6	0	1

LOCATION 38

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.1	1.4	0	0
NE	1.2	2.4	31	27
ENE	1.5	2.5	46	41
E	1.7	2.9	22	25
ESE	1.2	2.3	0	1
SE	1.3	2.4	0	1
SSE	1.6	2.8	0	3
S	.9	2.4	0	1
SSW	1.1	2.0	0	0
SW	1.7	2.4	0	1
WSW	1.6	2.6	0	1
W	.8	1.8	0	0
WNW	.8	1.9	0	0
NW	.8	2.2	0	0
NNW	.7	2.2	0	0
N	.5	1.7	0	0

LOCATION 39

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.5	1.3	0	0
NE	1.2	2.4	30	25
ENE	1.4	2.4	34	30
E	1.8	3.1	34	34
ESE	1.0	2.5	0	1
SE	1.2	2.6	1	2
SSE	1.6	3.1	0	6
S	.8	2.0	0	0
SSW	1.5	2.4	0	0
SW	1.5	2.2	0	0
WSW	1.6	2.5	0	0
W	1.2	2.3	0	0
WNW	1.1	2.9	0	1
NW	.9	2.4	0	0
NNW	.7	1.8	0	0
N	.5	1.4	0	0

PROPOSED SITE CONDITIONS

LOCATION 37

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.5	1.3	0	0
NE	.5	1.6	50	32
ENE	.5	1.5	39	26
E	.5	1.4	1	1
ESE	.5	1.7	1	1
SE	.9	2.1	3	7
SSE	1.3	2.7	5	21
S	.6	1.5	0	1
SSW	1.0	1.6	0	0
SW	1.2	1.8	0	2
WSW	.9	2.1	0	4
W	.8	1.7	0	1
WNW	.9	1.6	0	0
NW	.6	2.1	0	3
NNW	.6	1.5	0	0
N	.5	1.3	0	0

LOCATION 38

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	1.5	0	0
NE	.6	1.5	8	5
ENE	.8	1.9	62	26
E	1.0	1.8	3	2
ESE	.9	1.8	0	0
SE	1.3	3.1	8	15
SSE	2.0	3.8	15	31
S	.7	1.9	0	1
SSW	1.3	2.9	0	5
SW	.8	1.6	0	0
WSW	.8	1.8	0	0
W	1.5	2.6	0	4
WNW	1.9	3.4	0	5
NW	.7	2.0	0	0
NNW	.8	1.9	0	1
N	.8	1.5	0	0

LOCATION 39

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.7	1.7	0	0
NE	.7	1.9	73	29
ENE	.5	1.4	1	0
E	.7	1.8	5	2
ESE	1.1	2.2	1	2
SE	1.5	2.7	6	9
SSE	1.9	3.5	11	25
S	.8	2.2	0	2
SSW	1.4	3.0	1	7
SW	.9	1.9	0	1
WSW	1.7	2.6	1	4
W	1.6	3.0	0	8
WNW	2.1	3.6	0	6
NW	.9	2.6	0	3
NNW	.5	1.7	0	0
N	.8	1.7	0	0

TABLE C-13

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 40

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.0	2.3	0	0
NE	1.1	2.5	31	27
ENE	1.5	2.7	66	54
E	1.4	2.4	1	2
ESE	1.4	2.7	1	1
SE	.8	2.6	1	1
SSE	1.3	3.2	0	6
S	1.2	2.5	0	1
SSW	1.4	2.6	0	0
SW	1.4	2.6	0	1
WSW	.9	2.0	0	0
W	1.0	2.2	0	0
WNW	1.3	2.8	0	1
NW	1.2	2.7	0	1
NNW	1.7	3.0	0	2
N	1.4	2.8	0	2

LOCATION 41

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.2	2.5	1	2
NE	.8	2.4	43	32
ENE	1.2	2.3	41	31
E	1.1	2.6	13	14
ESE	.8	2.0	0	0
SE	.6	2.1	0	0
SSE	.9	2.4	0	1
S	1.4	2.9	0	4
SSW	1.7	2.9	0	2
SW	1.8	3.0	0	3
WSW	1.2	2.4	0	0
W	1.0	2.4	0	1
WNW	1.3	2.6	0	1
NW	1.3	2.7	0	1
NNW	1.5	2.7	0	1
N	1.6	2.9	0	4

LOCATION 42

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.9	1.9	0	0
NE	.7	2.4	85	57
ENE	1.0	2.0	13	13
E	.8	1.7	0	0
ESE	.8	1.9	0	0
SE	.9	2.1	0	1
SSE	1.0	2.5	0	3
S	1.5	3.2	1	11
SSW	1.9	3.2	0	5
SW	1.7	2.6	0	2
WSW	1.2	2.5	0	1
W	.9	2.1	0	0
WNW	1.0	2.3	0	1
NW	.9	2.2	0	0
NNW	1.0	2.2	0	1
N	1.2	2.3	0	2

PROPOSED SITE CONDITIONS

LOCATION 40

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.8	2.2	2	1
NE	.8	2.0	40	19
ENE	1.0	2.0	49	19
E	1.0	1.8	1	1
ESE	.9	1.9	0	0
SE	.9	2.4	2	2
SSE	1.6	3.1	2	11
S	1.7	3.2	1	11
SSW	3.1	4.1	2	16
SW	2.5	3.4	0	11
WSW	1.1	2.1	0	0
W	1.1	2.4	0	1
WNW	1.5	2.8	0	2
NW	1.2	2.0	0	0
NNW	1.2	2.5	0	2
N	1.1	2.3	0	2

LOCATION 41

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.8	0	0
NE	.8	2.2	81	43
ENE	.8	1.8	9	5
E	.8	1.8	1	1
ESE	.9	2.0	0	0
SE	.9	2.1	1	1
SSE	1.4	2.7	0	7
S	1.7	3.1	1	11
SSW	2.8	3.7	1	12
SW	2.5	3.6	1	14
WSW	1.1	2.4	0	2
W	.7	2.0	0	0
WNW	.5	1.7	0	0
NW	.5	1.6	0	0
NNW	.6	2.0	0	0
N	.7	2.0	0	1

LOCATION 42

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.8	1.7	2	1
NE	.5	1.7	64	29
ENE	.5	1.4	14	5
E	.7	1.8	12	7
ESE	.6	1.6	0	0
SE	.9	1.9	2	2
SSE	.7	1.8	0	2
S	1.3	2.4	1	8
SSW	2.2	3.2	2	16
SW	1.8	2.8	0	12
WSW	.9	2.2	1	4
W	.5	2.0	0	2
WNW	.7	2.0	0	1
NW	.6	1.8	0	1
NNW	.9	2.2	0	3
N	.8	1.9	0	3

TABLE C-14

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 43

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.0	2.1	0	0
NE	.8	2.4	46	36
ENE	1.1	2.4	48	39
E	.9	2.2	2	3
ESE	1.0	2.3	0	1
SE	.9	2.6	1	3
SSE	.9	2.3	0	1
S	1.5	3.1	0	7
SSW	1.8	3.3	0	4
SW	1.7	2.6	0	2
WSW	1.1	2.2	0	0
W	.8	2.0	0	0
WNW	.9	2.2	0	0
NW	1.0	2.2	0	0
NNW	1.3	2.5	0	1
N	1.3	2.5	0	2

LOCATION 44

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.5	1.9	0	0
NE	1.3	2.4	27	25
ENE	1.7	2.7	59	51
E	1.8	2.9	14	18
ESE	1.3	2.7	1	1
SE	.8	2.6	1	1
SSE	1.0	2.4	0	1
S	1.3	2.6	0	1
SSW	1.2	2.3	0	0
SW	1.7	2.6	0	1
WSW	.8	1.8	0	0
W	1.0	2.1	0	0
WNW	1.3	2.5	0	0
NW	.8	2.2	0	0
NNW	.8	2.3	0	0
N	.7	1.7	0	0

LOCATION 0

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.0	.0	0	0
NE	.0	.0	0	0
ENE	.0	.0	0	0
E	.0	.0	0	0
ESE	.0	.0	0	0
SE	.0	.0	0	0
SSE	.0	.0	0	0
S	.0	.0	0	0
SSW	.0	.0	0	0
SW	.0	.0	0	0
WSW	.0	.0	0	0
W	.0	.0	0	0
WNW	.0	.0	0	0
NW	.0	.0	0	0
NNW	.0	.0	0	0
N	.0	.0	0	0

PROPOSED SITE CONDITIONS

LOCATION 43

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.6	1.6	1	0
NE	.5	1.7	54	19
ENE	.6	1.6	30	7
E	.5	1.6	2	1
ESE	.5	1.6	0	0
SE	.6	2.1	3	3
SSE	1.1	2.3	0	6
S	1.4	3.0	3	17
SSW	2.5	3.6	3	19
SW	2.0	3.3	2	17
WSW	1.0	2.1	0	2
W	.7	2.1	0	1
WNW	.5	1.7	0	0
NW	.4	1.7	0	0
NNW	.7	1.9	0	1
N	.5	1.5	0	0

LOCATION 44

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.1	2.5	6	4
NE	1.0	2.0	37	16
ENE	1.3	2.0	45	15
E	1.1	1.9	1	1
ESE	.8	1.6	0	0
SE	.8	2.5	2	3
SSE	1.6	3.3	4	14
S	1.6	3.0	1	8
SSW	3.1	4.1	2	15
SW	2.3	3.2	0	8
WSW	.9	2.1	0	0
W	1.2	2.6	0	2
WNW	1.9	3.1	0	2
NW	1.4	2.7	0	2
NNW	1.6	2.9	0	4
N	1.3	2.5	0	3

LOCATION 45

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.6	2.7	0	0
NE	1.9	3.4	93	65
ENE	1.5	2.5	4	6
E	1.5	2.6	0	1
ESE	1.1	2.2	0	0
SE	1.5	3.0	1	1
SSE	2.7	4.1	0	9
S	2.1	4.4	1	12
SSW	1.0	2.2	0	0
SW	.9	1.9	0	0
WSW	1.3	2.3	0	0
W	1.2	2.2	0	0
WNW	1.2	2.8	0	0
NW	1.6	3.1	0	1
NNW	2.0	3.3	0	1
N	1.6	2.8	0	1

TABLE C-15

PEDESTRIAN LEVEL WIND TEST DATA

EXISTING SITE CONDITIONS

LOCATION 0

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.0	.0	0	0
NE	.0	.0	0	0
ENE	.0	.0	0	0
E	.0	.0	0	0
ESE	.0	.0	0	0
SE	.0	.0	0	0
SSE	.0	.0	0	0
S	.0	.0	0	0
SSW	.0	.0	0	0
SW	.0	.0	0	0
WSW	.0	.0	0	0
W	.0	.0	0	0
WNW	.0	.0	0	0
NW	.0	.0	0	0
NNW	.0	.0	0	0
N	.0	.0	0	0

LOCATION 0

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.0	.0	0	0
NE	.0	.0	0	0
ENE	.0	.0	0	0
E	.0	.0	0	0
ESE	.0	.0	0	0
SE	.0	.0	0	0
SSE	.0	.0	0	0
S	.0	.0	0	0
SSW	.0	.0	0	0
SW	.0	.0	0	0
WSW	.0	.0	0	0
W	.0	.0	0	0
WNW	.0	.0	0	0
NW	.0	.0	0	0
NNW	.0	.0	0	0
N	.0	.0	0	0

LOCATION 0

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.0	.0	0	0
NE	.0	.0	0	0
ENE	.0	.0	0	0
E	.0	.0	0	0
ESE	.0	.0	0	0
SE	.0	.0	0	0
SSE	.0	.0	0	0
S	.0	.0	0	0
SSW	.0	.0	0	0
SW	.0	.0	0	0
WSW	.0	.0	0	0
W	.0	.0	0	0
WNW	.0	.0	0	0
NW	.0	.0	0	0
NNW	.0	.0	0	0
N	.0	.0	0	0

PROPOSED SITE CONDITIONS

LOCATION 46

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.5	2.6	0	0
NE	1.8	3.1	43	36
ENE	2.2	3.1	56	49
E	2.0	2.8	1	2
ESE	1.4	2.3	0	0
SE	1.1	2.3	0	0
SSE	1.4	3.1	0	2
S	1.4	3.8	0	5
SSW	1.3	2.5	0	0
SW	1.8	2.9	0	0
WSW	1.7	2.7	0	0
W	1.4	3.3	0	1
WNW	2.1	3.3	0	1
NW	1.8	2.9	0	0
NNW	2.4	3.7	0	2
N	1.8	2.9	0	1

LOCATION 47

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	.2	1.9	0	0
NE	.5	2.4	30	22
ENE	1.1	2.6	60	40
E	1.2	2.6	6	7
ESE	1.6	3.2	1	3
SE	1.4	2.9	1	3
SSE	1.0	2.1	0	0
S	1.3	2.8	0	2
SSW	3.0	4.2	1	9
SW	2.6	3.8	0	8
WSW	1.8	3.3	0	4
W	.8	2.1	0	0
WNW	1.3	3.1	0	1
NW	.3	2.2	0	0
NNW	.5	2.1	0	0
N	.7	2.2	0	0

LOCATION 48

WIND ANGLE	RATIOS MEAN	RATIOS GUST	WEIGHT SUM	WEIGHT WINT
NNE	1.1	2.5	1	1
NE	1.5	2.8	69	40
ENE	1.4	2.4	22	13
E	1.0	2.1	0	0
ESE	1.4	2.9	1	1
SE	1.5	3.2	2	4
SSE	2.6	3.9	2	12
S	2.8	4.2	2	15
SSW	2.4	4.1	1	7
SW	2.1	3.1	0	2
WSW	1.6	2.6	0	0
W	1.0	2.1	0	0
WNW	1.1	2.4	0	0
NW	1.6	3.3	0	2
NNW	.7	2.4	0	0
N	1.1	2.7	0	1

TABLE C-16

PEDESTRIAN LEVEL WIND TEST DATA

Appendix G

Sun/Shade Study

Rowan Williams Davies & Irwin Inc.

Rowan Williams
Davies & Irwin Inc.

SUN/SHADE STUDY
FOR THE
PROPOSED WAIKIKIAN HOTEL
HONOLULU, HAWAII

Report 90-254F-7
August 9, 1990

Submitted to:
KOP HAWAII INC.
HONOLULU, HAWAII

By:
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GUELPH, ONTARIO

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FIGURES

APPENDIX

A - Heliodon - Sun/Shade Simulator

1. EXECUTIVE SUMMARY

Scale model sun/shade simulations were undertaken to determine the shadow impacts of the proposed Waikikian Hotel. Generally, from early morning until noon hour on March 21st and September 21st, the shadow impact of the proposed Waikikian Hotel was limited to the Ilikia Hotel's tennis courts, the east portion of the public right-of-way, and a nearby section of Ala Moana Boulevard. A similar impact was noted along the boulevard and right-of-way from mid-morning until mid-afternoon for December 21st, although the shadow cast by the study building was notably longer. The shadow impact on pedestrian related areas in June was minimal.

Leisure areas on the west side of the proposed hotel (i.e. swimming pool, Tahitian Lanai and ocean terrace) were primarily in shade during morning hours in March, September and December. For the balance of the day and year, these areas were predominantly in direct sunlight but will be partially shaded with landscaping. The proposed hotel's recreation deck received appreciable shade on the north side throughout the year. On an annual basis, the northeast portion of the recreation deck has the greatest exposure to direct sunlight, whereas the deck area directly north of the hotel tower has the least exposure. Landscaping and a trellis have been proposed to provide additional shade for hot sunny days.

2. INTRODUCTION

Rowan Williams Davies & Irwin Inc. (RWDI) was retained by KOP Hawaii of Honolulu, Hawaii, Inc. to conduct a sun/shade study of the proposed Waikikian Hotel, located south of the Ilikai Hotel on the south side of the Ala Moana Boulevard, and north of the Hilton Hawaiian Village, in the city of Honolulu.

The study was conducted with the aid of a heliodon, also known as a sun/shade simulator, and a 1:400 scale model of the proposed development and surroundings. A more detailed description of the heliodon is provided in Appendix A. The scale model of the existing buildings and the proposed development, shown in Figure 1, were constructed in accordance with plans prepared by KOP Hawaii, Inc. in May 1990, Sanborn maps, an area map and photographs supplied by KOP Hawaii, Inc. and site photographs taken by RWDI in April of 1990. For simplification in this study, the landscaping, perimeter fence and existing low Waikikian Hotel buildings near the Tahitian Lanai were excluded.

3. OBJECTIVE

The primary objective of the study was to determine the potential exposure to sunlight and shadow in key locations on and around the study site, including designated open spaces (i.e. proposed leisure areas) and surrounding pedestrian walkways. The shadow patterns with and without the study building in place were analyzed and are discussed in this report. The issue of reflectivity of building material was not a part of this study.

4. METHODOLOGY

The 1:400 scale model was mounted on the heliodon which is capable of simulating the appropriate geographic and solar angles for the Honolulu region. The model was then oriented relative to a high intensity light source representing the sun, to provide good approximations of the shadow conditions anticipated in the vicinity of the study site. Shadow patterns for the dates and times indicated in Table 1 were simulated and photographed. The times listed are Hawaiian Standard Time.

Date	Time
March 21st (HST)	8:00 am, 10:00 am, 12:00 (noon), 12:38 (solar noon), 2:00 pm, 4:00 pm, 5:00 pm
June 21st (HST)	8:00 am, 10:00 am, 12:00 (noon)*, 12:33 (solar noon)*, 2:00 pm*, 4:00 pm, 6:00 pm
September 21st (HST)**	8:00 am, 10:00 am, 12:00 (noon), 12:24 (solar noon), 2:00 pm, 4:00 pm, 5:00 pm
December 21st (HST)	8:00 am, 10:00 am, 12:00 (noon), 12:30 (solar noon), 2:00 pm, 4:00 pm

Table 1: Dates/Times Studied

Note: * The orientation and frame of these photographs differed from the rest of the times tested in order to compensate for the camera's influence on the photographs during these times.

** Times for September are approximately 15 minutes earlier than shown.

Each date studied has a time identified as solar noon. At solar noon, the sun is at its highest point resulting in the shortest shadows of the day, and on March 21st, September 21st and December 21st the sun is located due south. However, on June 21st, the sun at solar noon in Hawaii is located due north, whereby the shadows fall to the south of a building. The exact time pertaining to solar noon varies throughout the year as a result of the earth's orbit around the sun.[1] [2]

The dates and times chosen best illustrate the shadow patterns that can be expected throughout the year. June 21st represents the Summer Solstice, when the shortest annual shadow lengths occur. December 21st represents the Winter Solstice when the longest annual shadow lengths occur. March 21st and September 21st represent the Vernal Equinox and Autumnal Equinox, respectively, and illustrate intermediate shadow conditions.

The shadows cast on March 21st are similar to those occurring on September 21st, but are approximately 15 minutes later, due to variations in the earths rotation and orbit about the sun. Hence, shadow patterns occurring at 8:00 am on March 21st *are similar to those cast* at approximately 7:45 am on September 21st. This condition applies for all September times examined in this study. This time difference is conventionally not shown in a presentation of shadow conditions. This report therefore was the conventional presentation which, for discussion purposes only, ignores the time difference.

Table 2 lists approximate sunrise and sunset times for the four times of the year studied as these may also be of interest when assessing the shadow conditions.

[1]Duffet-Smith, Peter, Practical Astronomy with your Calculator, Cambridge University Press, Cambridge, Massachusetts, 1979.

[2]Bennet, Robert, Sun Angles for Design, Bala Cynwyd, PA, 1978.

Date	Sunrise Time	Sunset Time
March 21st	6:35 am	6:39 pm
June 21st	5:50 am	7:12 pm
September 21st	6:20 am	6:24 pm
December 21st	7:05 am	5:50 pm

Table 2: Approximate Sunrise and Sunset Times

5. TEST RESULTS

The photograph in Figure 1 shows the proposed Waikikian Hotel and the surrounding buildings. Figures 2 through 21 visually identify the shadows of all structures on and around the study site with and without the study building in place. Figure 22 is provided as an orientation plan of the study area. It is noted that a wide angle lens was used to obtain these photographs and that some distortion may occur. For instance, the photographs make it appear as if the Ilikai Hotel is actually located on top of the public right-of-way on the north side of the Waikikian Hotel site. This in fact is not the case. The shadows resulting from the two test configurations can be identified by comparing the shadow conditions for each configuration at the same date and time. A written summary of the results is provided, however, emphasis is placed on the visual record supplied by the photographs.

The tests conducted in this study assume bright sunlight from sunrise to sunset in order to properly identify shadow patterns created by the existing and proposed structures. Shadow intensity is lessened or nullified when the skies are overcast, thus reducing the impact of shadows cast by all structures. The effect of daylight (diffuse light from the sky, reflected light from surroundings, etc.) causes varying shadow intensities to occur throughout the day and year. The presence of daylight has been considered in the simulation as the shadows shown in the photographs do not completely obscure the buildings/ streets with shade.

The following discussion is divided into two major components of shadow effects: off-site and on-site. The comments regarding "off-site" shadow effects are of interest for environmental impacts on the surroundings, whereas the "on-site" shadow effects are of interest to the architect and landscape architect for site planning purposes.

The off-site areas of prime interest in relationship to this sun/shade study include: the Ilikai Hotel; the public right-of-way; Ala Moana Boulevard sidewalks; Ala Wai Yacht Harbor; and the Hilton lagoon beach. Areas of interest on the proposed Waikikian Hotel site are: the entrance to the study building; the recreation deck; the Tahitian Lanai; the swimming pool; the ocean terrace; and the sand beach at the Hilton lagoon.

March 21st/September 21st

The tennis courts and the main entry area of the Ilikai Hotel were shaded by the proposed development during the early to mid-morning hours (8:00 - 10:00 am) in March and September. A northeast section of the public right-of-way was shaded by the proposed Waikikian Hotel from early morning until approximately 1:00 pm. The south side of Ala Mona Boulevard, adjacent to the study building, was generally in shade as a result of the addition of the proposed building, from early morning until mid-afternoon. During the late afternoon hours (4:00 - 5:00 pm) the shadow of the Waikikian Hotel was orientated in an easterly direction resulting in a minimal impact on the Hilton Parking Complex, the Hilton Dome and Kalakaua Avenue.

The entry area to the proposed hotel was sunlit at 4:00 pm in shade for the rest of the day. The Tahitian Lanai, ocean terrace and the swimming pool area to the east of the study building were sunlit from solar noon until late afternoon, and in partial shade from early morning until noon. On the north side of the proposed tower, the recreation deck is only sunlit around 4:00 pm and in shade for the remainder of the day. The west side of this recreational deck is predominantly sunlit throughout the day. The eastern section of the recreation deck is partially sunlit in the early morning and is primarily in shadow for the rest of the times tested.

June 21st

In the early to mid-morning hours, the shadow impact of the proposed Waikikian Hotel was limited to a narrow portion of the Ala Wai Yacht Harbor parking lot and the west end of the public right-of-way. From noon until nearly 2:00 pm, the shadow cast by the study building did not noticeably impact any surrounding building or property. Later in the afternoon (4:00 pm) the shadows cast by the study building shaded a notable area of the Hilton Convention Center and parking structure to the south of the study site. The Waikikian Hotel's shadow, during the early evening, had minimal effect on the immediate surrounding buildings or pedestrian related areas, as it is aligned the with shadow cast by the existing Ilikia Hotel. The

only noticable shadow impact that the proposed hotel cast was onto the east side of Kalakaua Avenue, to the east of the Tapa Tower.

The entry area of the proposed Waikikian Hotel was sunlit from early morning until approximately 3:00 pm. The existing Ilikai Hotel shaded the main entrance to the proposed structure from mid-afternoon until evening. The area to the west of the proposed hotel, where the Tahitian Lanai and the ocean terrace will be located, was predominantly sunlit for all of the times tested on June 21st. The recreation deck was mainly sunlit from early morning until early afternoon. The deck on the south side of the tower was in shade from approximately 1:00 pm until the end of the day. The north portion of the recreation deck was mostly shaded by the Ilikia Hotel from approximately 4:00 pm and for the remainder of the day. The proposed hotel's beach area (Hilton Lagoon) would only be affected by the hotel around sunrise in June.

December 21st

The proposed building had a very limited effect on the west side of Ala Moana Boulevard in front of the Ilikai Hotel during the early morning hours of December 21st. This was the only street area affected at this time of day. From mid-morning until noon both the east and west sides of Ala Moana Boulevard north of the study site was shade by the proposed Waikikian Hotel. A small eastern section of the public right-of-way also received additional shade at this time. By mid-afternoon the shadow of the study building was orientated in an north-northeast direction and impacted both sides of Ala Moana Boulevard south of the Hawaii Inn. The Waikikian Hotel cast a shadow in a northeasterly direction by late afternoon, onto both sides of Ala Moana Boulevard south of the Travel Lodge Hotel. The tennis courts at the Ilikai Hotel and the Ala Wai Yacht Harbor were generally unaffected by the proposed Waikikian Hotel's shadow at this time of the year.

The entrance to the proposed Waikikian Hotel was in shade throughout the day in December. The Tahitian Lanai, ocean terrace and pool area to the west of the study building were shaded by existing buildings from early morning until approximately 11:00 am. From this time until approximately 2:00 pm, only the lanai received shade with all areas being totally sunlit for the remainder of the day. The recreational deck was primarily in shadow for all of the times tested in December. However, the northeast section of this deck was sunlit from noon until mid-afternoon, and the western portion was sunlit at mid-morning and again during the late afternoon.

6. CONCLUSIONS AND RECOMMENDATIONS

The addition of the proposed Waikikian Hotel has typically increased the degree of shade along Ala Moana Boulevard from approximately September through March. The Ilikai Hotel's tennis courts receive additional shading, most notably in the early morning hours of March and September. The public right-of-way also received additional shading during morning and mid-day hours; however, given the extent and height of existing trees in the area, this impact would be negligible. The change in shadow conditions for the Ala Wai Yacht Harbor, Hilton lagoon beach and buildings to the south were insignificant. The pedestrian leisure areas on the west side of the hotel property generally received shade in the morning hours - usually from existing buildings. The recreation deck received significant shading on the north side of the tower. The best exposure to direct sunlight was the northeast portion of the recreation deck. We recommend that the shadow patterns presented in this report be viewed as a general guideline to assist in planning of "solar" sensitive outdoor use areas.

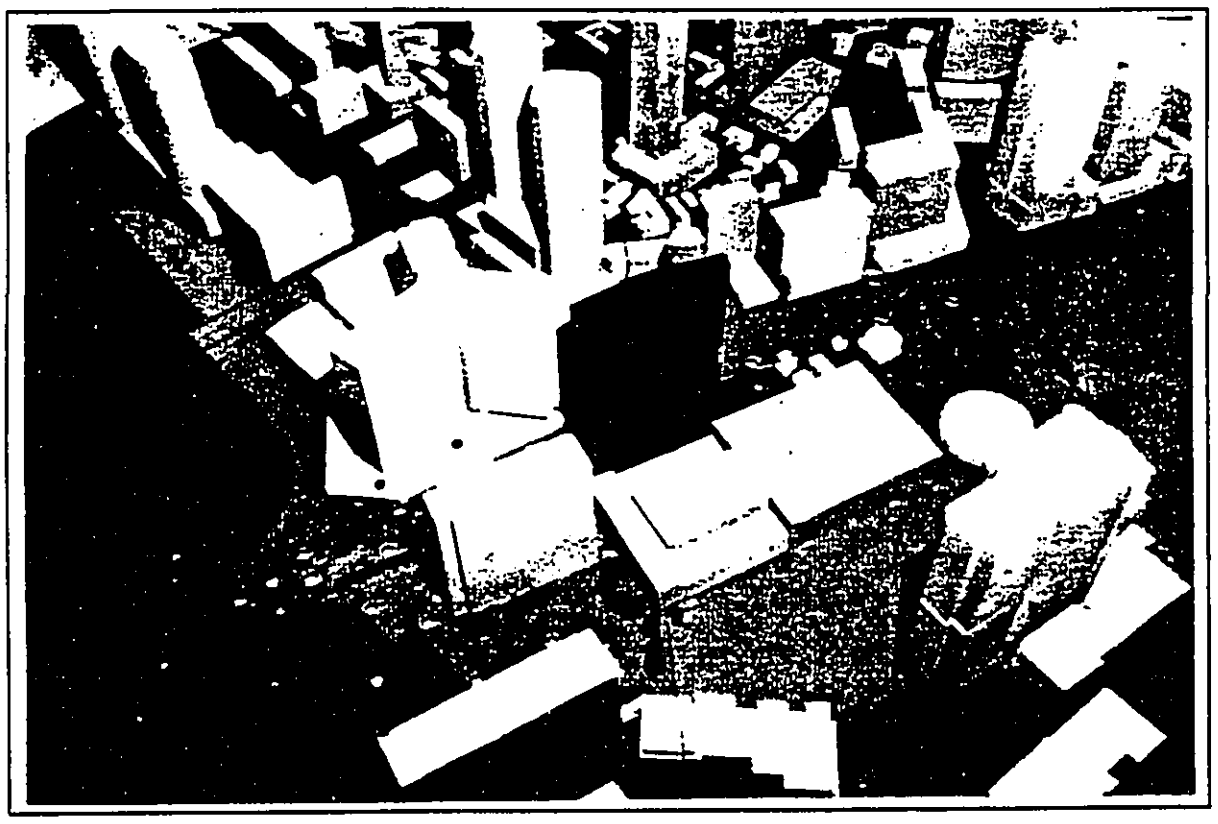
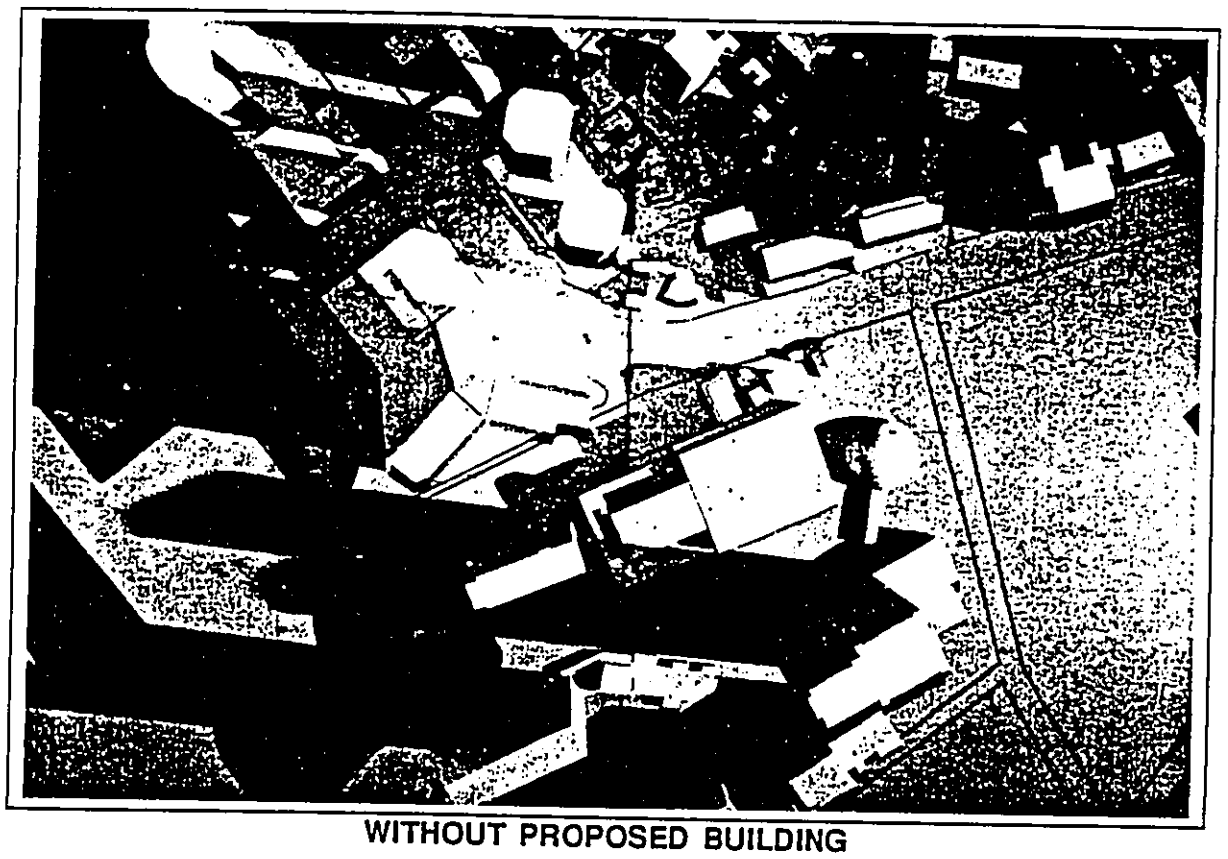


Figure 1: Orientation of Study Site



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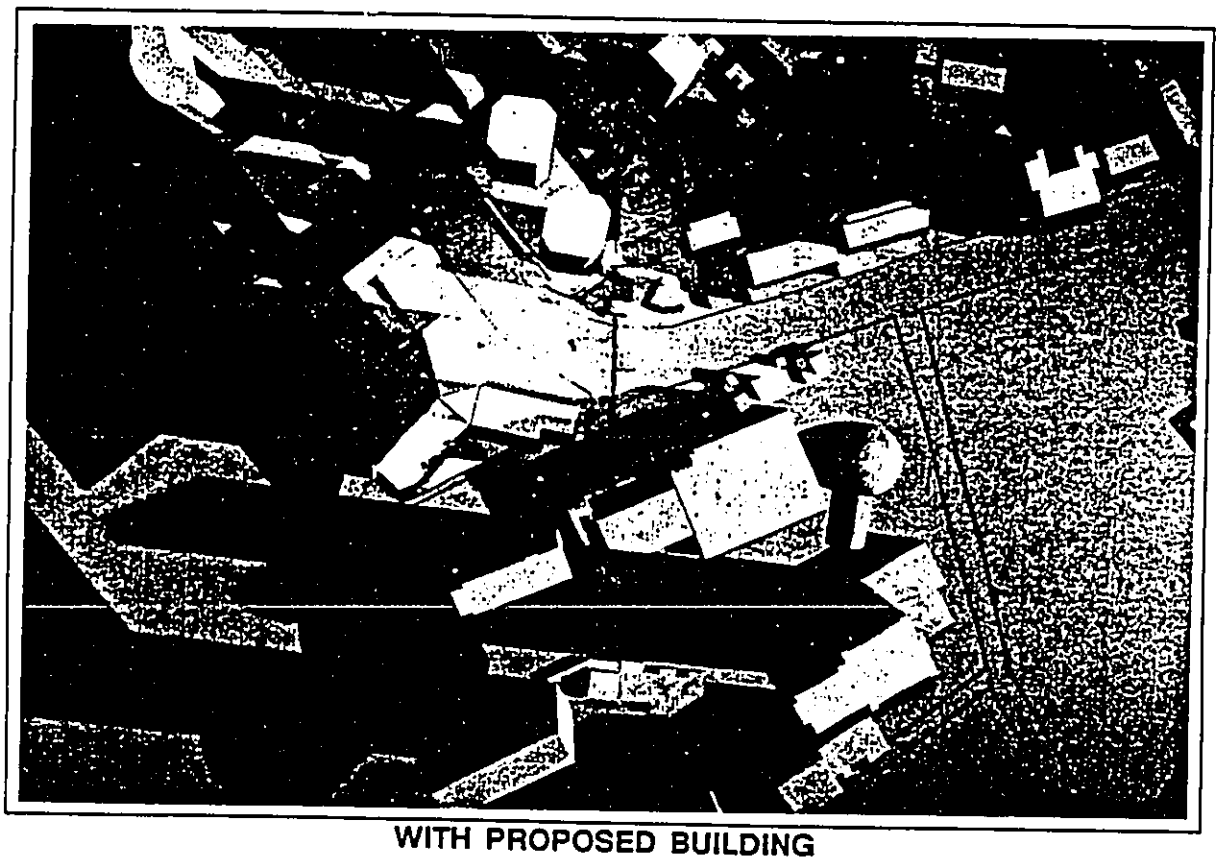
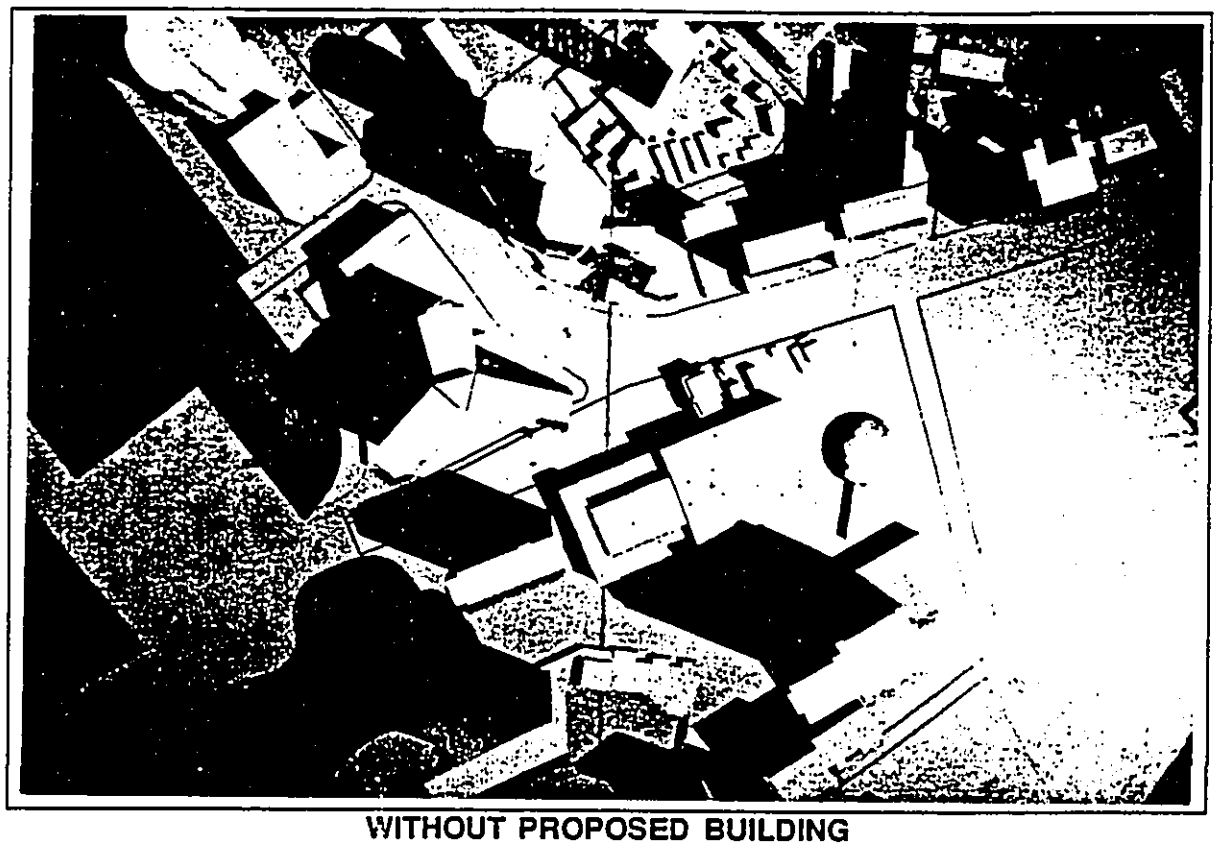


WITH PROPOSED BUILDING

Figure 2: March 21st / September 21st 8:00 a.m.



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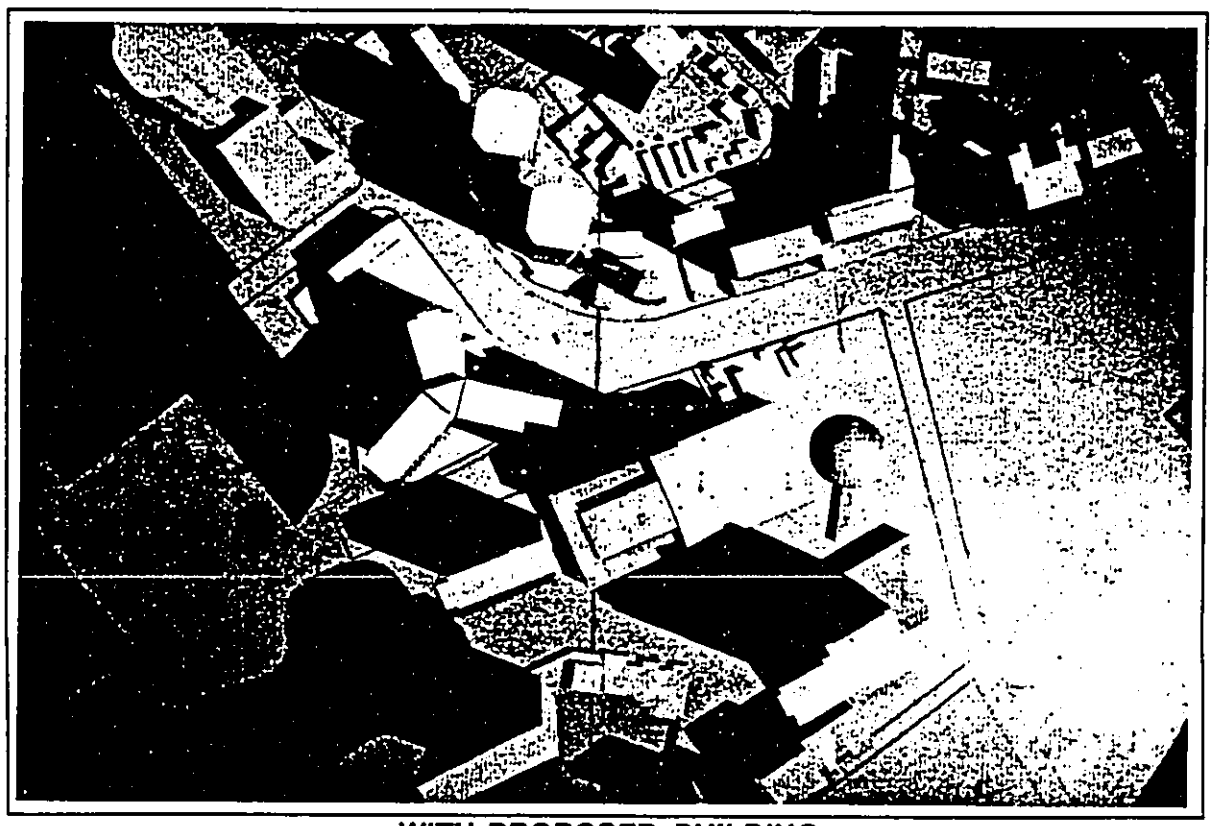
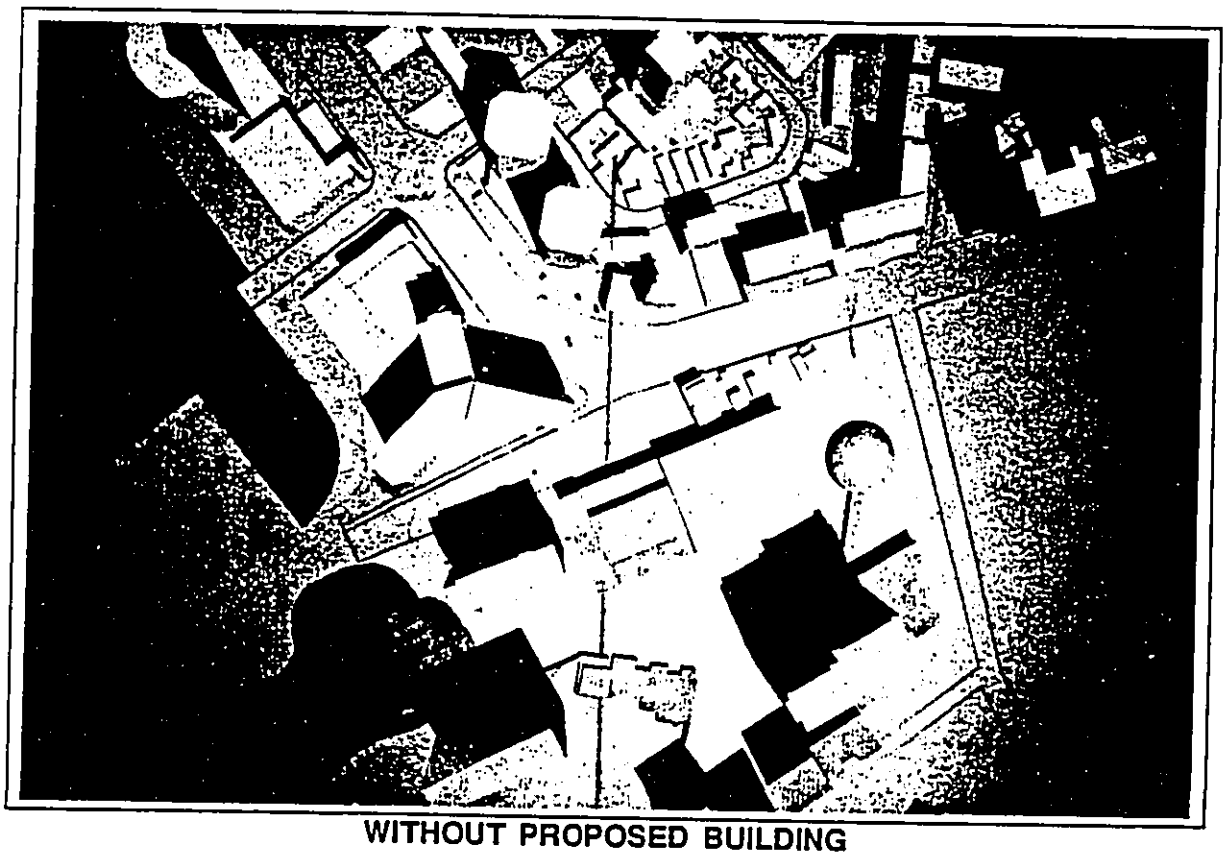


WITH PROPOSED BUILDING

Figure 3: March 21st / September 21st 10:00 a.m.



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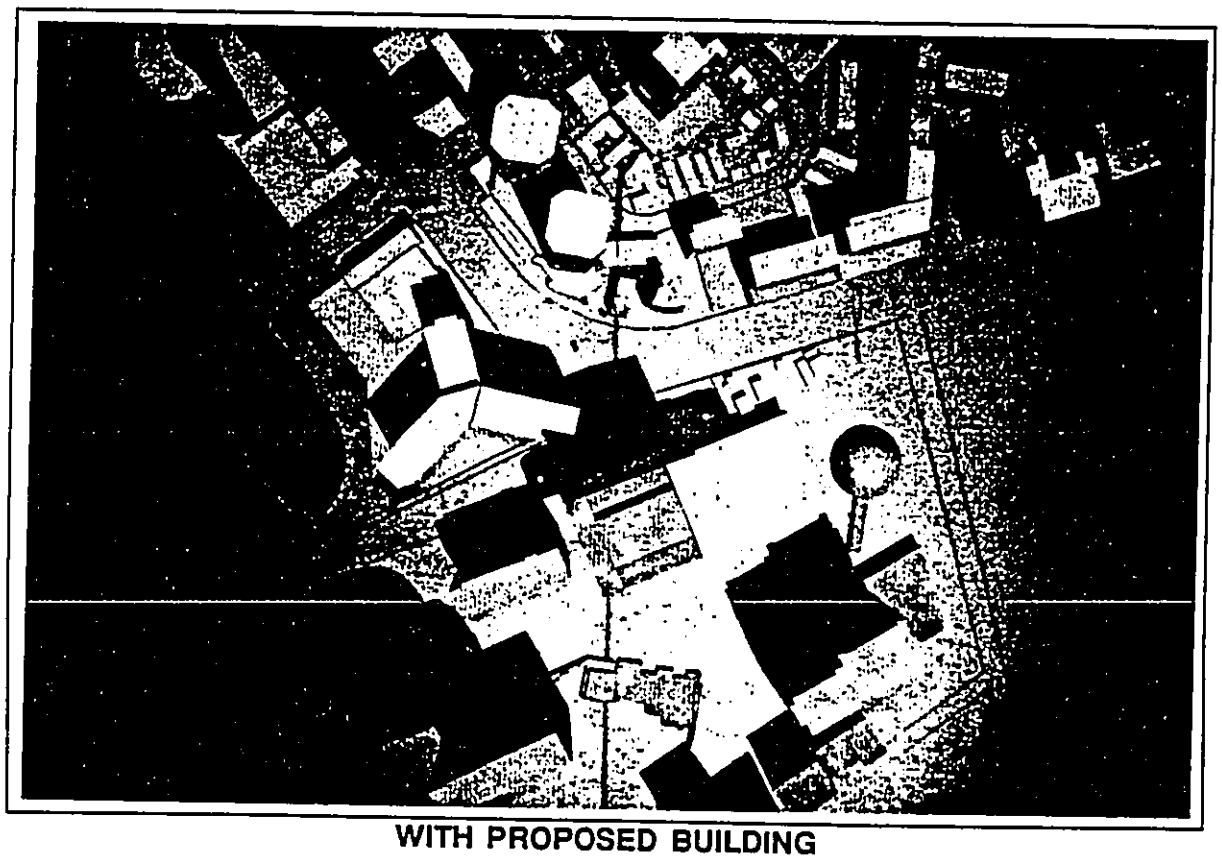
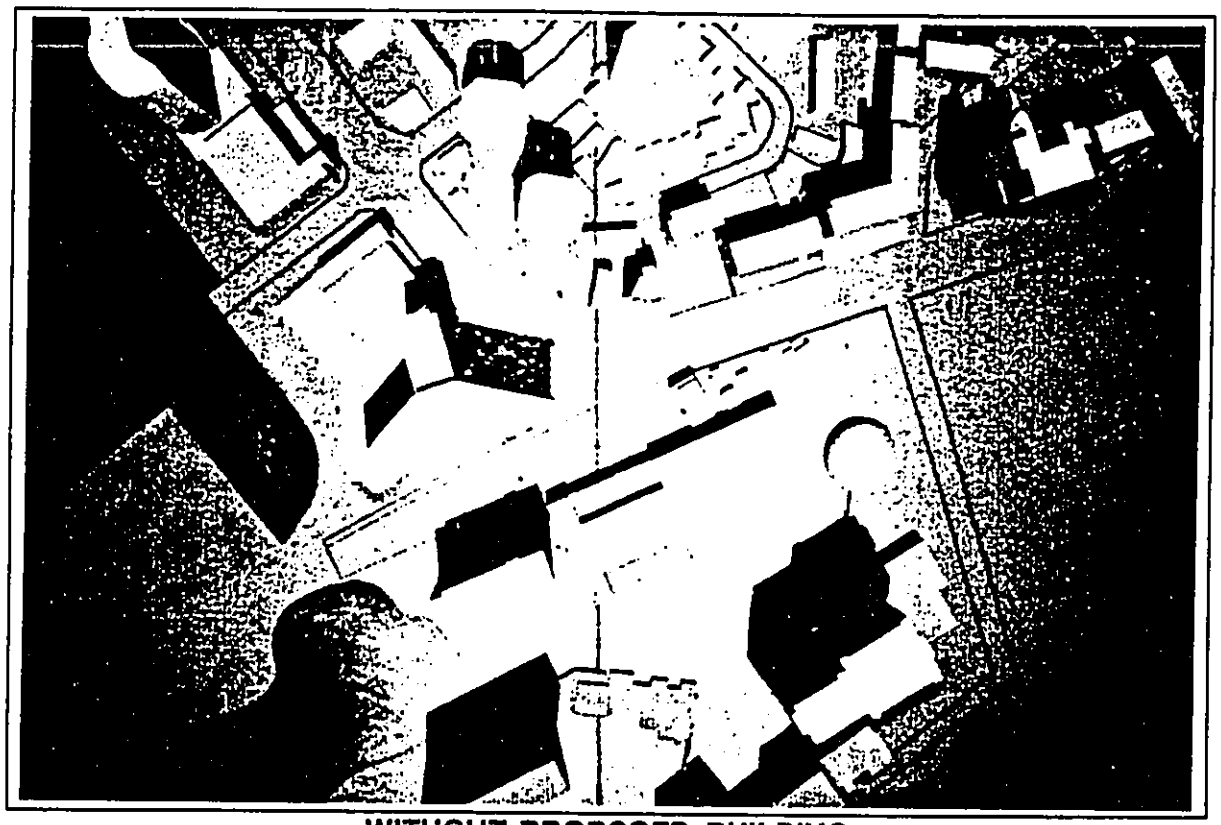


WITH PROPOSED BUILDING

Figure 4: March 21st / September 21st 12:00 (noon)



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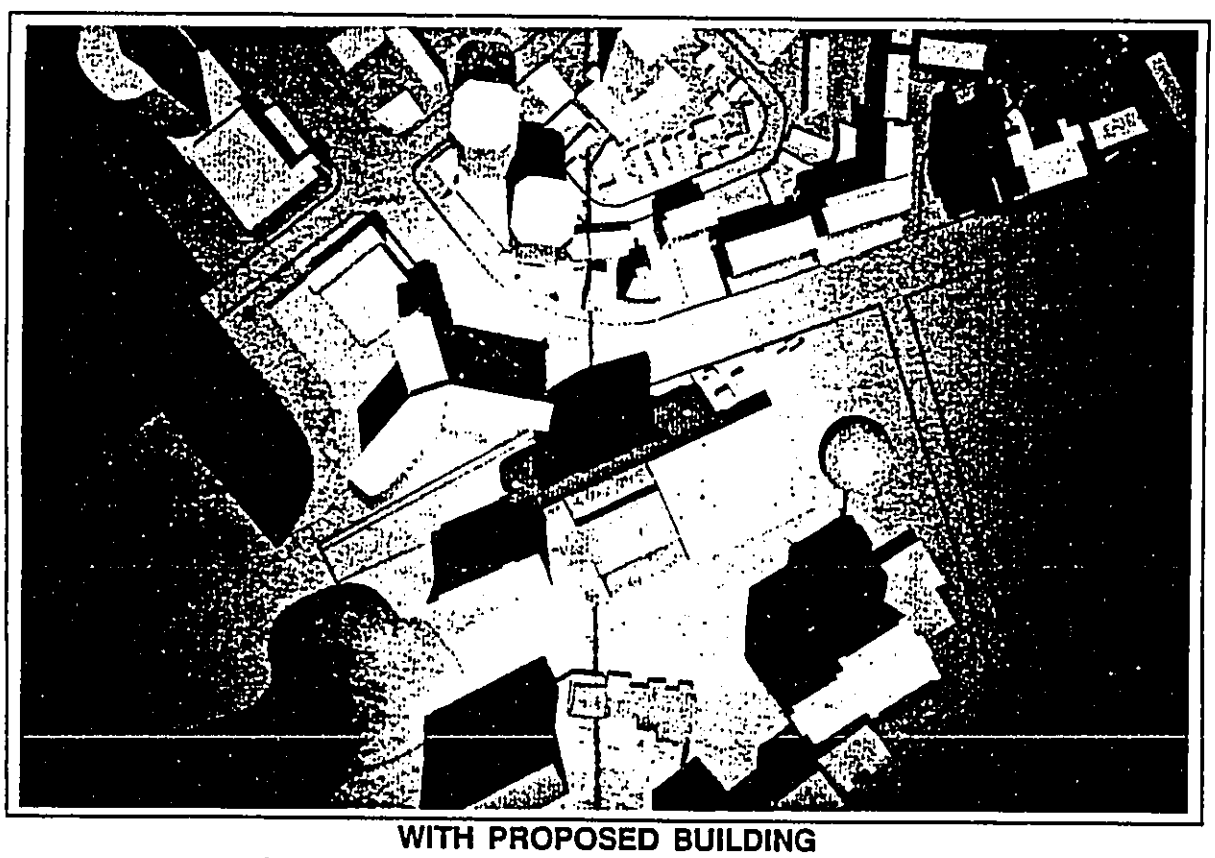

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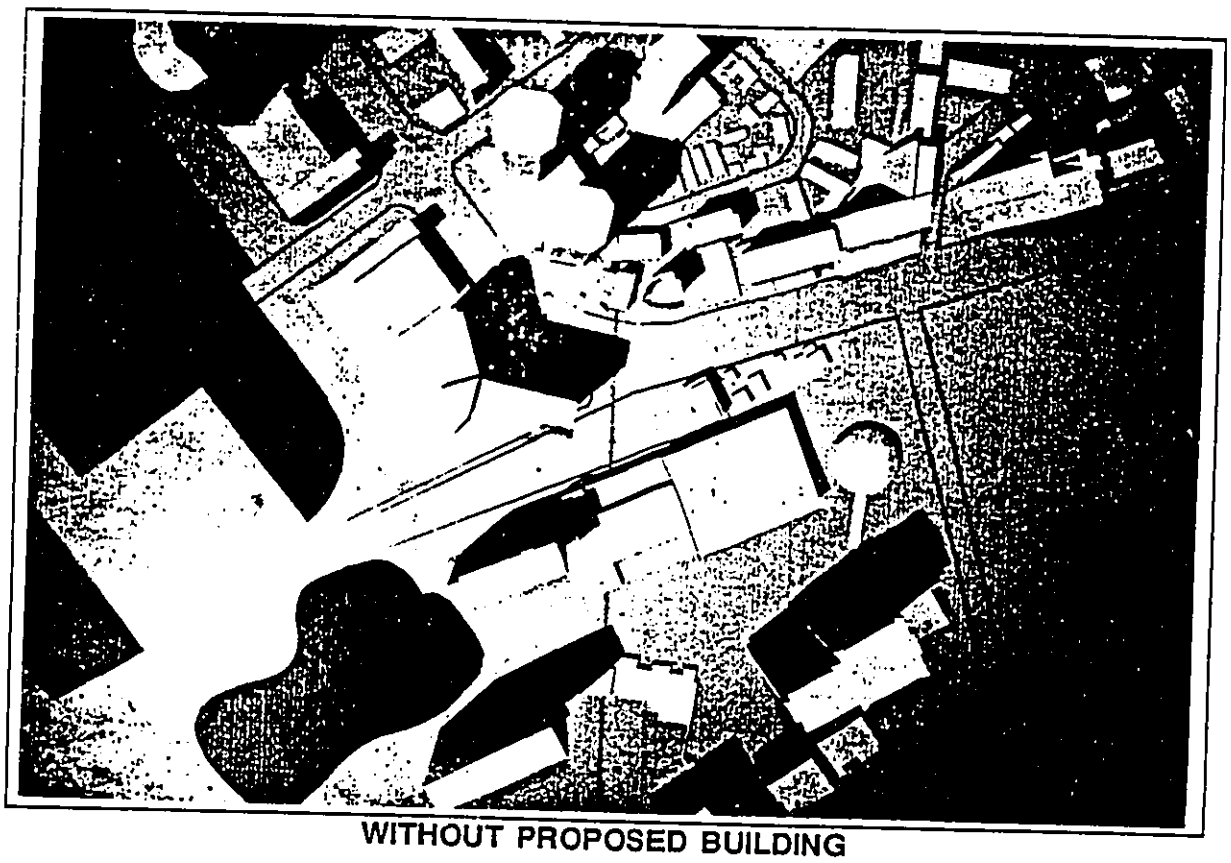
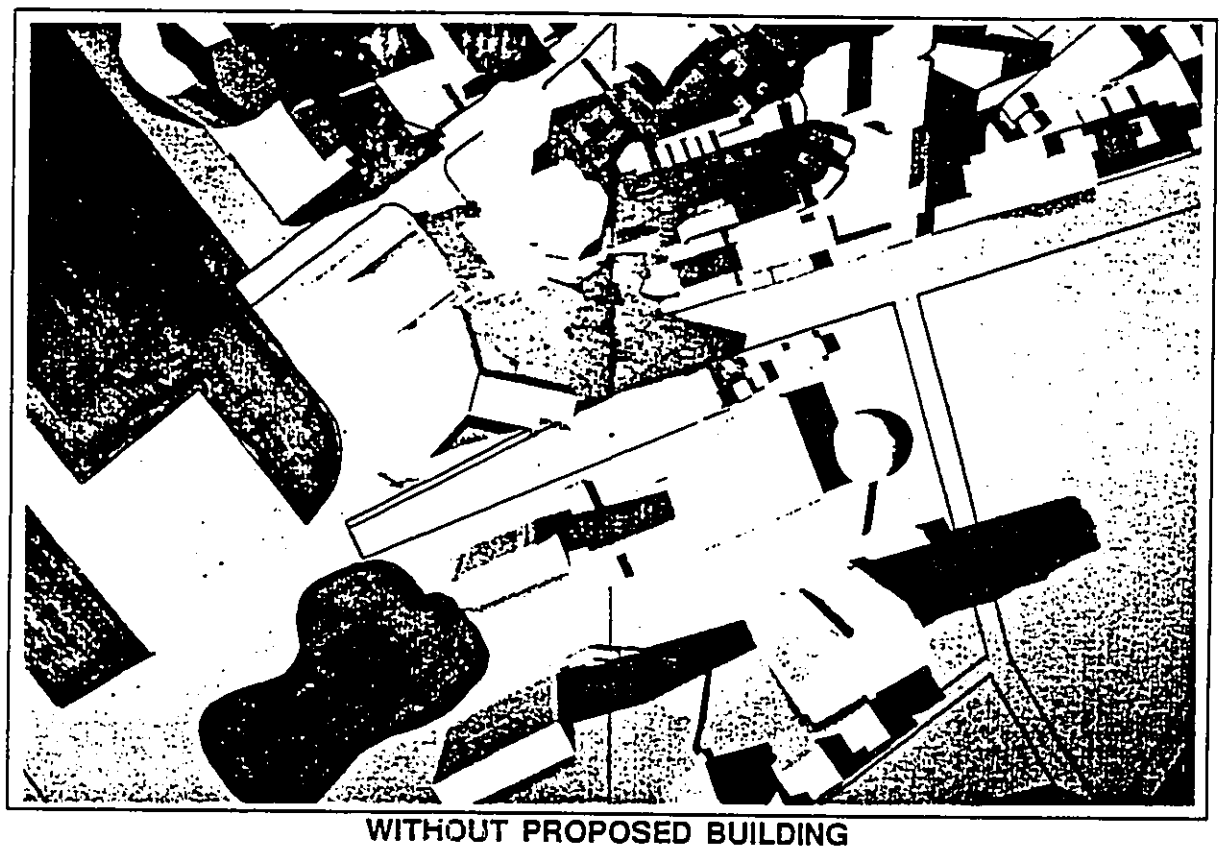
Figure 5: March 21st / September 21st 12:38 p.m.



WITHOUT PROPOSED BUILDING

WITH PROPOSED BUILDING

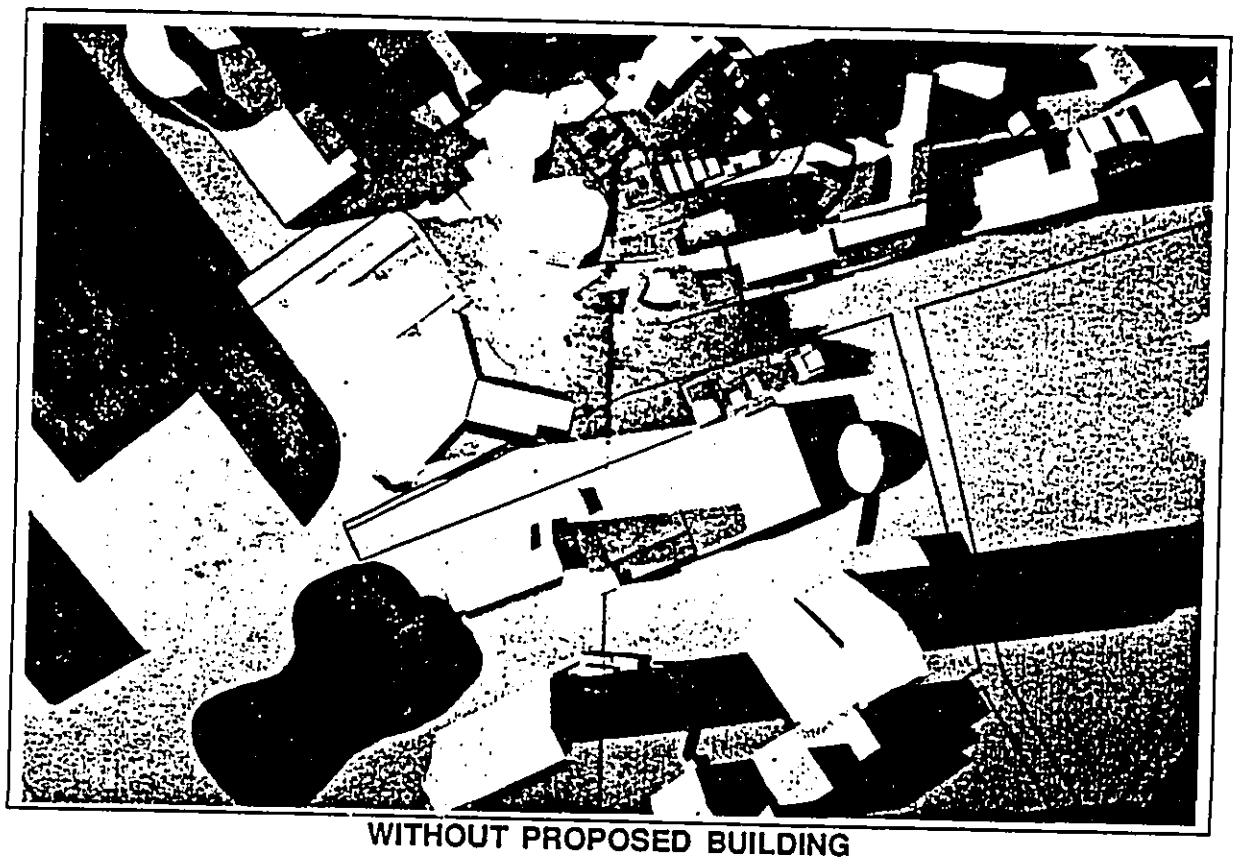
Figure 6: March 21st / September 21st 2:00 p.m.



WITHOUT PROPOSED BUILDING

WITH PROPOSED BUILDING

Figure 7: March 21st / September 21st 4:00 p.m.



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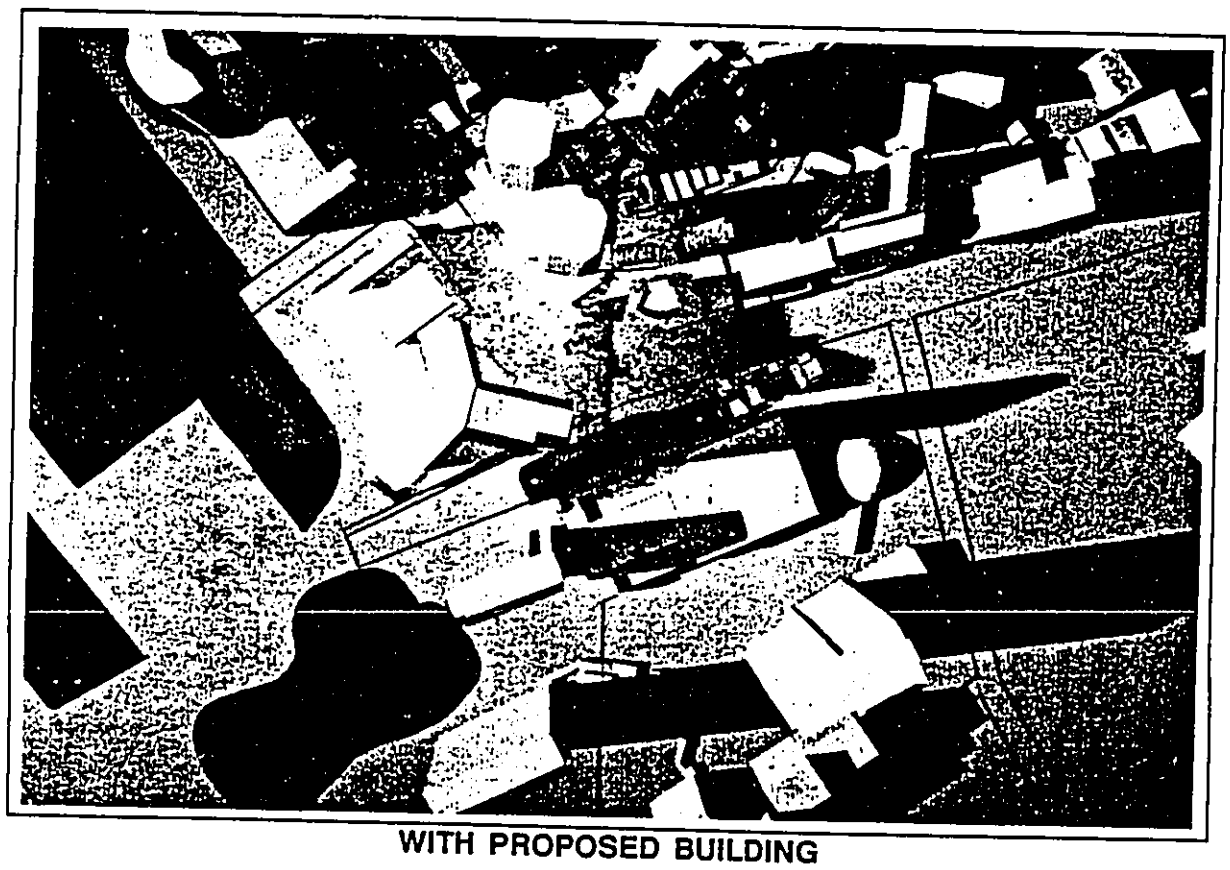
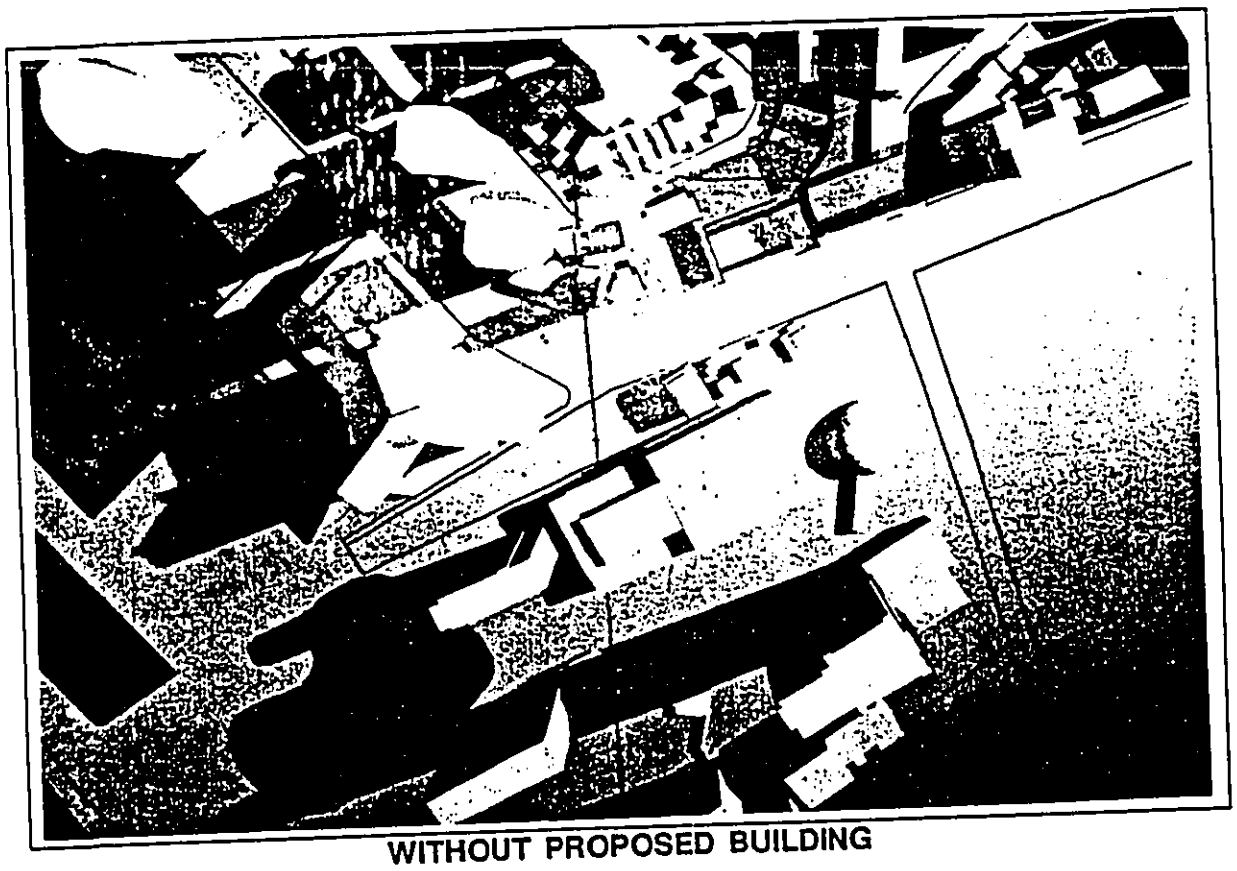


WITH PROPOSED BUILDING

Figure 8: March 21st / September 21st 5:00 p.m.



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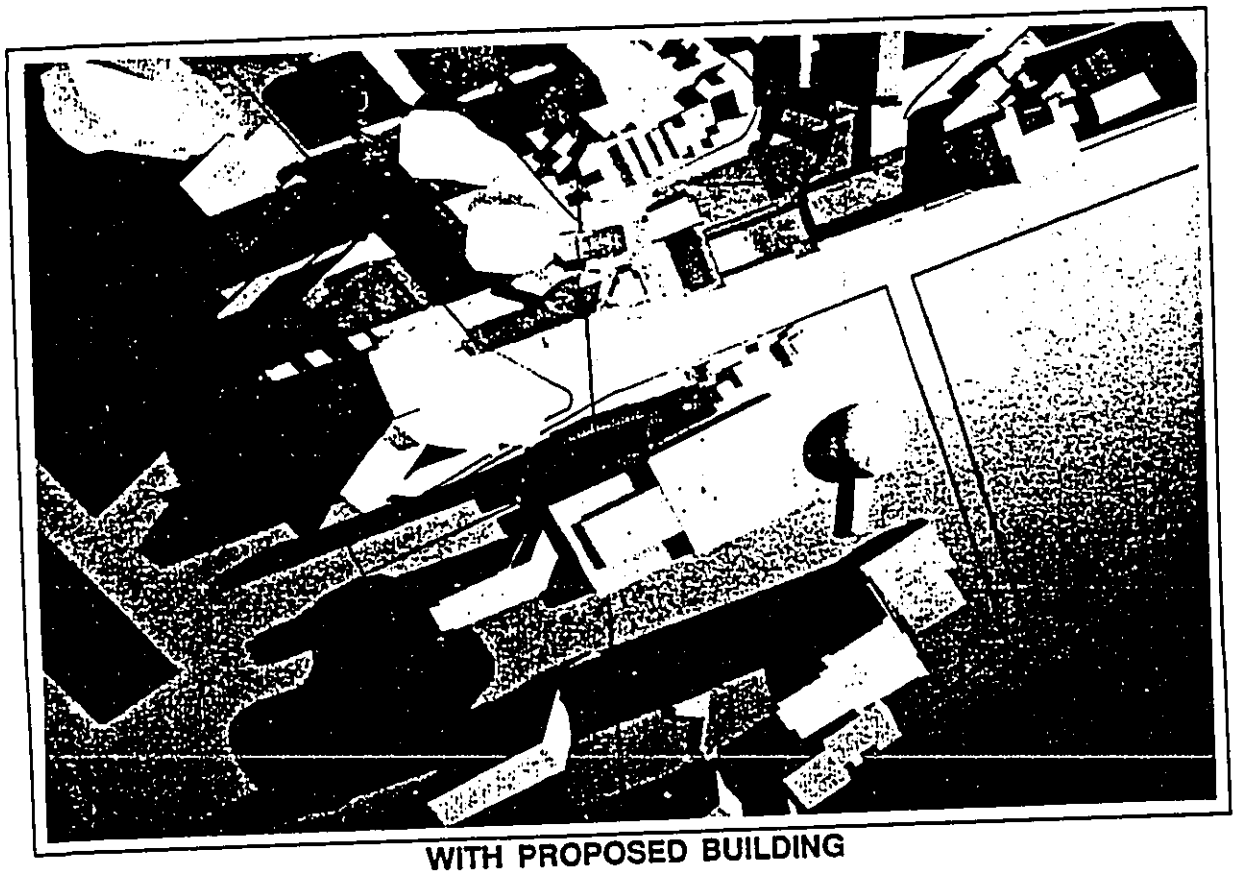
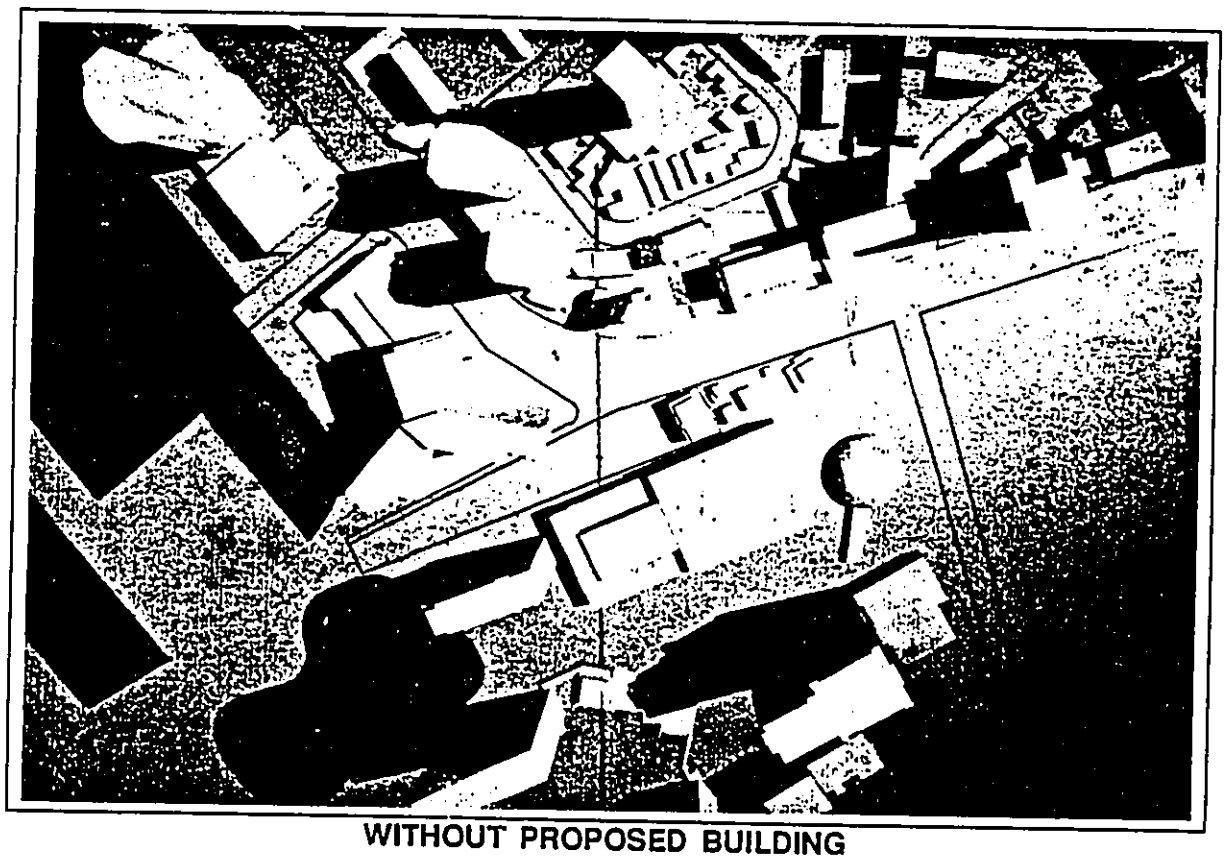


WITH PROPOSED BUILDING

Figure 9: June 21st 8:00 a.m.



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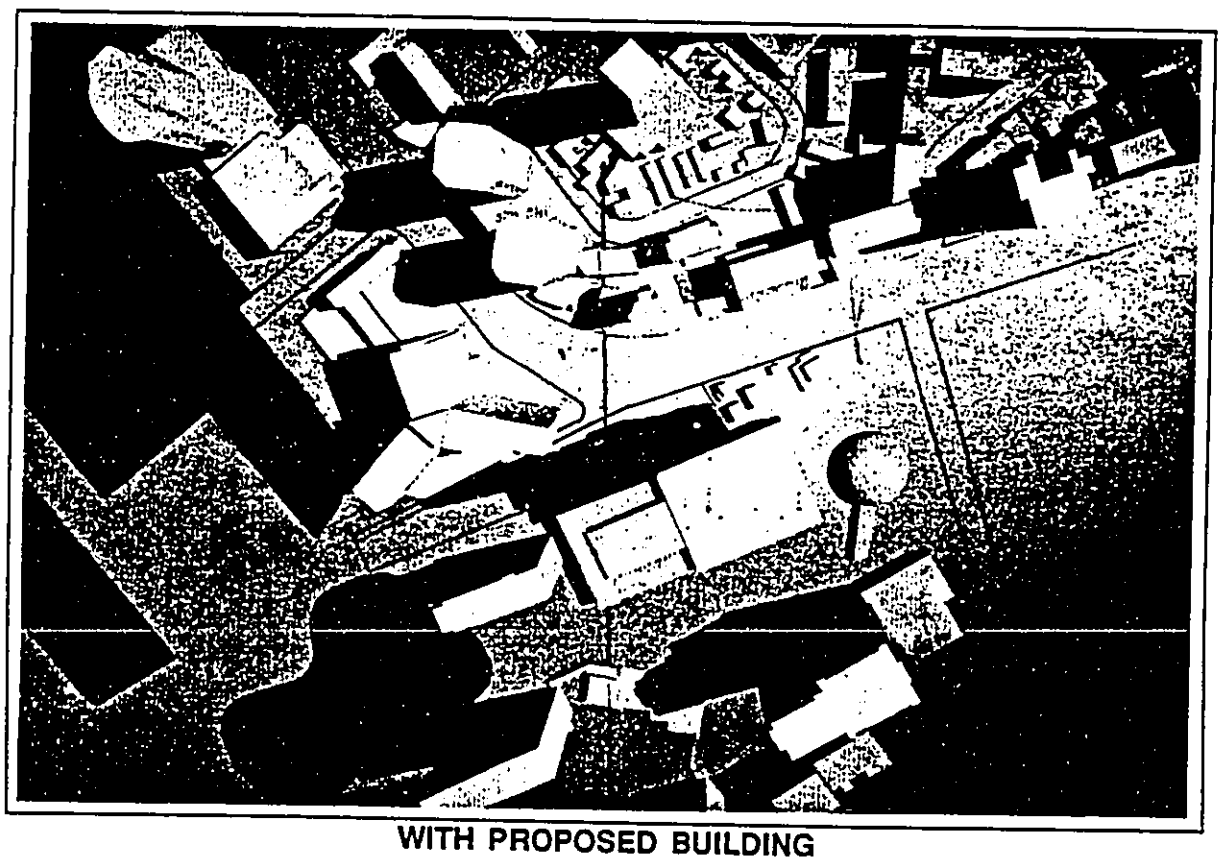

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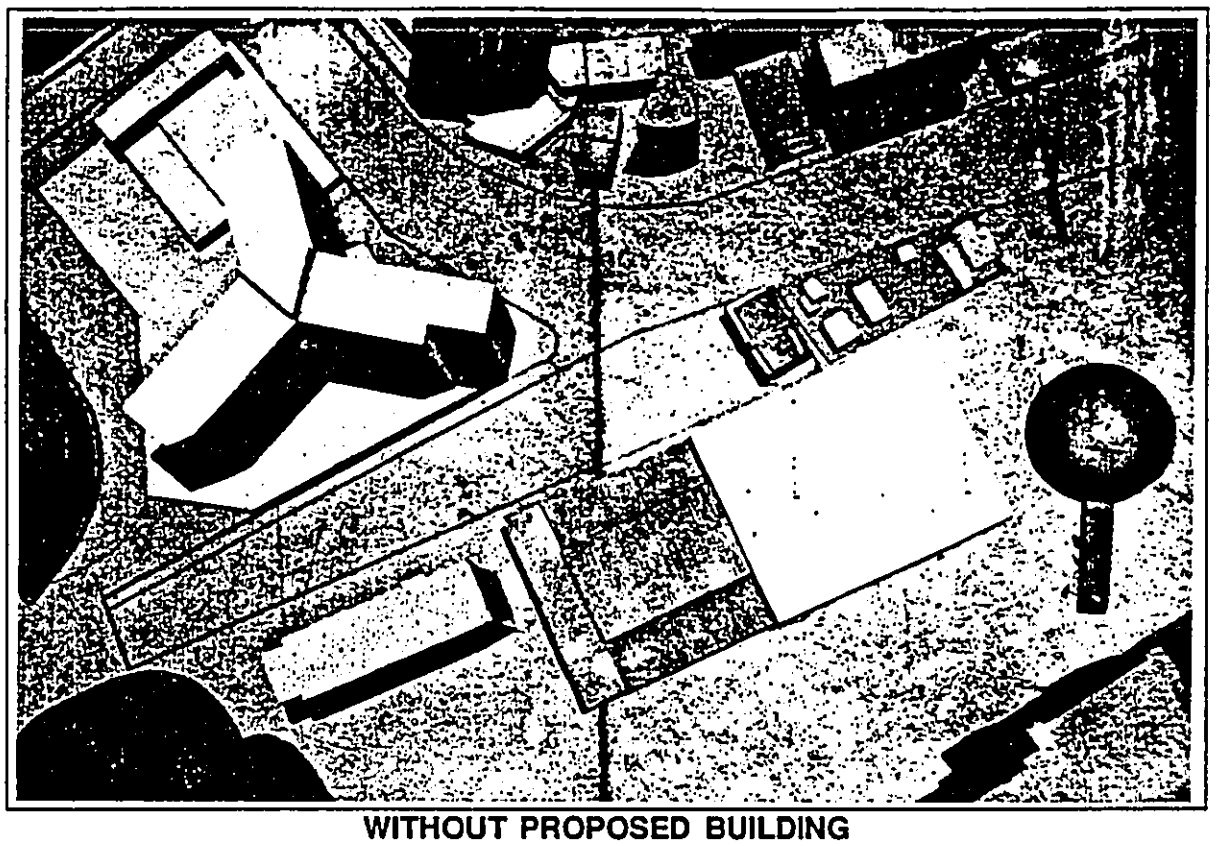
Figure 10: June 21st 10:00 a.m.



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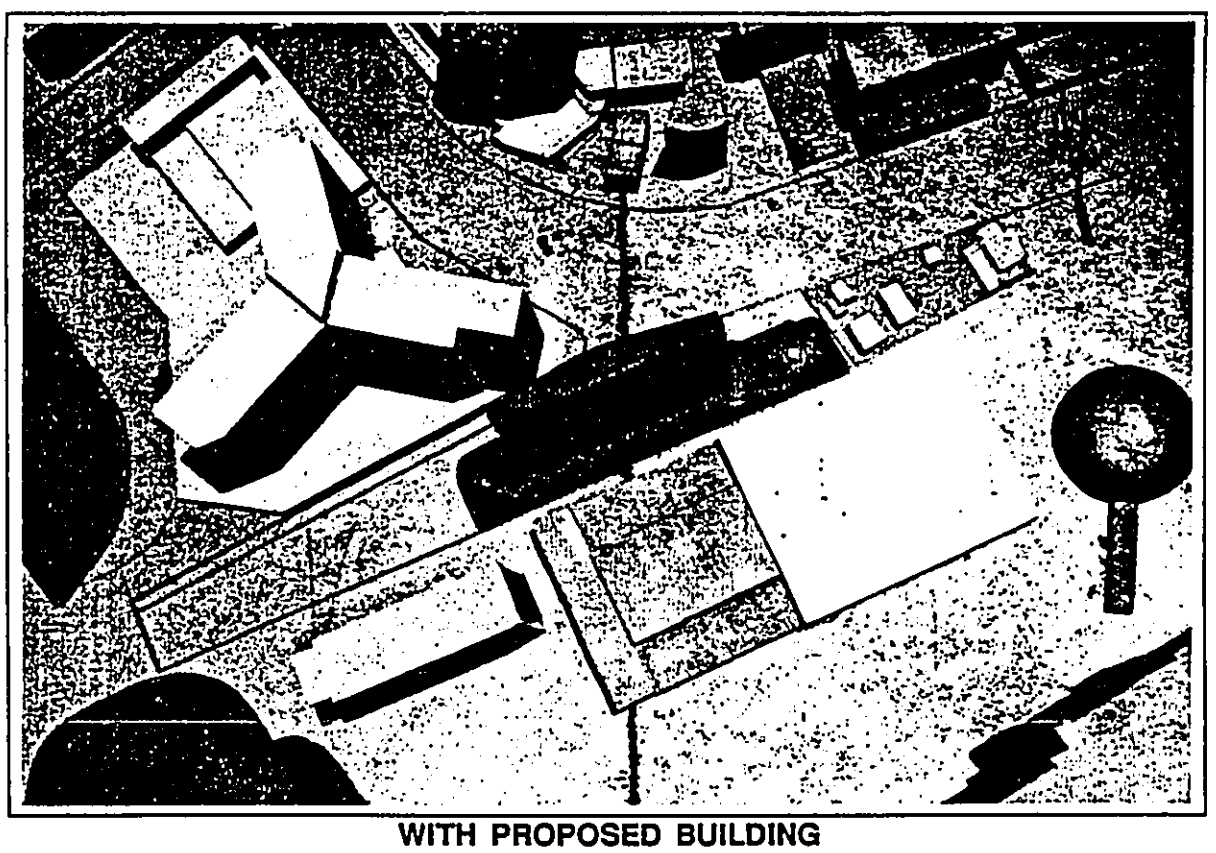

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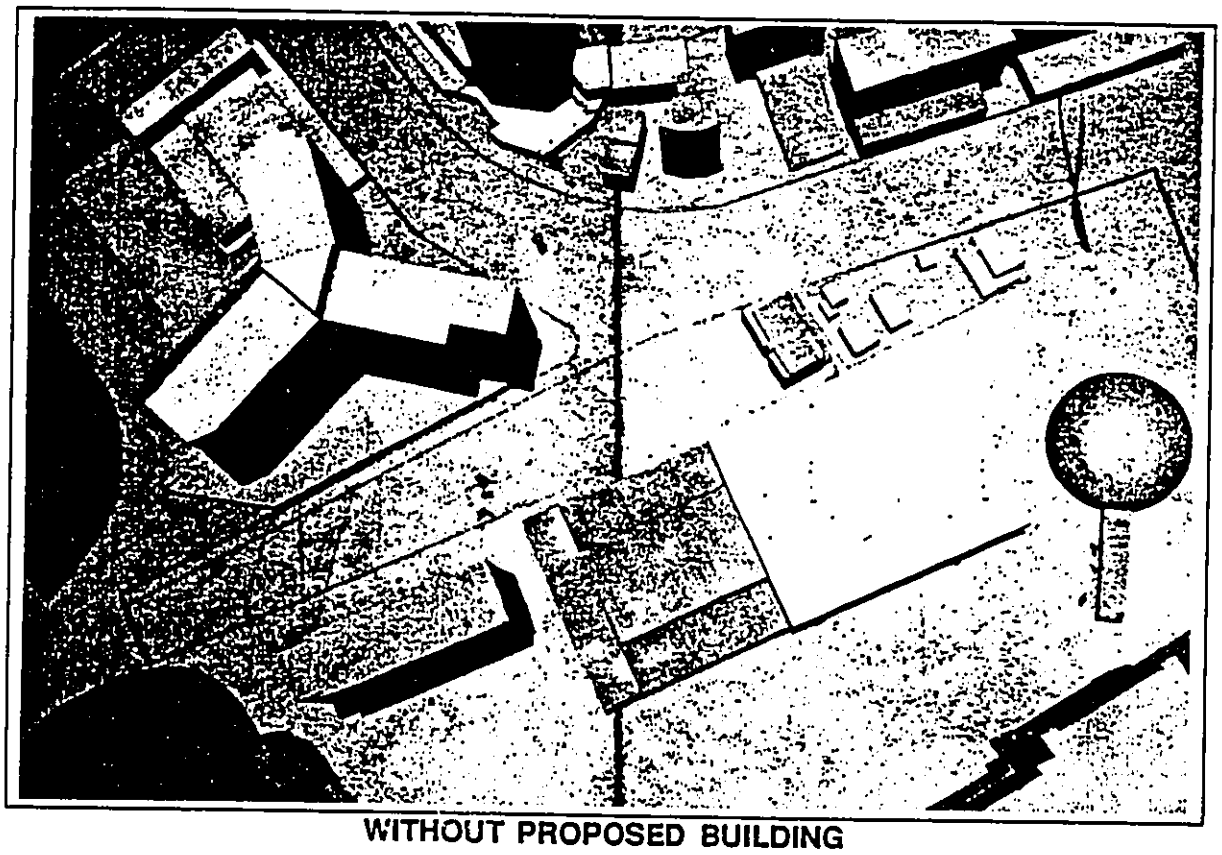
Figure 11: June 21st 12:00 (noon)



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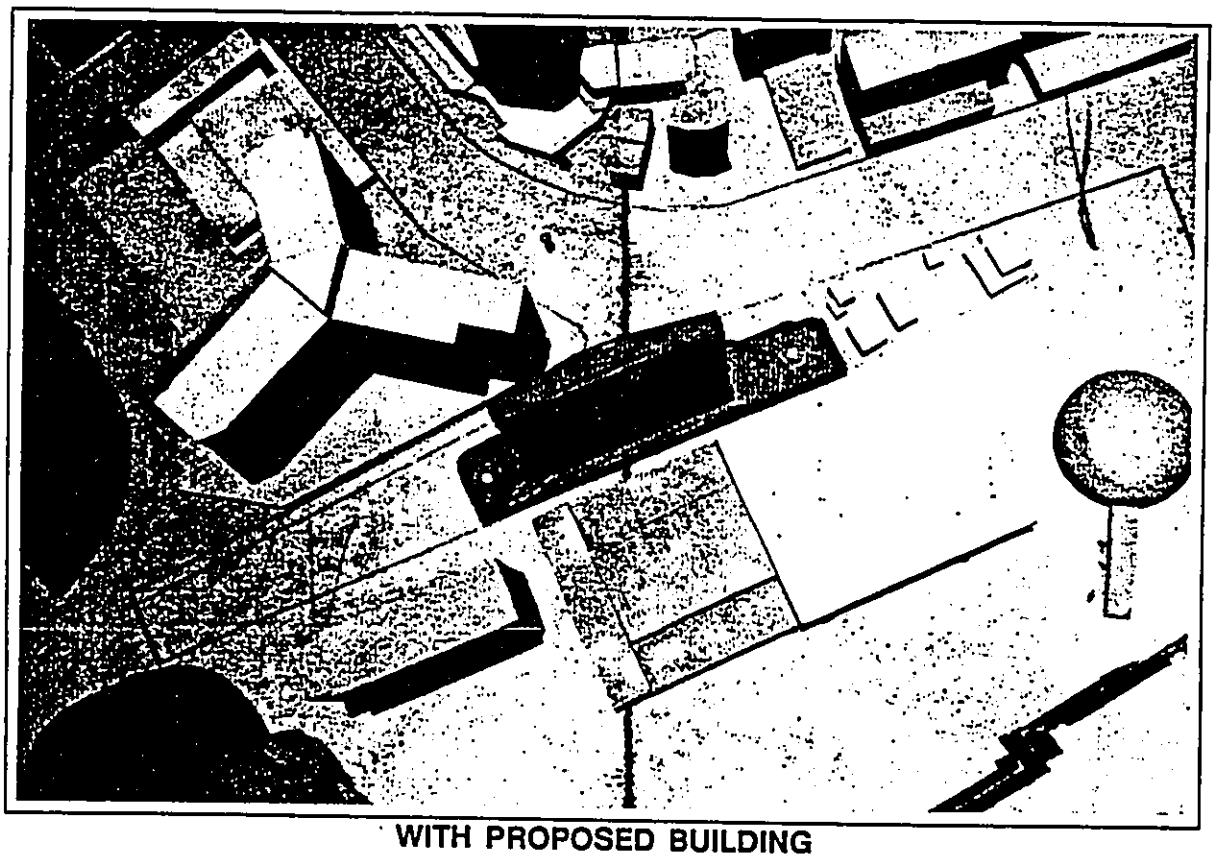

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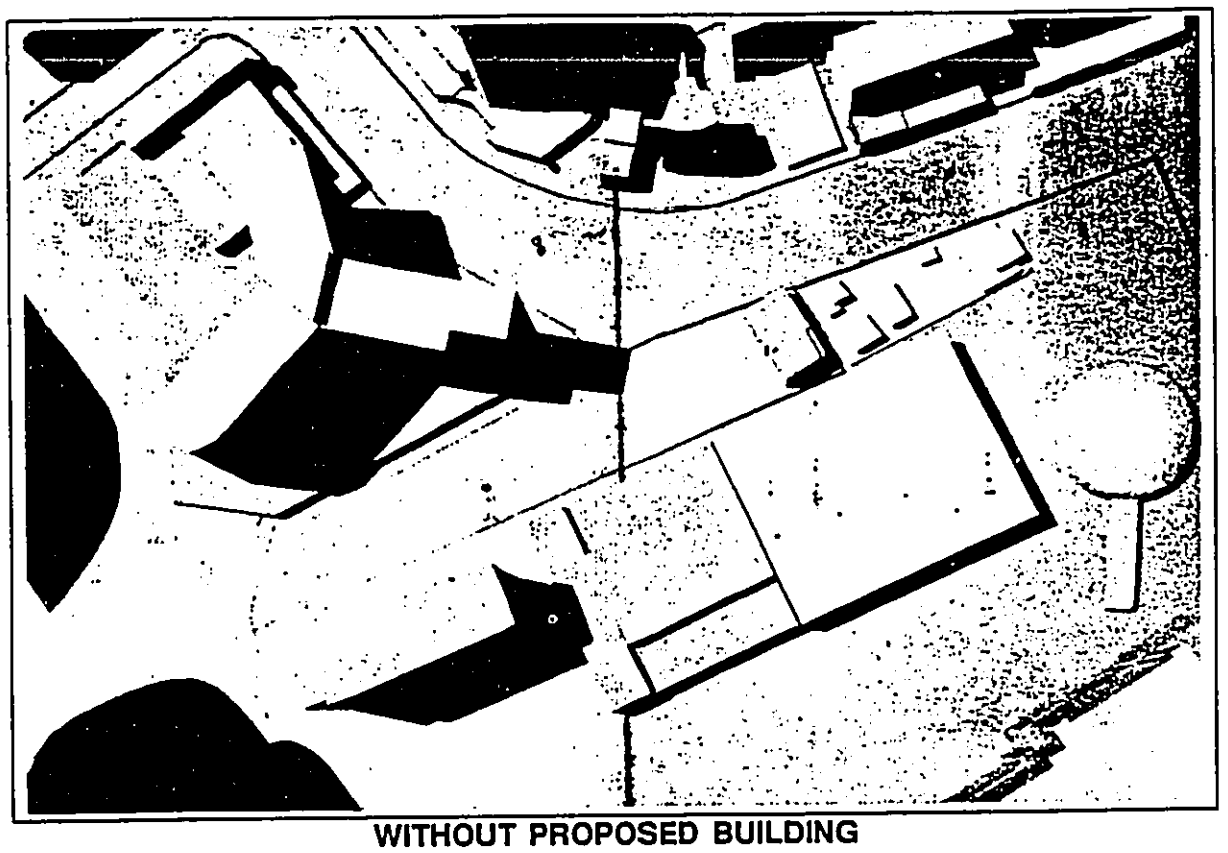
Figure 12: June 21st 12:33 p.m.



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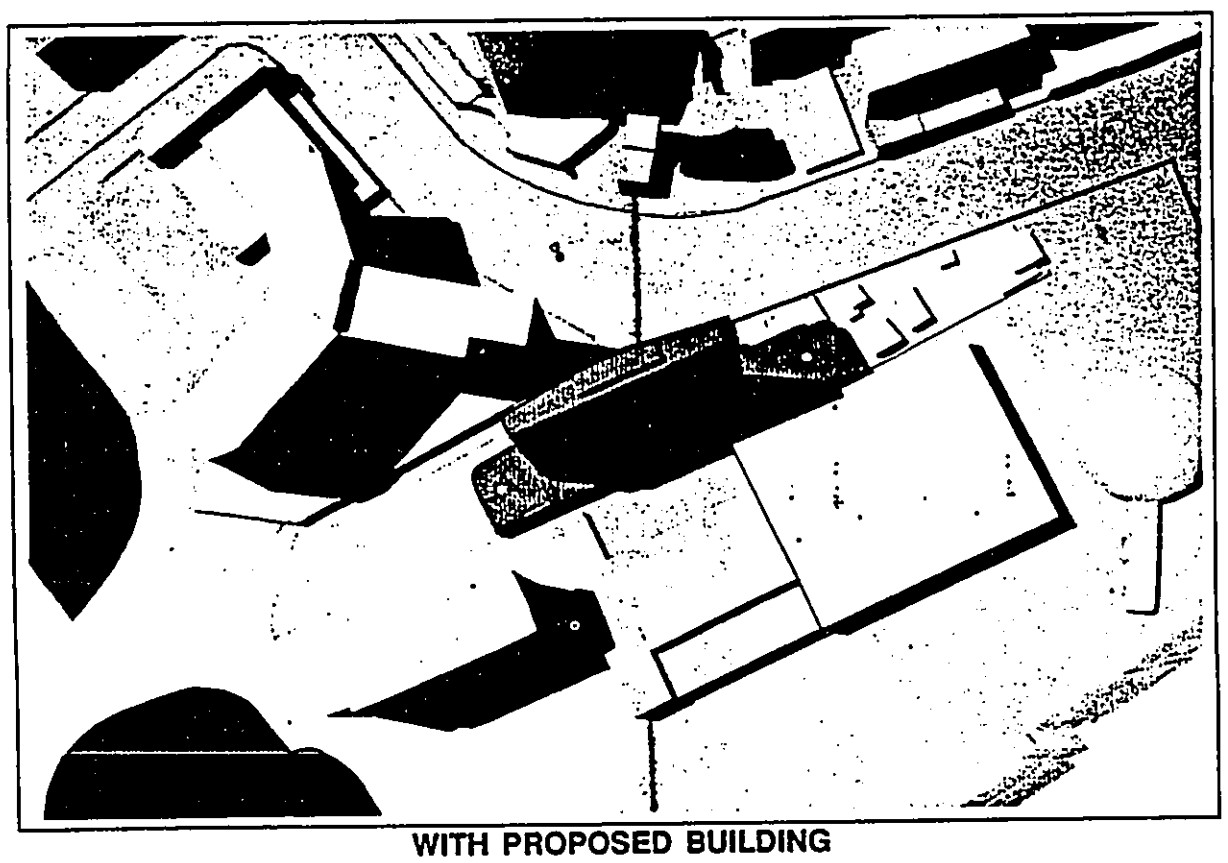

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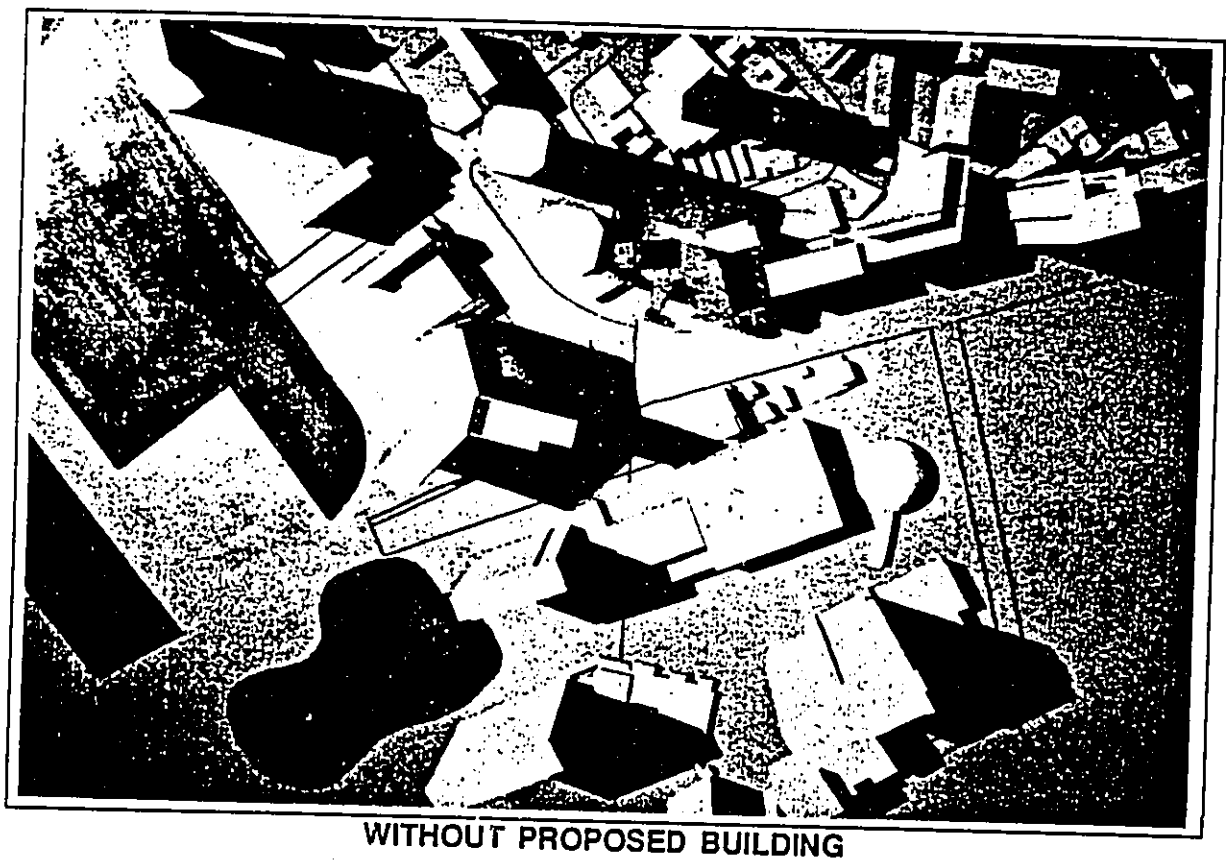
Figure 13: June 21st 2:00 p.m.



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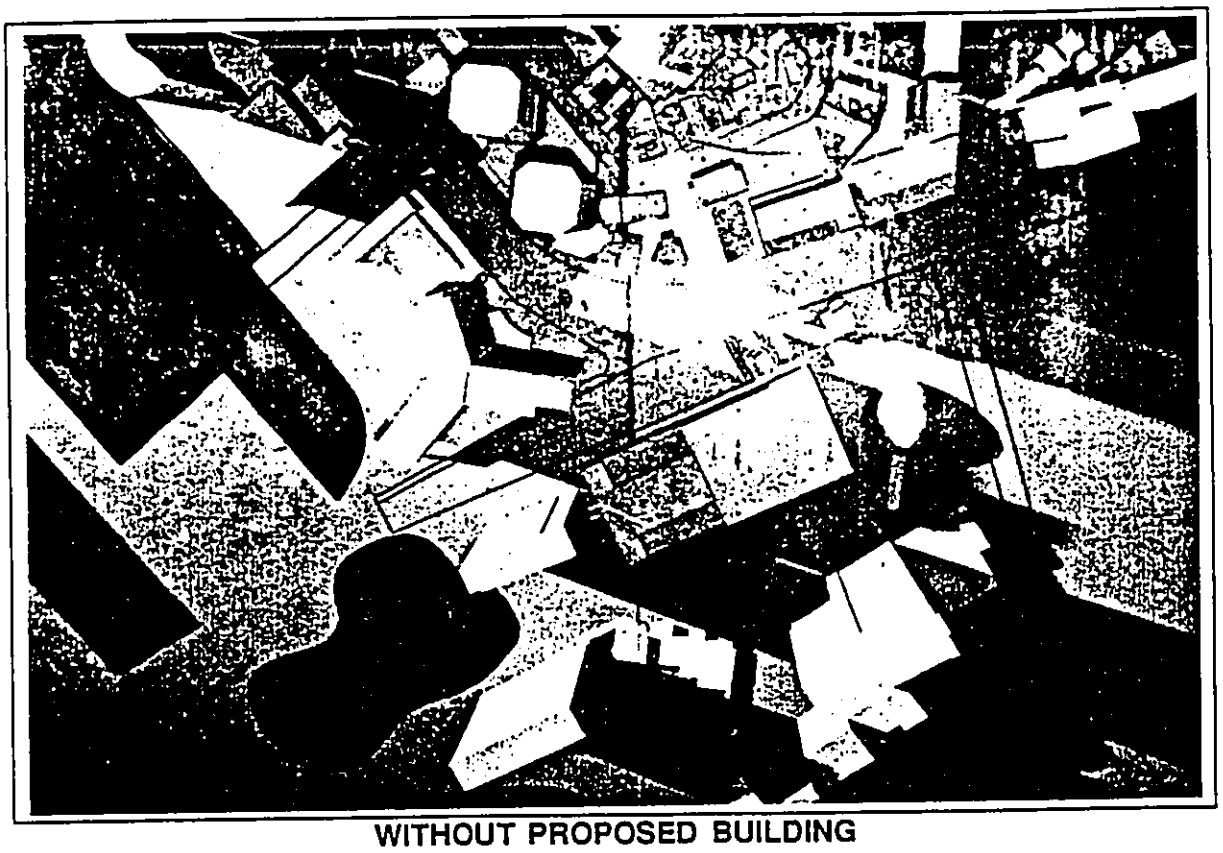
WITH PROPOSED BUILDING

Figure 14: June 21st 4:00 p.m.



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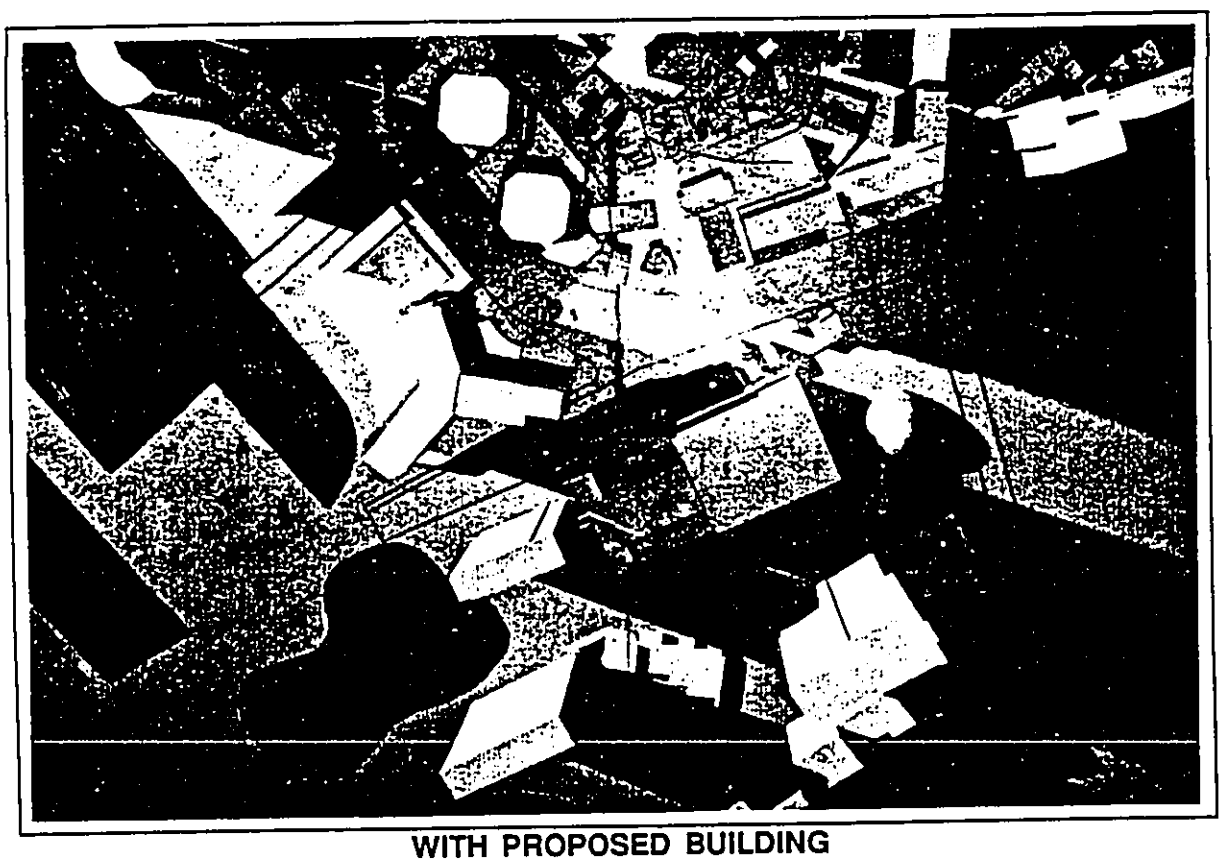

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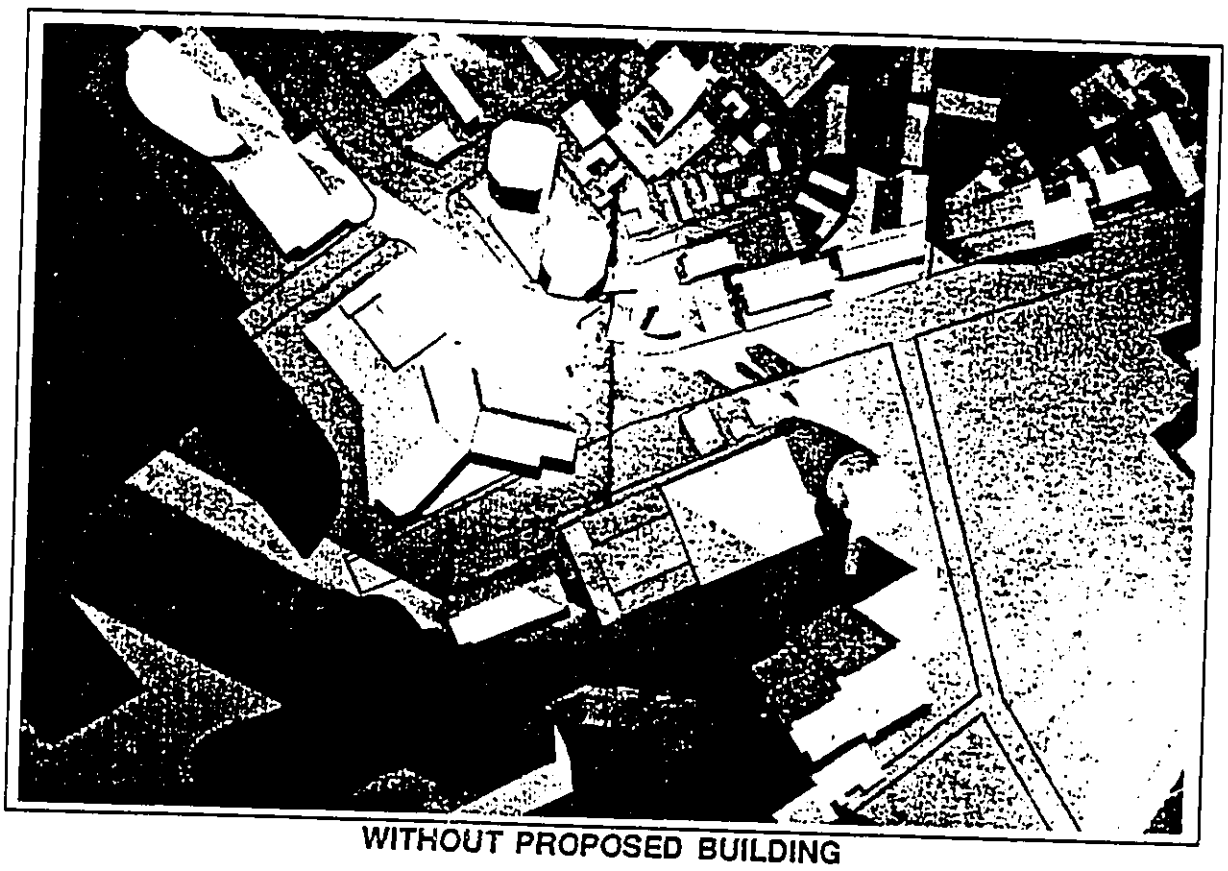
Figure 15: June 21st 6:00 p.m.



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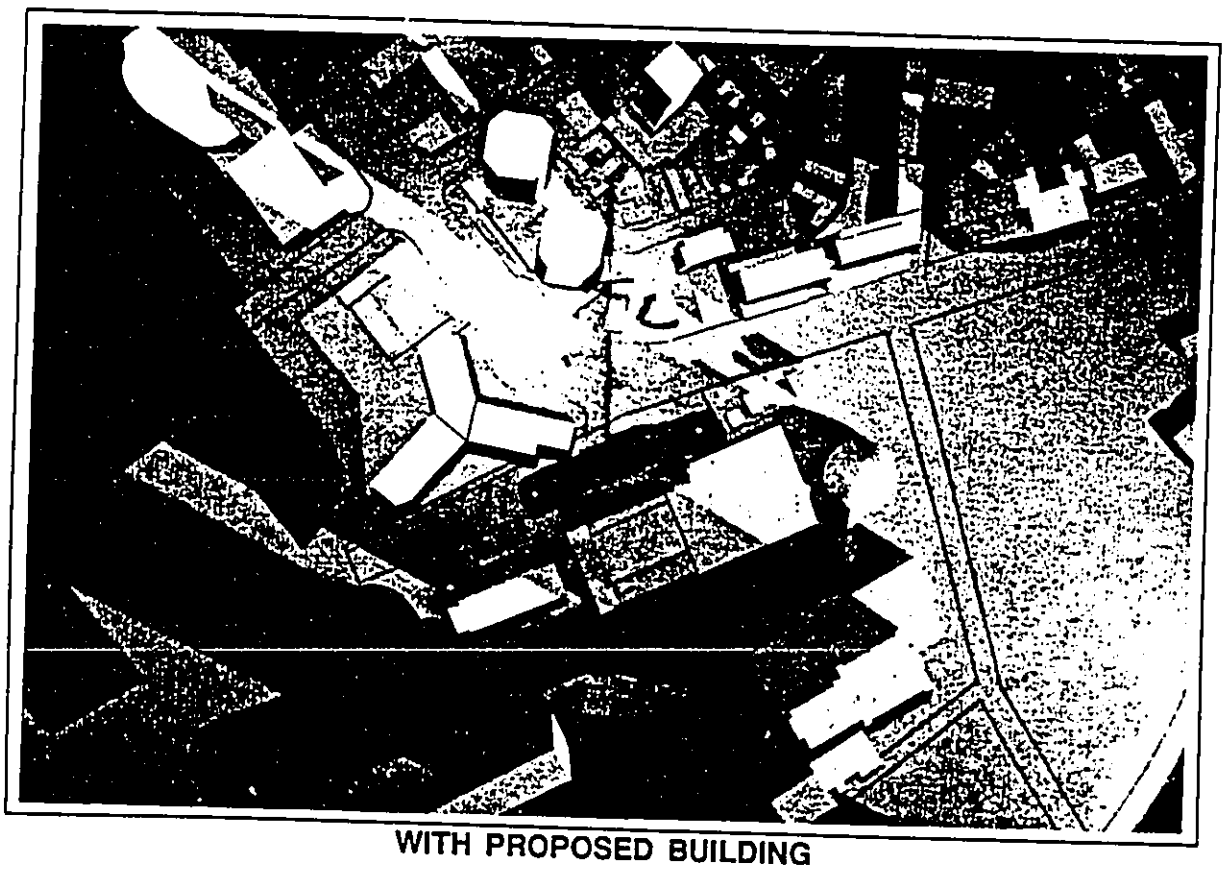

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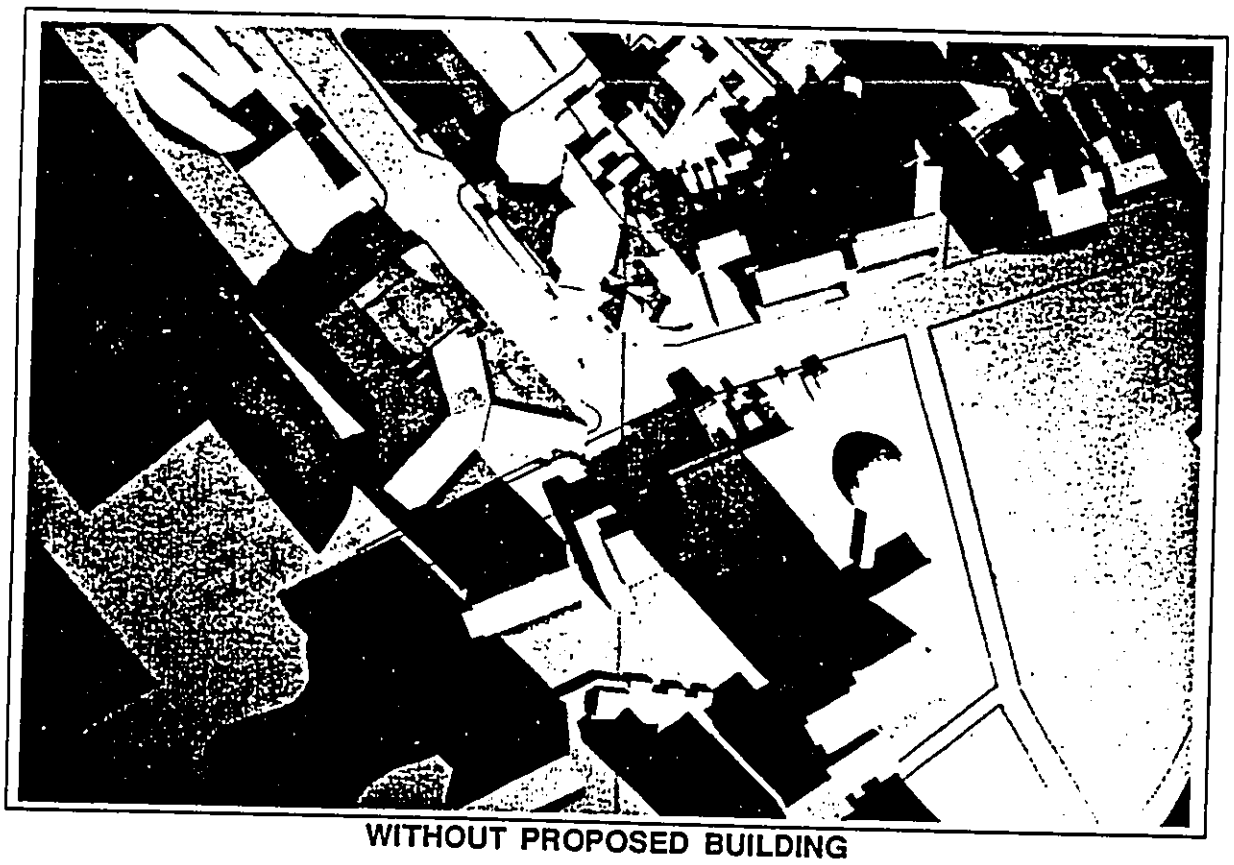
Figure 16: December 21st 8:00 a.m.



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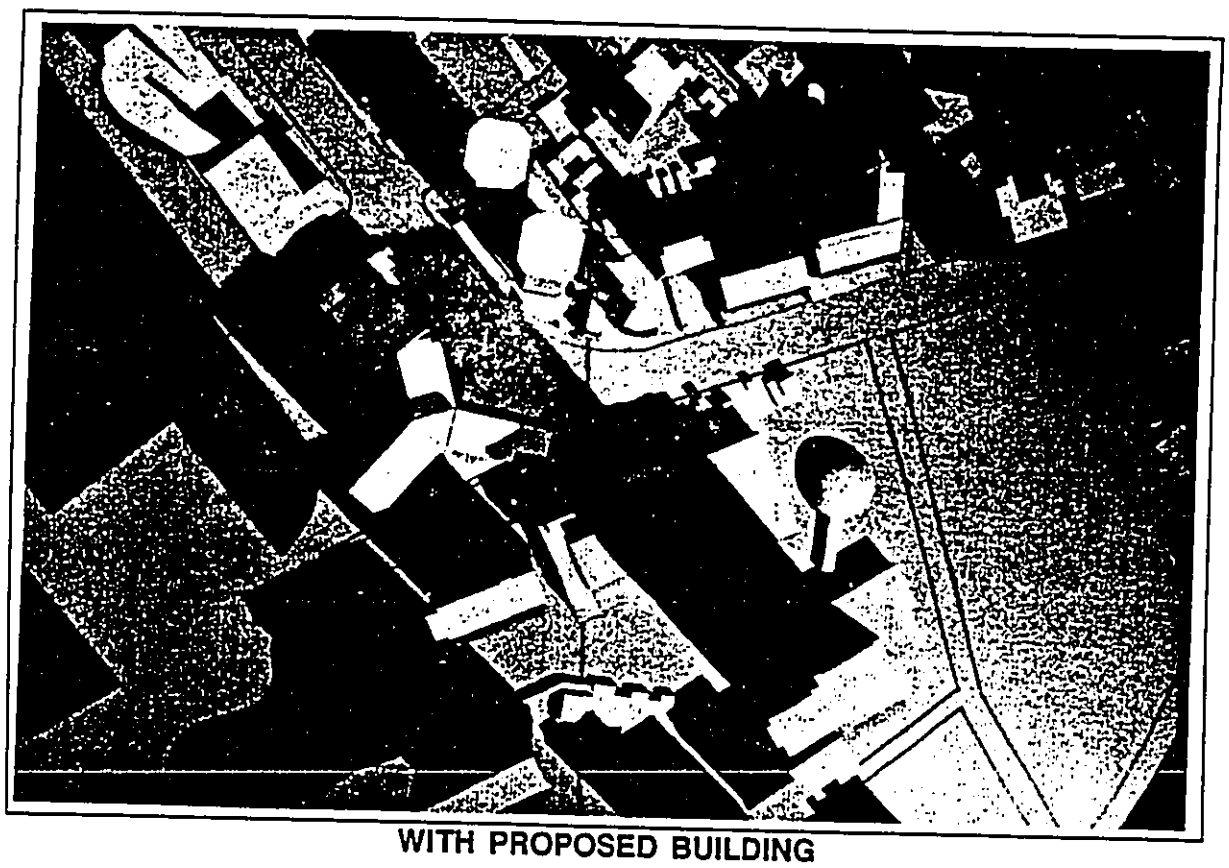
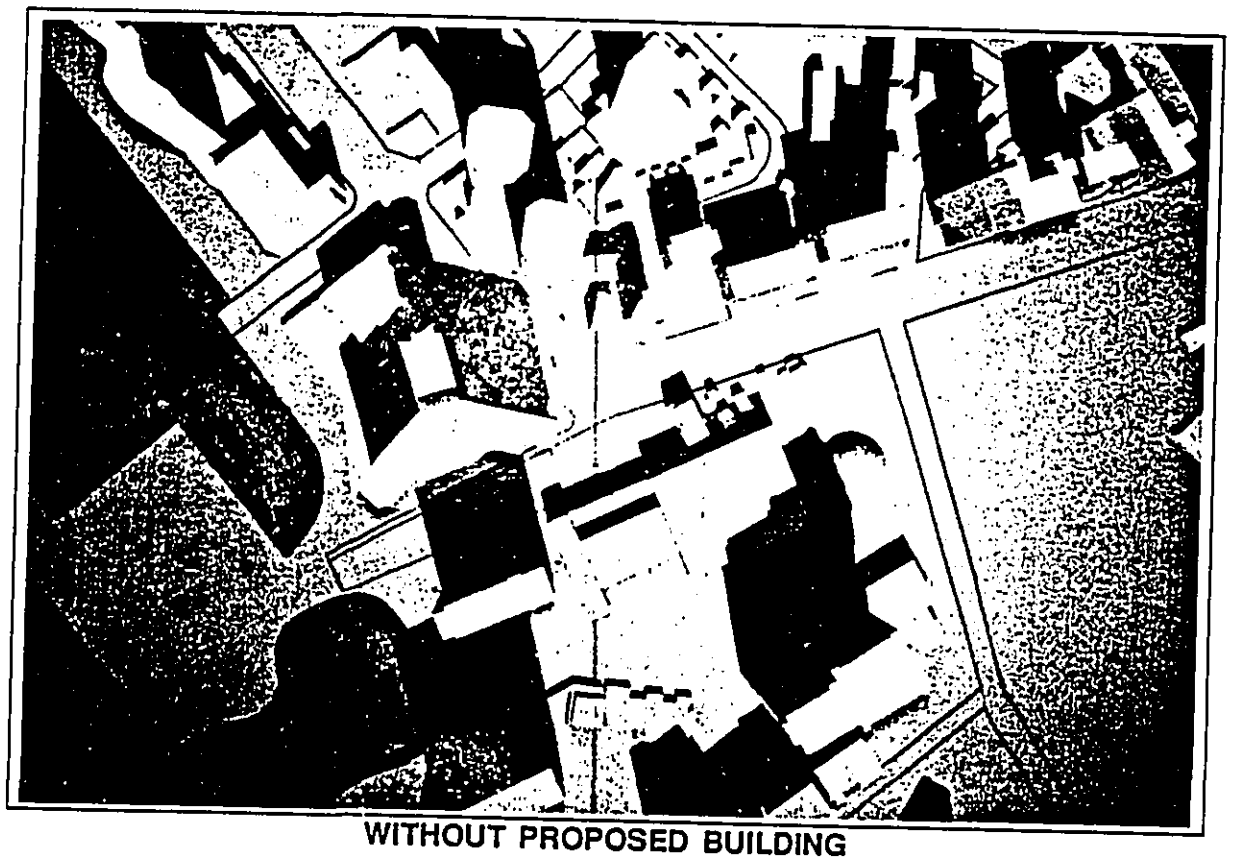


WITH PROPOSED BUILDING

Figure 17: December 21st 10:00 a.m.



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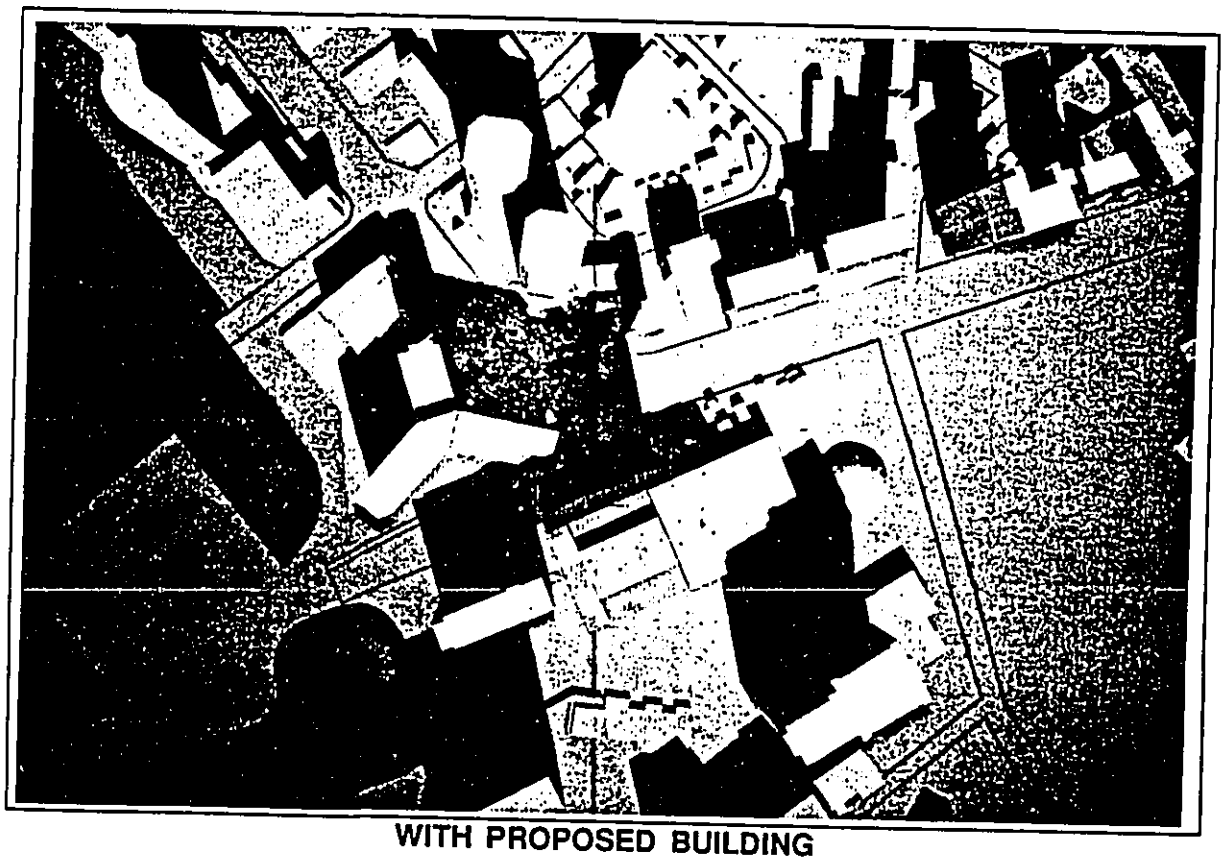
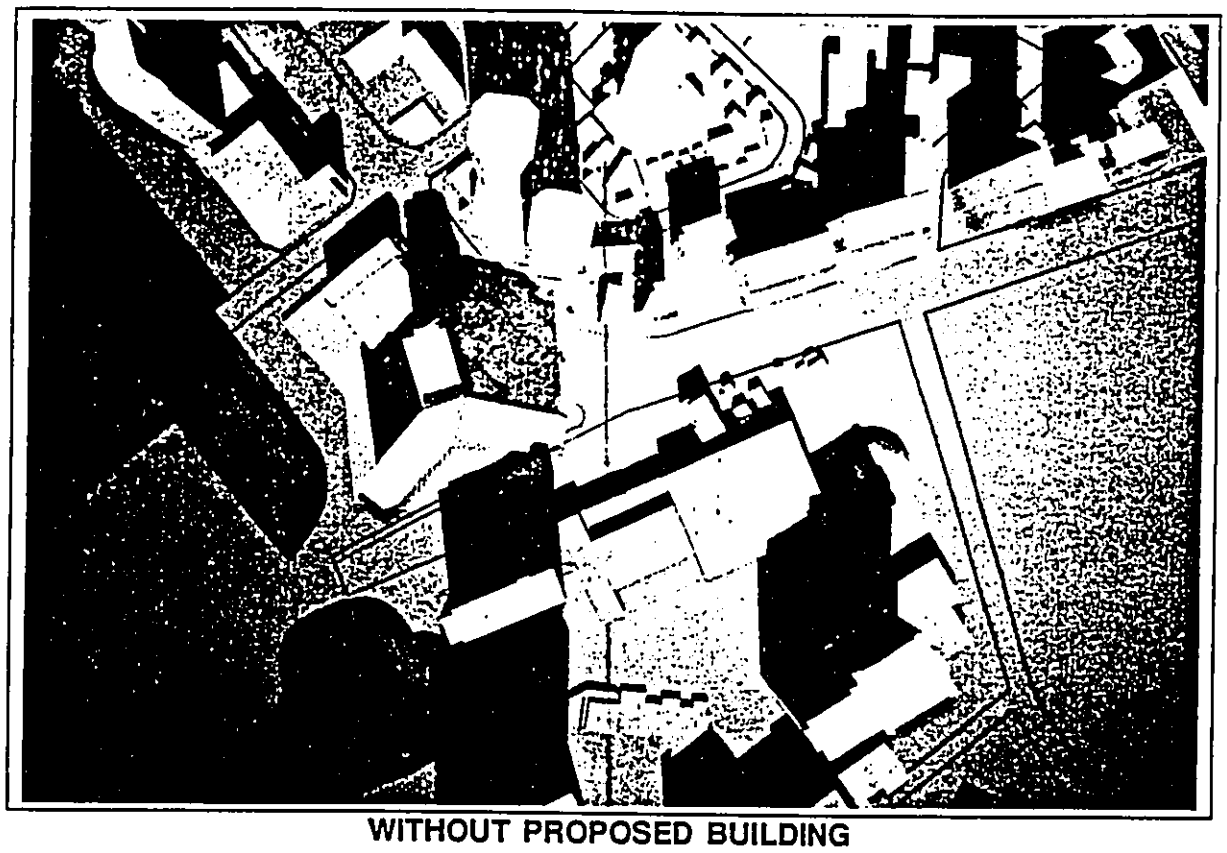


WITH PROPOSED BUILDING

Figure 18: December 21st 12:00 (noon)



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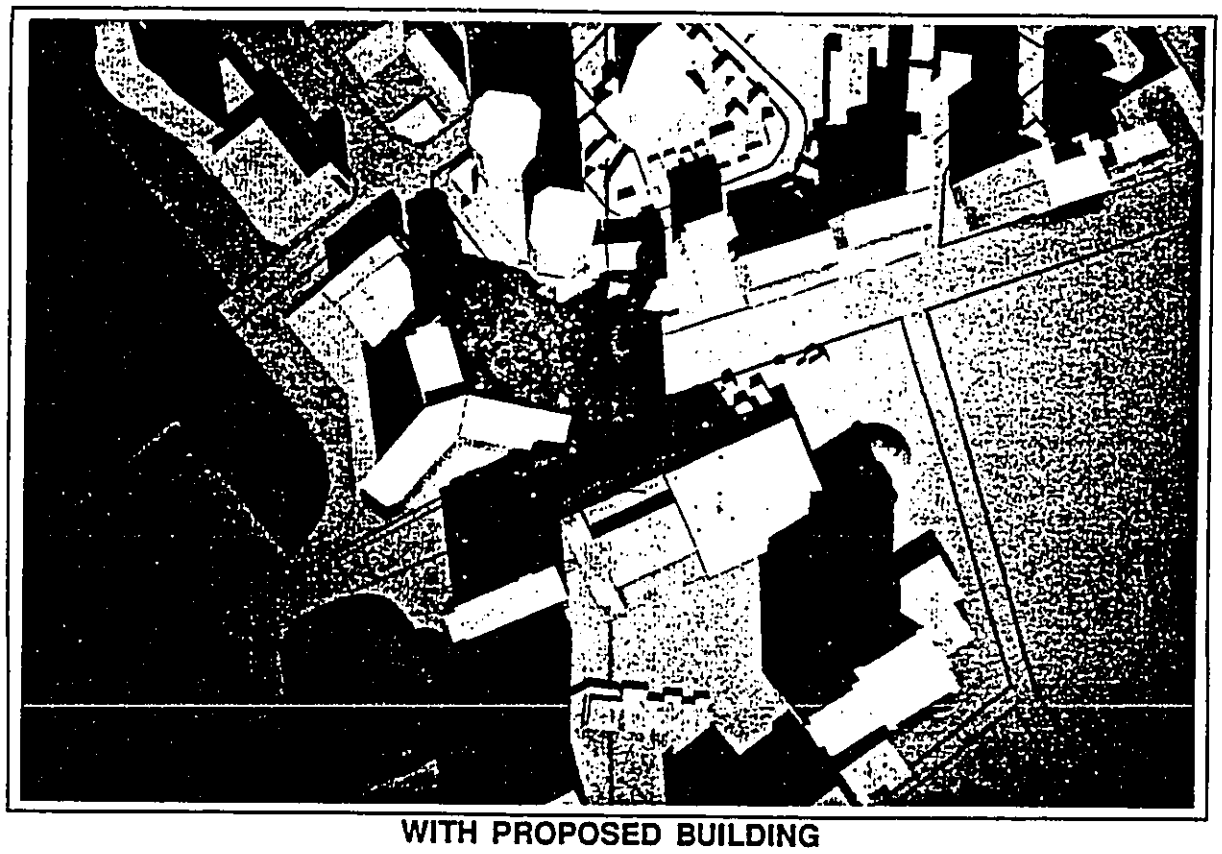
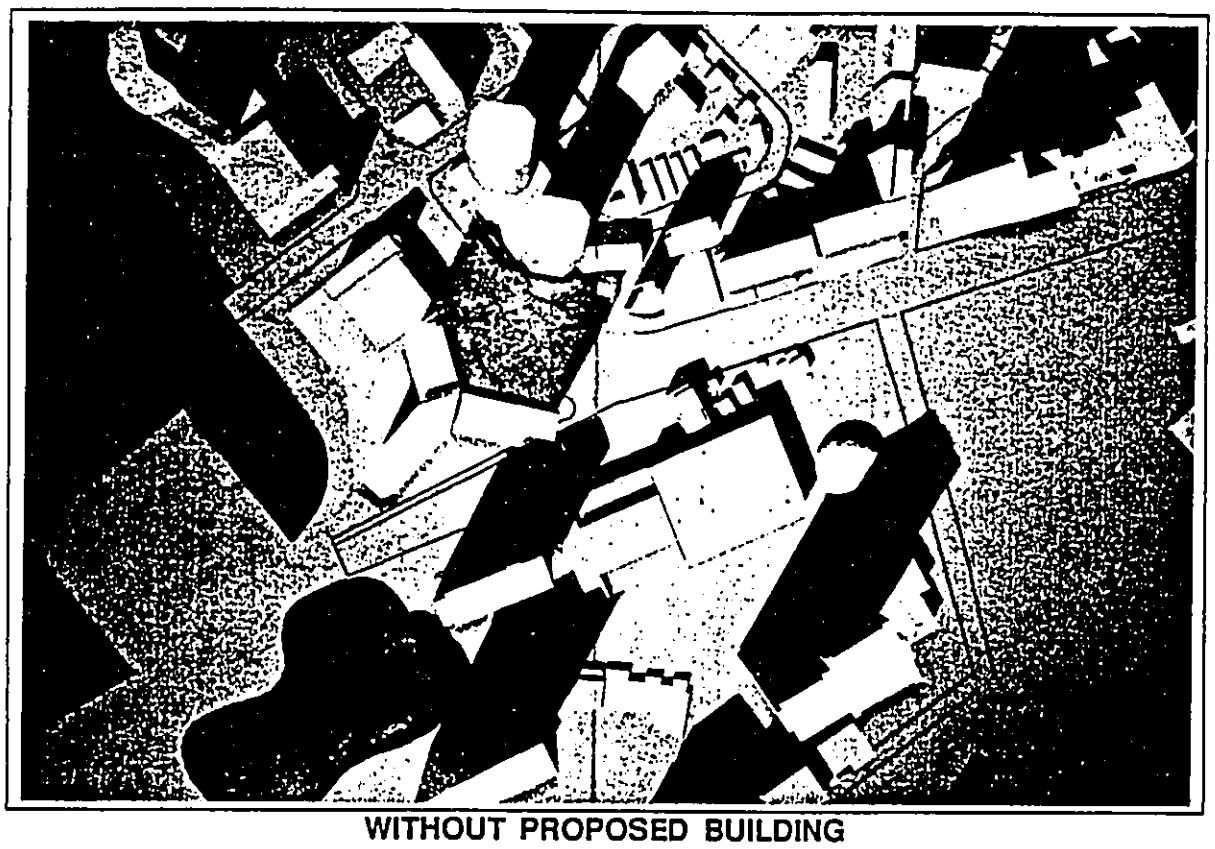


WITH PROPOSED BUILDING

Figure 19: December 21st 12:30 p.m.



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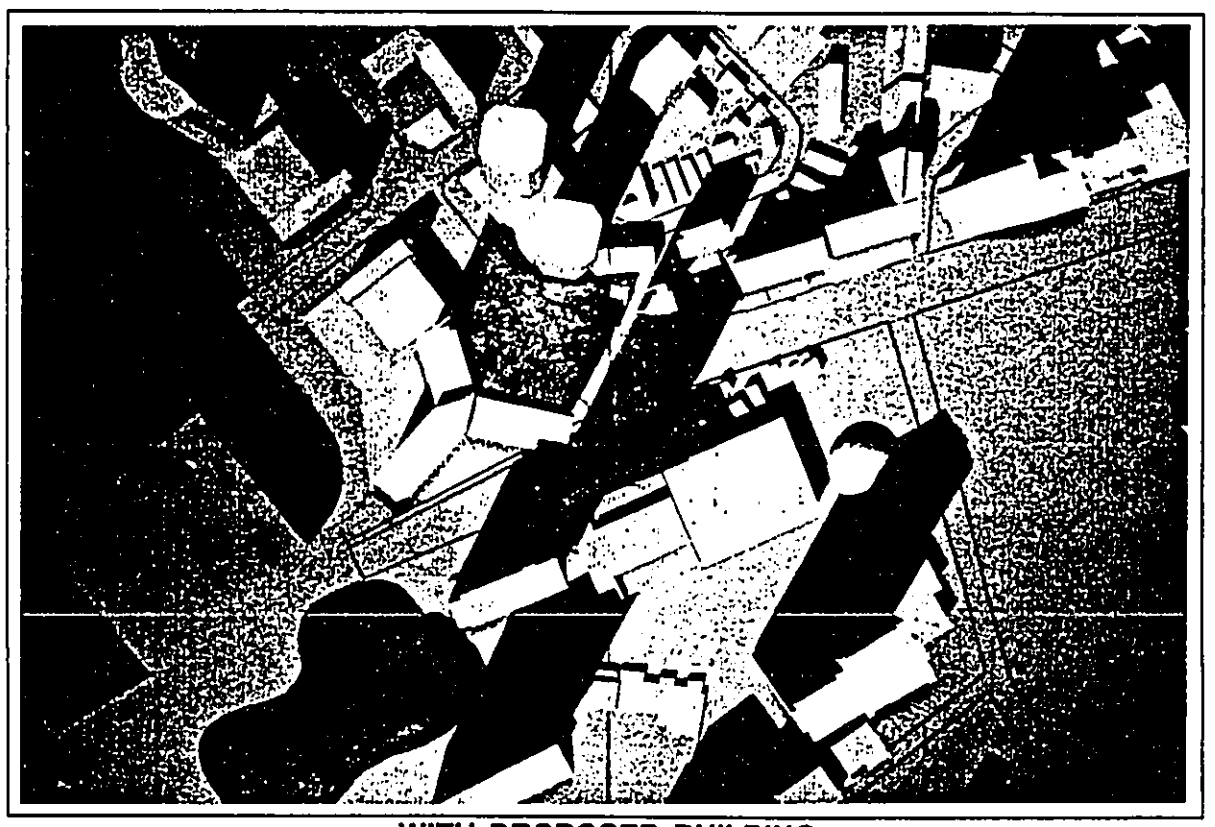
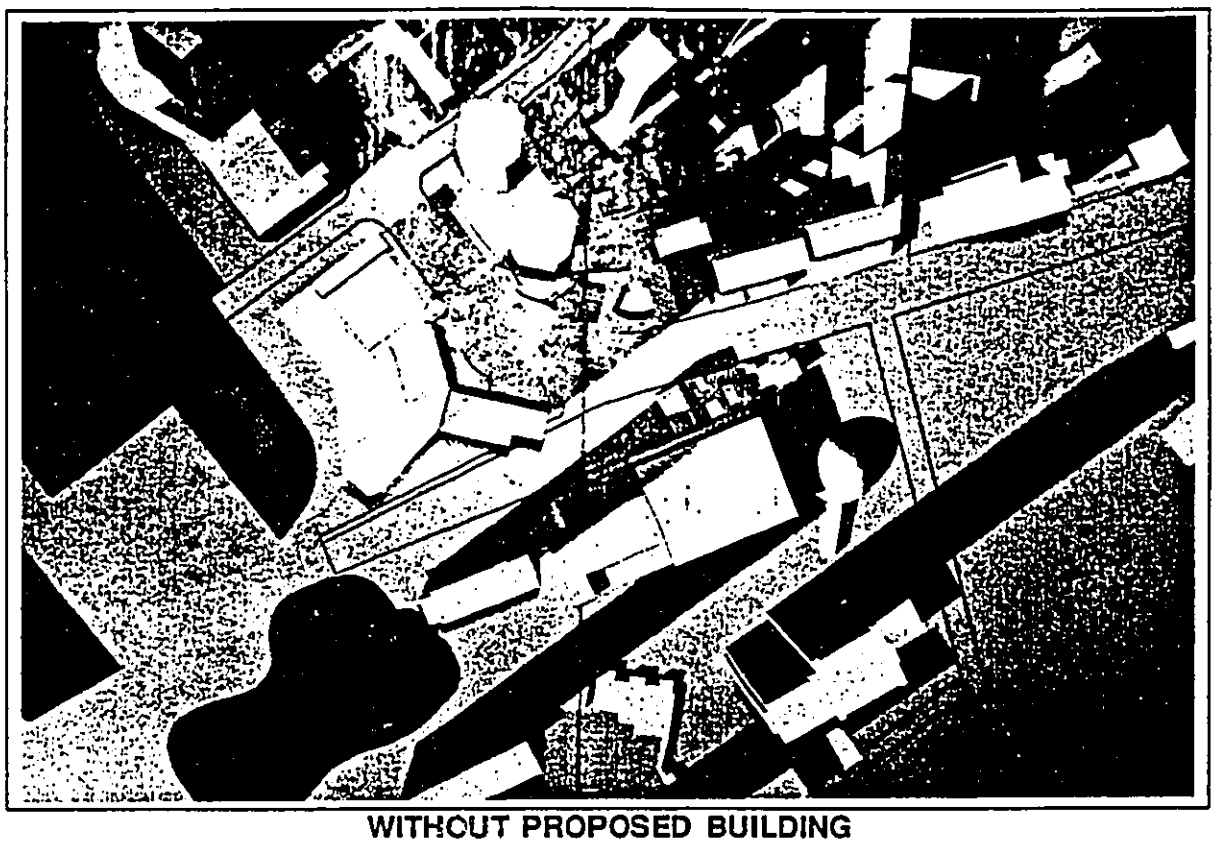


WITH PROPOSED BUILDING

Figure 20: December 21st 2:00 p.m.



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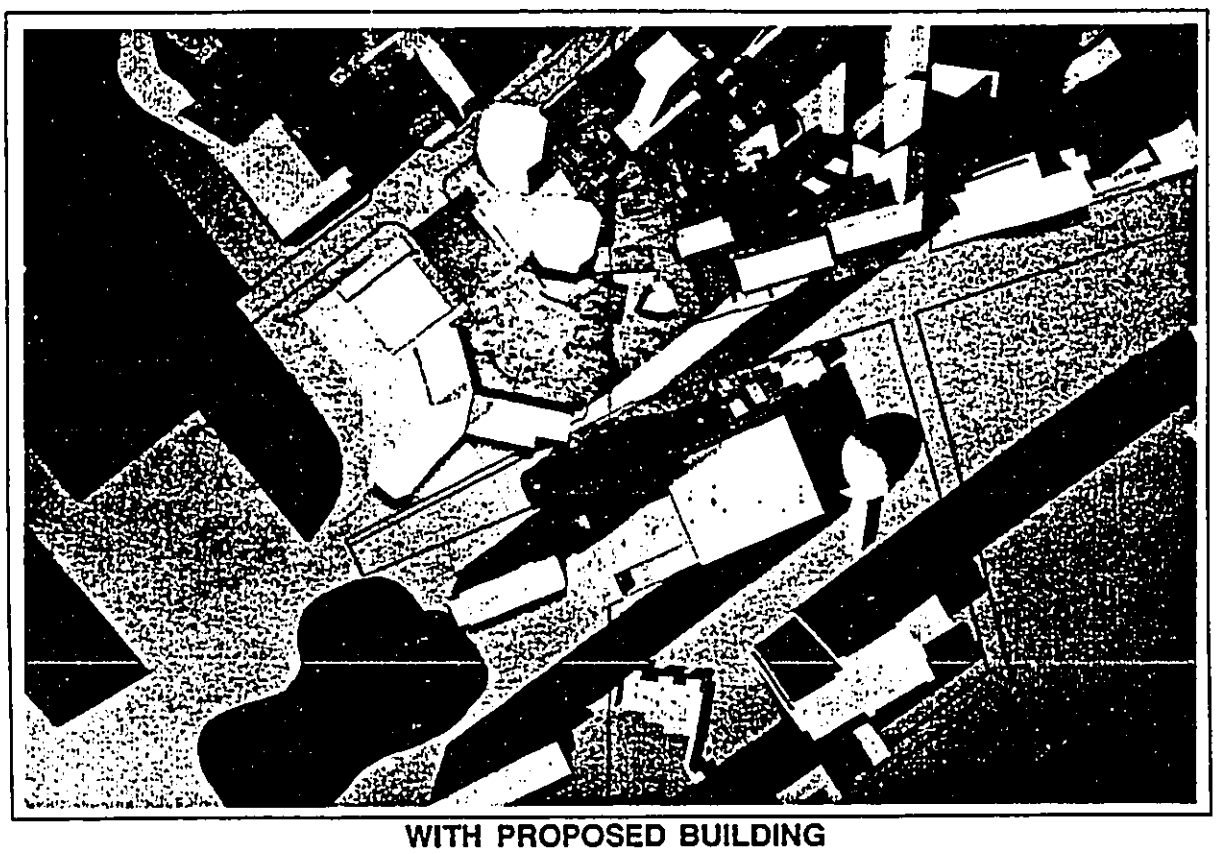
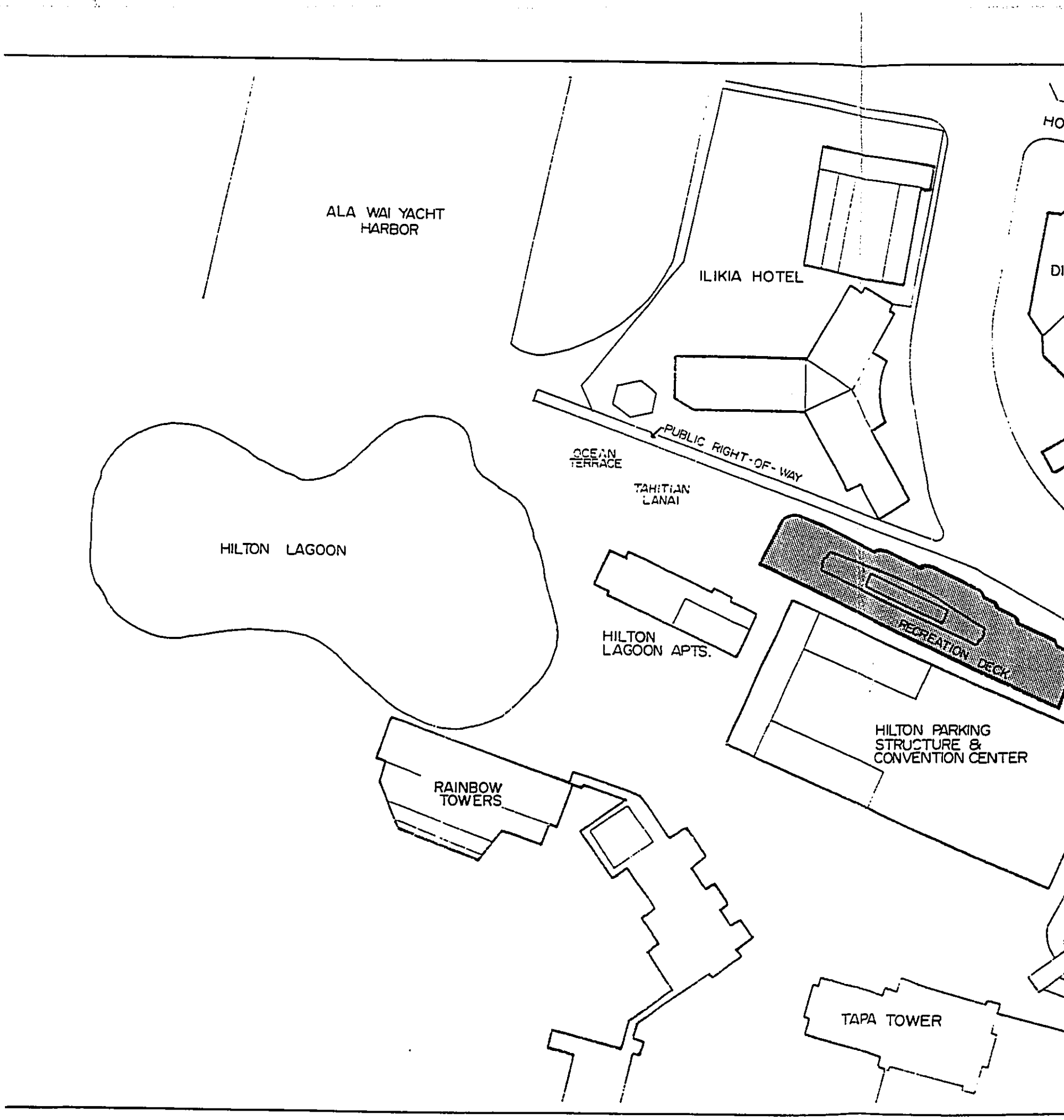


WITH PROPOSED BUILDING

Figure 21: December 21st 4:00 p.m.


ALA WAI YACHT
HARBOR
ILIKIA HOTEL
PUBLIC RIGHT-OF-WAY
OCEAN
TERRACE
TAHITIAN
LANAI
HILTON LAGOON
HILTON
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RECREATION DECK
HILTON PARKING
STRUCTURE &
CONVENTION CENTER
RAINBOW
TOWERS
TAPA TOWER

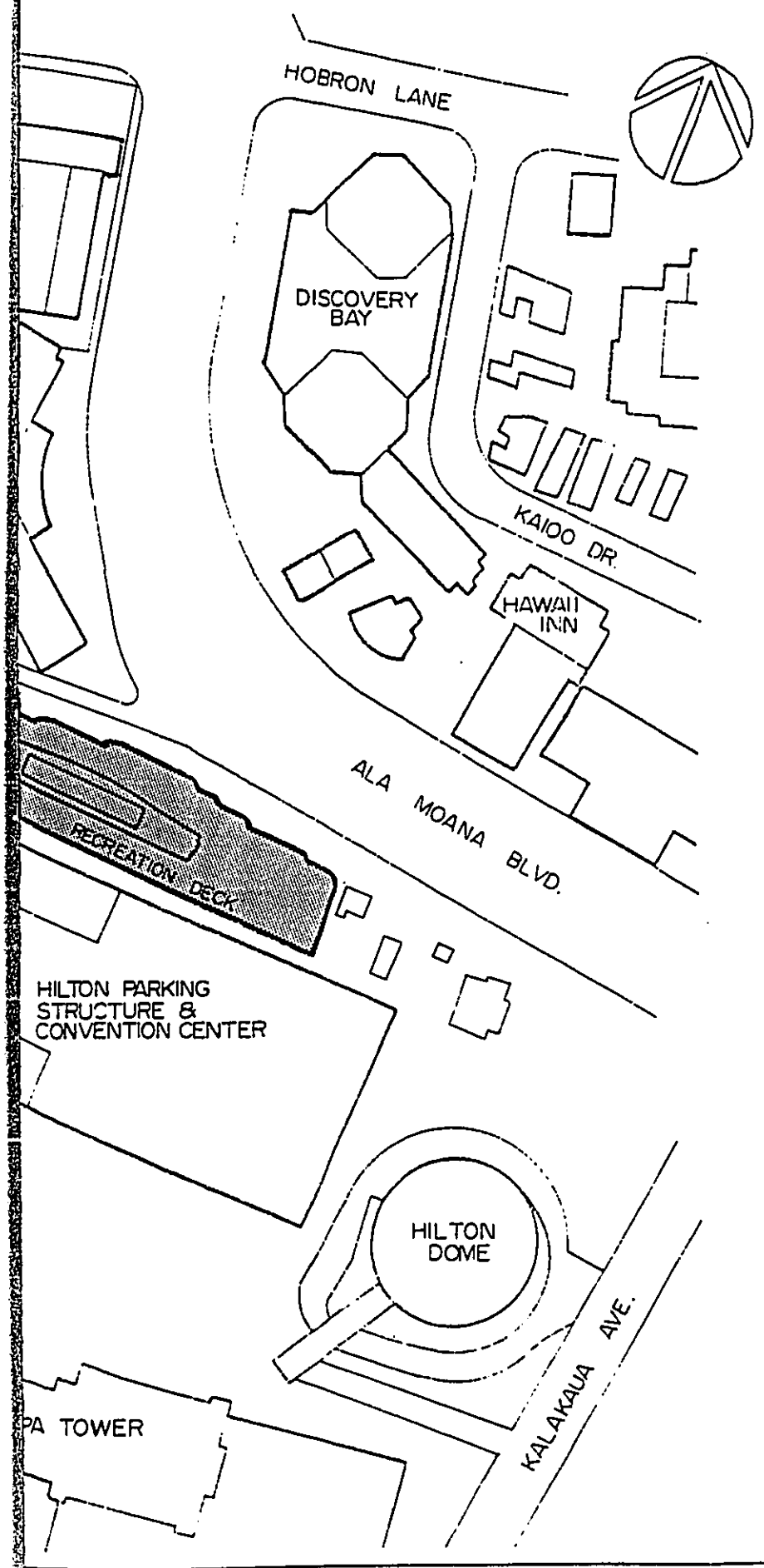


Figure 22: Orientation Plan
Approx. Scale 1" = 150'

Appendix H

Transportation/Traffic

Wilbur Smith Associates

WAIKIKIAN HOTEL

TRAFFIC STUDY

CONSULTANT'S REPORT ON TRANSPORTATION

Prepared for

Tyrone T. Kusao, Inc.

Honolulu, Hawaii

Prepared by

Wilbur Smith Associates

June 12, 1990

SUMMARY

The Waikikian Hotel is proposed for redevelopment on a 1.9-acre site located along Ala Moana Boulevard in Waikiki. The site, which is located to the immediate north of the Hilton Hawaiian Village, would be redeveloped by the JAMI Corporation of Honolulu.

Redevelopment of the site would require:

- Demolition of the existing 132-unit Waikikian Hotel as well as restaurant and retail space; and

- Construction of a 256-unit hotel tower with three levels of parking for 180 vehicles, administrative and retail spaces including 5,000 sq. ft. for restaurant use, and a separate 4-story structure housing 8 guest room units.

Existing Conditions

Existing use of the site includes the 132-unit Waikikian Hotel, a restaurant (the Tahitian Lanai) and several small retail stores. On-site parking provides about 28 spaces. Ala Moana Boulevard, a six-lane divided arterial, is the principal roadway servicing the site. Access to and egress from the site is accomplished via a loop/pull-out road in front of the hotel. The loop provides access to the Waikikian Hotel parking lot as well as the Ilikai Hotel and an alley which forms the northern boundary of the site. The two-way alley connects Ala Moana Boulevard to Holo Moana Street/Harbor Lane.

Kalia Road, located to the Diamond Head direction of the project site, is a signalized secondary street which intersects Ala Moana Boulevard. It is operated as a two-way street and provides three lanes for mauka-bound traffic. Ena Road is aligned opposite Kalia Road at Ala Moana Boulevard. Ena Road is operated as a two-way, two-lane street. Hobron Lane, located in the ewa direction from the project site, forms the second key intersection with Ala Moana

Boulevard. Hobron Lane is a signalized secondary street which is operated as a two-lane, two-way street mauka of the intersection, and as a four-lane, two-way street makai of the intersection.

The most recent State Department of Transportation (DOT) machine count on Ala Moana Boulevard at the Ala Wai Canal Bridge on December 19-20, 1989 recorded about 49,000 vehicles for a 24-hour period. Existing traffic volumes on the loop/pull-out road in front of the Waikikian Hotel were recorded at 88 vehicles during the AM peak hour and 110 vehicles during the PM peak hour. Volumes for the hotel parking lot indicated six vehicles entering and 12 exiting during the AM peak hour. PM peak hour volumes were determined to be 17 vehicles entering and 15 vehicles exiting.

A study was made of the two traffic signal-controlled intersections in the project vicinity using the operational analysis procedure defined in the *Highway Capacity Manual*. The procedure results in the determination of capacity and level of service for each lane group or approach as well as overall intersection level of service. A level of service (LOS) concept is the standard means of rating traffic conditions at intersections. There are six levels of service, LOS A through LOS F, which relate to the peak period traffic conditions from best to worst, respectively.

The intersections analyzed include Kalia and Ena Roads/Ala Moana Boulevard and Hobron Lane/Ala Moana Boulevard. Manual traffic counts were taken from 7:00 AM - 9:00 AM and 4:00 PM - 6:00 PM on May 2-4, 1990. This analysis indicates that Hobron Lane/Ala Moana Boulevard operates at LOS C during the AM peak hour and LOS D in the PM peak hour. Kalia-Ena Road/Ala Moana Boulevard presently operates at LOS D during AM peak hour and LOS E in the PM peak hour.

1993 Conditions Without the Project

The proposed project is scheduled for completion in mid-1993, which was used as the time point for forecasting future area traffic conditions. Traffic volumes are expected to increase by one percent per year from 1990 to 1993 as a result of general growth in the area. In addition, traffic generated by two area projects, the expansion of Fort DeRussy facilities and the Waikiki Landmark project, was included in this analysis.

- o The combined increase from general growth factors and the two nearby projects results in an estimated increase in traffic of just over five percent for the overall study area during the AM and PM peak hours.

- o Levels of service at both intersections during AM and PM peak periods are estimated to remain unchanged from those of existing conditions.

- o Although the 1993 overall intersection traffic conditions without the project would continue to operate at an acceptable level, individual left-turning movements at Kalia-Ena Road/Ala Moana Boulevard would operate at LOS F during the PM peak hour. The left-turn movements estimated to operate at LOS F are:
  - Left-turn movement from Kalia Road onto Ala Moana Boulevard;
  - The Ala Moana Ewa-direction left-turn lane; and
  - The Ala Moana Boulevard, Diamond Head direction left-turn lane.

1993 Conditions With the Project

The proposed redevelopment of the Waikikian Hotel would increase traffic volumes by 26 and 44 vehicles during the AM and PM peak hours, respectively. The project would increase traffic volumes in the area by much less than one percent. Project generated traffic has virtually no impact on intersection operations within the study area during the AM and PM peak hour.

The principal findings from the traffic analysis of 1993 conditions with the proposed project are as follows:

- o The intersection at Hobron Lane/Ala Moana Boulevard continues to operate at an acceptable level of service during the AM and PM peak hours.

- Project generated traffic adds about 10 seconds delay to left-turn movements from Ala Moana Boulevard Diamond Head direction to Ena Road during the PM peak hour.

- At present the left-turn storage lane on Ala Moana Boulevard Diamond Head direction is 175 feet long. This is not sufficient to accommodate PM peak hour volumes. It is recommended that this left-turn lane be extended from the present 175 feet to 250 feet in length.

- The overall level of service and V/C ratio at the Kalia-Ena Road/Ala Moana Boulevard intersection during the PM peak hour is unchanged by project generated traffic.

Introduction

The Waikikian Hotel Project is a proposed redevelopment of a 1.9 acre site which fronts Ala Moana Boulevard in Waikiki. The JAMI Corporation, owner of the site, is proposing to demolish the existing 132-room Waikikian Hotel and rebuild a new hotel with approximately 264-units, 20,000 sq. ft. of commercial, restaurant and administrative office space, and on-site parking for 180 automobiles. This report has been prepared by Wilbur Smith Associates to determine the transportation impacts of the proposed project in Waikiki.

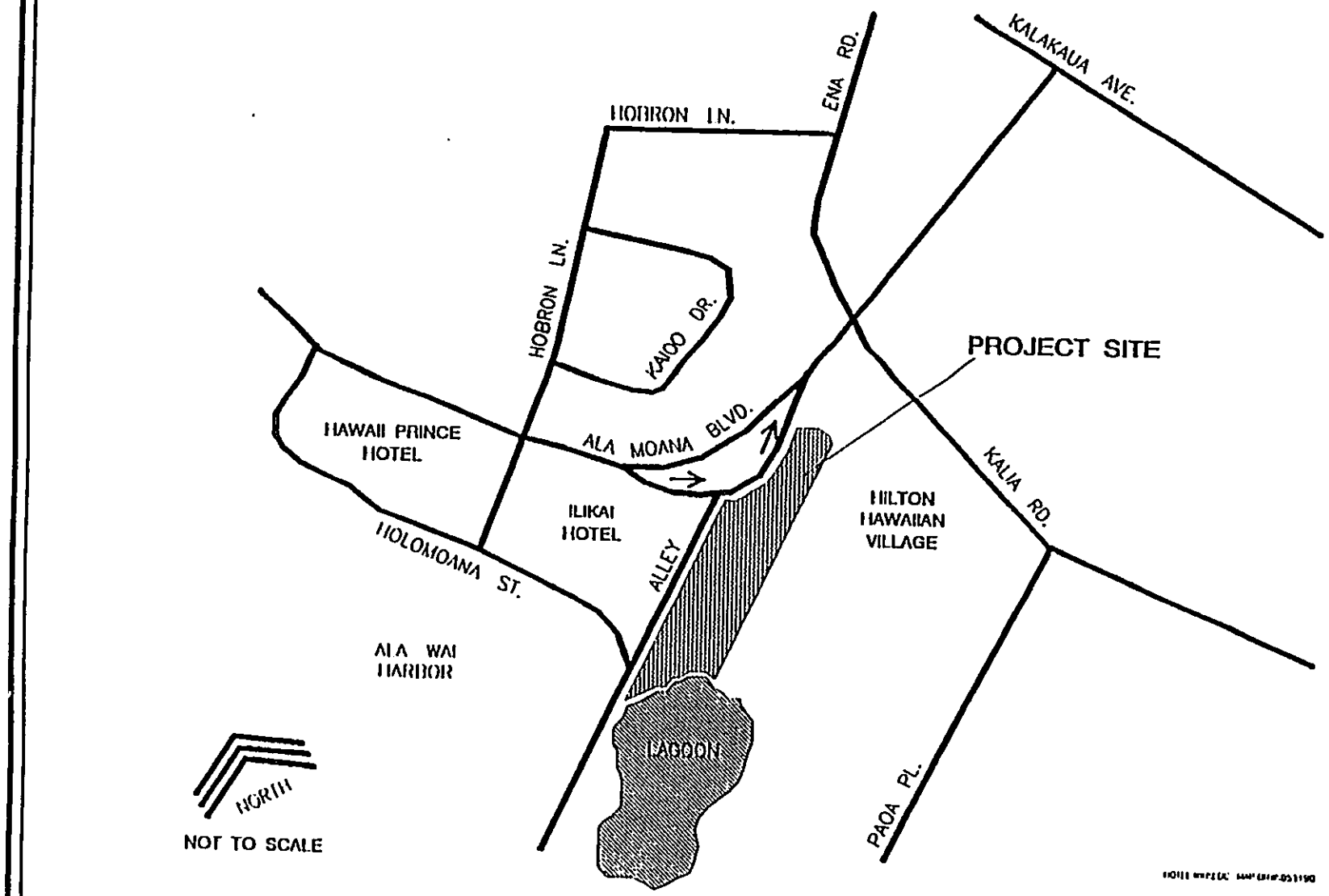
Existing Conditions

The 1.9 acre site is located in the Resort Hotel Precinct of the Waikiki Special District. The site, shown in Figure 1, is level but relatively narrow and irregularly shaped. To the north of the project site is the Ilikai Hotel. On the east are four parcels which front Ala Moana Boulevard to the intersection at Kalia Road, containing shops, a car rental service and a restaurant. Immediately to the south of the site is the Hilton Hawaiian Village, Rainbow Tower and Hilton Parking Garage. To the west is the Hilton Lagoon and Ala Wai Yacht Harbor.

Existing uses on the site include the 132-room Waikikian Hotel, a restaurant (the Tahitian Lanai), and several small retail stores. Parking for the hotel is located just off the Ala Moana Boulevard frontage with about 38 on-site spaces provided. Parking for the restaurant is located on land leased from the State adjacent to the Ala Wai Yacht Harbor.

Existing Roadways

Ala Moana Boulevard, a six-lane divided arterial, is the principal roadway servicing the site. Access to and egress from the site is accomplished via a loop/pull-out road in front of the Waikikian Hotel. In addition, the loop provides access to the Ilikai Hotel parking garage as well as to an alley between the Waikikian and the Ilikai hotels. The two-way alley connects Ala Moana Boulevard to Holo Moana Street/Harbor Lane and provides access to parking for the Tahitian Lanai restaurant, the public beach and the Ala Wai Yacht Basin.



WSA

VINCINITY MAP

Waikikian Hotel EIS Traffic Study

1

Kalia Road is classified as a secondary roadway and is located to the Diamond Head direction of the project site. Kalia Road intersects Ala Moana Boulevard and is operated as a two-way street with three lanes for mauka-bound traffic.

Ena Road, a secondary roadway, is aligned opposite Kalia Road at Ala Moana Boulevard. Ena Road is operated as a two-lane, two-way street.

Hobron Lane, a secondary street, is located in the Ewa direction from the project site. Hobron Lane intersects Ala Moana Boulevard and is operated as a two-lane, two-way street mauka of the intersection, and as a four-lane, two-way street makai of the intersection. A separate right-turn lane is provided on the mauka side of the intersection.

Both intersections are controlled by a multi-phase traffic signal operation which provides separate phases for the Hobron Lane and the Kalia Road and Ena Road approaches respectively. The number of phases, minimum pedestrian crossing times, and heavy vehicle volumes result in long cycle lengths, timed at about 170 seconds for Kalia-Ena Road and 165 seconds at Hobron Lane.

Existing Traffic Volumes

The State Department of Transportation (DOT) conducts a 24-hour machine traffic count on an annual basis for Ala Moana Boulevard at the Ala Wai Canal Bridge. The most recent count was made December 19-20, 1989. The 1989 DOT count recorded a 24-hour volume of 49,153 vehicles total for both directions on Ala Moana Boulevard. The highest one-hour traffic period on Ala Moana Boulevard was 3:45 PM - 4:45 PM with 3,752 vehicles. The highest morning one-hour period occurred from 11:00 AM - 12:00 Noon with 2,990 vehicles. However, this study uses the 7:00 AM to 8:00 AM peak period for analysis purposes of the project impact during the early morning commute hour. The 1989 volume for the 7:00 AM - 8:00 AM period was 2,785 vehicles in both directions.

Traffic counts were undertaken at two signalized intersections in the immediate vicinity of the site by Wilbur Smith Associates (WSA) during the weekday AM and PM peak hour to

determine existing intersection operations. The intersections counted include Kalia and Ena Roads at Ala Moana Boulevard and Hoborn Lane at Ala Moana Boulevard. Manual counts were taken from 7:00 AM - 9:00 AM and 4:00 PM - 6:00 PM on May 2 through May 4, 1990. The morning and afternoon peak commute hour volumes are shown in Figure 2.

It should be noted that less than one month before Wilbur Smith Associates conducted traffic counts for this study, the 529-unit Hawaii Prince Hotel opened. This hotel is located on Ala Moana Boulevard near Hobron Lane and undoubtedly increased traffic volumes in the study area, which are reflected in the traffic counts made for this study.

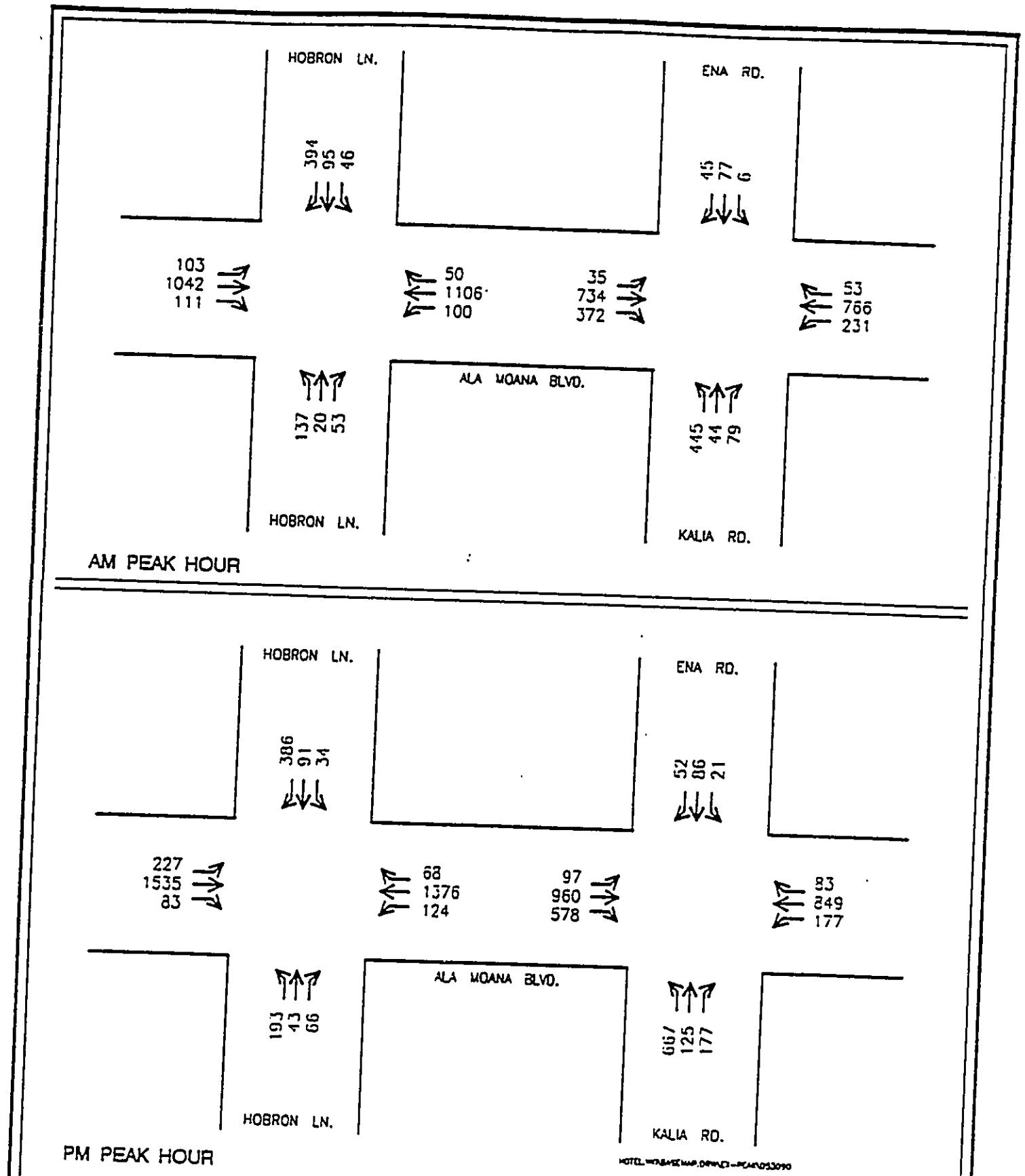
The traffic volume on any road fluctuates somewhat from day-to-day, week-to-week, and month-to-month. However, the magnitude of peak hour traffic on the roads in the vicinity of the proposed project can vary substantially as a result of both seasonal factors and special events in the area.

A special event at the Hilton, Hale Koa or other nearby hotel attended by 1,000 persons could easily result in an additional 500 vehicles within a one-hour period. Events like these are frequent enough to be noticed, but they are not frequent or predictable enough to be considered typical.

During the AM peak hour, through traffic on Ala Moana Boulevard between Hobron Lane and Kalia-Ena Road totalled 2,397 vehicles in both directions. PM peak hour counts of 3,202 vehicles total for the same roadway represent a 33 percent volume increase in afternoon commute traffic over morning volumes.

The Ala Moana Boulevard Loop/Pull-out road in front of the Waikikian Hotel recorded a morning peak hour volume of 88 vehicles. Afternoon peak hour traffic on the loop increased about 20 percent over morning peak hour to 110 vehicles.

Current peak hour volumes for the Waikikian Hotel parking lot are relatively low. The AM peak hour counts recorded 6 vehicles into and 12 vehicles from the hotel parking lot. PM peak hour volumes were determined to be 17 vehicles into and 15 vehicles from the hotel parking lot.



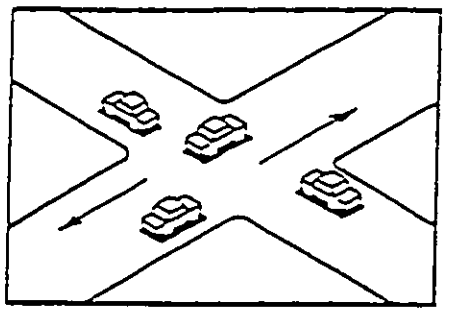
WSA

1990 PEAK HOUR TRAFFIC VOLUMES

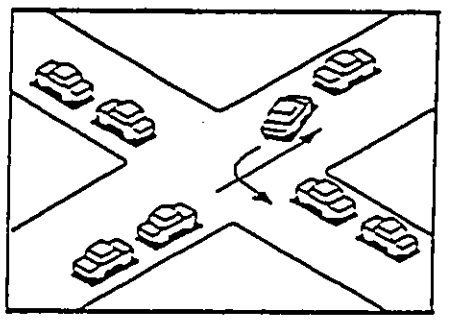
Waikikian Hotel EIS Traffic Study

2

LEVEL OF SERVICE "A" - V/C = 0 TO 0.60
Describes operations with very low delay, i.e., less than 5 seconds per vehicle. This occurs when signal progression is extremely favorable, and most vehicles arrive during the green phase. Most vehicles do not stop at all.

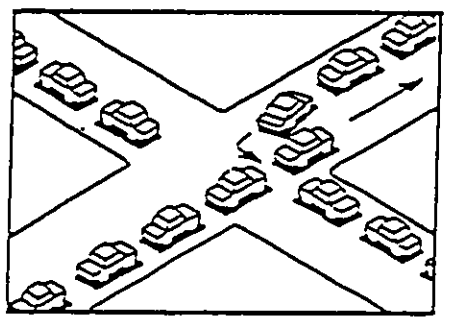

LOS 'A'

LEVEL OF SERVICE "B" - V/C = 0.61 TO 0.70
Describes operations with delays in the range of 5 to 15 seconds per vehicle. This generally occurs with good progression and/or short cycle lengths. More vehicles stop than for LOS "A", causing higher levels of average delay.


LOS 'C'

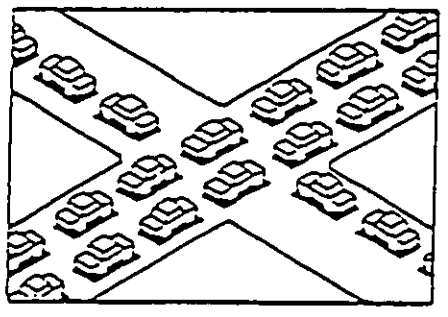
LEVEL OF SERVICE "C" - V/C = 0.71 TO 0.80
Describes operation with delay in the range of 15 to 25 seconds per vehicle. Occasionally vehicles may wait more than one red signal phase. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.

LEVEL OF SERVICE "D" - V/C = 0.81 TO 0.90
Describes operations with delay in the range of 25 to 40 seconds per vehicle. At LOS "D", the influence of congestion becomes more noticeable. Many vehicles stop, and the proportion of vehicles not stopping declines. Noticeable numbers of vehicles fail to clear signal during the first green phase.


LOS 'D'

LEVEL OF SERVICE "E" - V/C = 0.91 TO 1.00
Describes operations with delay in the range of 40 to 60 seconds per vehicle. These high delay values generally indicate poor progression, long cycle lengths, and high V/C ratios. Vehicles frequently fail to clear the signal during the first green phase.

LEVEL OF SERVICE "F" - V/C GREATER THAN 1.00
Describes operations with delay in excess of 60 seconds per vehicle. This condition often occurs with oversaturation, i.e., when arrival flow rates exceed the capacity of the intersection.


LOS 'F'

SOURCE: Highway Capacity Manual, 1985.

Peak hour volumes for the Waikikian Alley were recorded at 20 vehicles in the makai direction and 59 vehicles mauka bound during morning peak hour. Afternoon peak hour volumes were 32 makai direction vehicles and 74 vehicles approaching Ala Moana Boulevard.

Existing Traffic Conditions

The two signalized intersections surveyed were evaluated using the operational analysis procedure defined in the 1985 Highway Capacity Manual.[1] The procedure results in the determination of capacity and level of service for each lane group or approach, as well as the level of service for the intersection as a whole. The Operations Method estimates intersection level of service based on average vehicle delay. In order to calculate delay, a significant amount of data describing the intersection's physical characteristics, traffic conditions, and control devices is necessary.

One way of expressing the result of a signalized intersection analysis is in terms of the volume-to-capacity (V/C) ratio. To determine the V/C ratio, the critical sum (the sum of volumes of conflicting movements on a per-lane basis) is divided by the design capacity per lane (often 1,400 vehicles per hour). A level of service (LOS) concept is the standard means of describing traffic conditions associated with various ranges of V/C ratio. There are six levels of service, Levels A through F, which relate to the peak period traffic conditions from best to worst, respectively. The traffic flow characteristics for the various levels of service are summarized in Figure 3.

Table 1 presents existing level of service results for the AM and PM peak hours. As shown, both of the intersections analyzed currently operate at acceptable levels of service except for the Kalia-Ena/Ala Moana Boulevard intersection which operates at LOS E during the PM peak hour.

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1 Transportation Research Board, *Special Report 209.*

Table 1
EXISTING INTERSECTION LEVELS OF SERVICE
Waikikian Hotel EIS

Signalized Intersection	AM Peak Hour		PM Peak Hour	
	V/C	LOS	V/C	LOS
Hobron Lane/Ala Moana Blvd.	0.54	C	0.71	D
Kalia-Ena Rd./Ala Moana Blvd.	0.69	D	0.84	E

V/C = Volume-to-Capacity LOS = Level-of-Service
Wilbur Smith Associates; May, 1990.

In general, existing traffic conditions in the project area are acceptable. The only significant operational problem occurs at the Kalia Road/Ala Moana Boulevard intersection; here left-turn movements from Kalia Road operate at LOS E during the AM and PM peak hour. The proposed Waikikian development would have minimal impact on the Kalia Road left-turn movements.

1993 Traffic Conditions Without The Project

The proposed redevelopment of the Waikikian Hotel is scheduled to begin in mid-1991 with completion in mid-1993. Therefore, 1993 is used as the time point for forecasting future area traffic volumes and conditions with and without the project.

The effects of additional development and increased activity levels on 1993 area traffic volumes is reflected by the use of general growth factors. In addition the traffic generated by two nearby projects, the Waikiki Landmark project is a mixed-use development with residential and commerical uses and and the Fort DeRussy military hotel and parking facilities are included in the 1993 volumes. The Waikiki Landmark project is a mixed use development with residential and commercial uses and is planned for the block bounded by Kalakaua Avenue, McCully Street and Ala Wai Boulevard.

1993 Traffic Without The Project

For this report, traffic was assumed to continue to increase by one percent per year from 1990 to 1993 as a result of general growth in the Waikiki area. Traffic estimated for the Waikiki Landmark and Fort DeRussy projects was added to the projected traffic volumes. The additional volumes are estimates using standard trip generation rates [2] and are presented in Table 2.

Table 2
ESTIMATED 1993 TRAFFIC GENERATED BY AREA PROJECTS
Waikiklan Hotel EIS

	AM Peak Hour		PM Peak Hour	
Project	Hobron	Kalia-Ena	Hobron	Kalia-Ena
Fort DeRussy	52	72	60	83
Waikiki Landmark	21	17	22	18

Note: *Increase in traffic volume at signalized intersections* generated by the two projects noted above.

Wilbur Smith Associates; June, 1990.

The projected AM and PM peak volumes for 1993 without the proposed project are presented in Figure 4. The combined increase from general growth and the two nearby projects results in an estimated traffic increase of just over 5 percent during the morning and afternoon peak hours for the overall study area.

1993 Traffic Conditions Without the Project

In general, 1993 traffic conditions without the project continue at an acceptable level with the exception of the Kalia Road mauka approach intersection during the PM peak period. Levels of service at both intersections during AM and PM peak periods has remained unchanged from the 1990 existing levels of service and are presented in Table 3.

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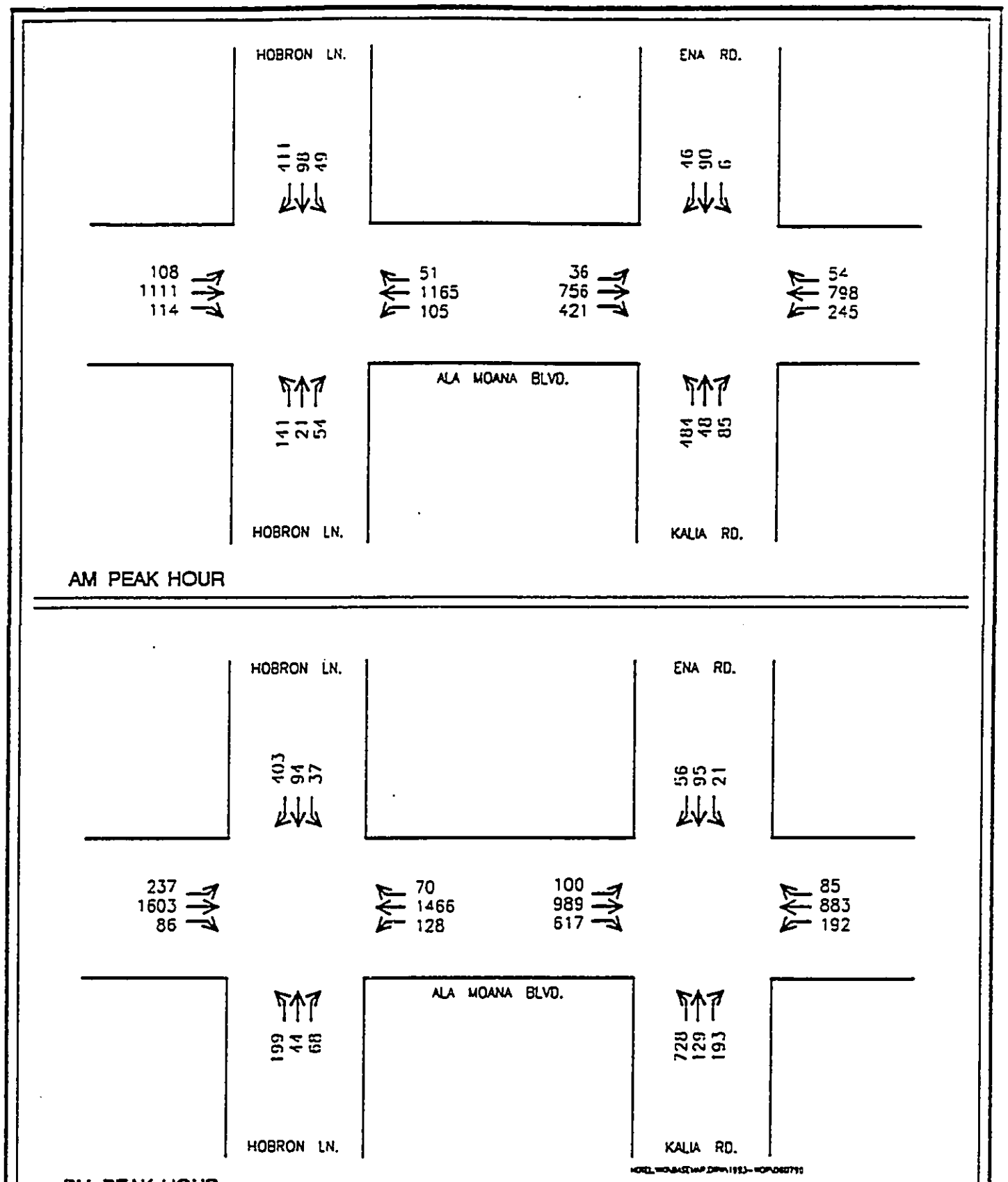
[2] *Trip Generation*, Institute of Transportation Engineers, Third Edition, 1982.



WSA

1993 PEAK HOUR TRAFFIC VOLUMES
WITHOUT PROPOSED PROJECT
Waikikian Hotel EIS Traffic Study

4

Table 3
LOS AND V/C RATIOS
1993 WITHOUT PROJECT
Waikiklan Hotel EIS

Signalized Intersection	AM Peak Hour		PM Peak Hour	
	V/C	LOS	V/C	LOS
Hobron Lane/Ala Moana Blvd.	0.57	C	0.75	D
Kalia-Ena Rd./Ala Moana Blvd.	0.74	D	0.89	E

V/C = Volume-to-Capacity LOS = Level-of-Service

Wilbur Smith Associates; June, 1990.

As mentioned, the overall traffic volume increase for the project area is about 5 percent. However, the projected increase at the Kalia-Ena Road intersection is closer to 6 percent. This increase has a measurable impact on vehicles turning left onto Ala Moana Boulevard from Kalia Road. During the afternoon peak hour left-turn movements from Kalia Road are estimated at 725 vehicles. The individual left-turning lanes from Kalia Road are estimated to operate at LOS F with over a 10 percent increase in vehicle delay per left-turn movement. The overall intersection would continue to operate at LOS E, with a V/C ratio of 0.89 and an average vehicle delay of 45.1 seconds.

1993 Traffic Conditions With The Project

The proposed project is expected to be developed and occupied by mid-1993. The site will consist of a tower containing 256 units and three parking levels for 180 automobiles. A separate four-story structure will house eight additional rooms. The Tahitian Lanai restaurant will occupy 5,000 square feet.

Trip Generation

Estimated peak hour vehicle trips generated by the proposed hotel are based on rates developed by Wilbur Smith Associates for the Honolulu Convention Center Complex.[3] Trip generation rates for the project restaurant were developed from the ITE *Trip Generation*. Table 4 presents the total estimated vehicle trips generated by the proposed project.

Table 4
ESTIMATED WEEKDAY PEAK HOUR VEHICLE TRIPS
WAIKIKIAN HOTEL PROJECT
Waikikian Hotel EIS

		AM Peak Hour		PM Peak Hour	
Item	Unit	To Project	From Project	To Project	From Project
Trip Rates					
Hotel	Rooms	0.12	0.06	0.08	0.11
Restaurant	1,000 GSF	0.82	0.09	4.97	2.23
Vehicle Trips					
Hotel	264 Rooms	32	16	22	30
Restaurant	5,000 GSF	4	0	25	11
Total by Direction		36	16	47	41
Total Vehicle Trip Ends		52		88	

GSF = Gross sq. ft. of floor area.

Wilbur Smith Associates; May, 1990.

The actual number of new vehicle trips generated by the project in 1993 would be 34 trips during the AM peak period and 56 trips during the PM peak hour. These numbers are derived by subtracting the existing hotel trips from the 1993 projected estimates. The project generated

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3 *Transportation Plan and Traffic Impact Study Honolulu Convention Center Complex*; prepared for First Development, Inc., by Wilbur Smith Associates; August, 1989.

trips were added to the 1993 base volumes and distributed on the study area roadways. Trips were distributed based on existing land use patterns and current traffic volumes.

1993 Traffic Volumes with Project

Projected 1993 peak hour traffic volumes at the signalized intersections near the project site are presented in Figure 5. The estimated volumes include vehicle trips to and from the proposed project. The project will increase traffic volumes in the area by much less than one percent.

1993 Traffic Conditions with Project

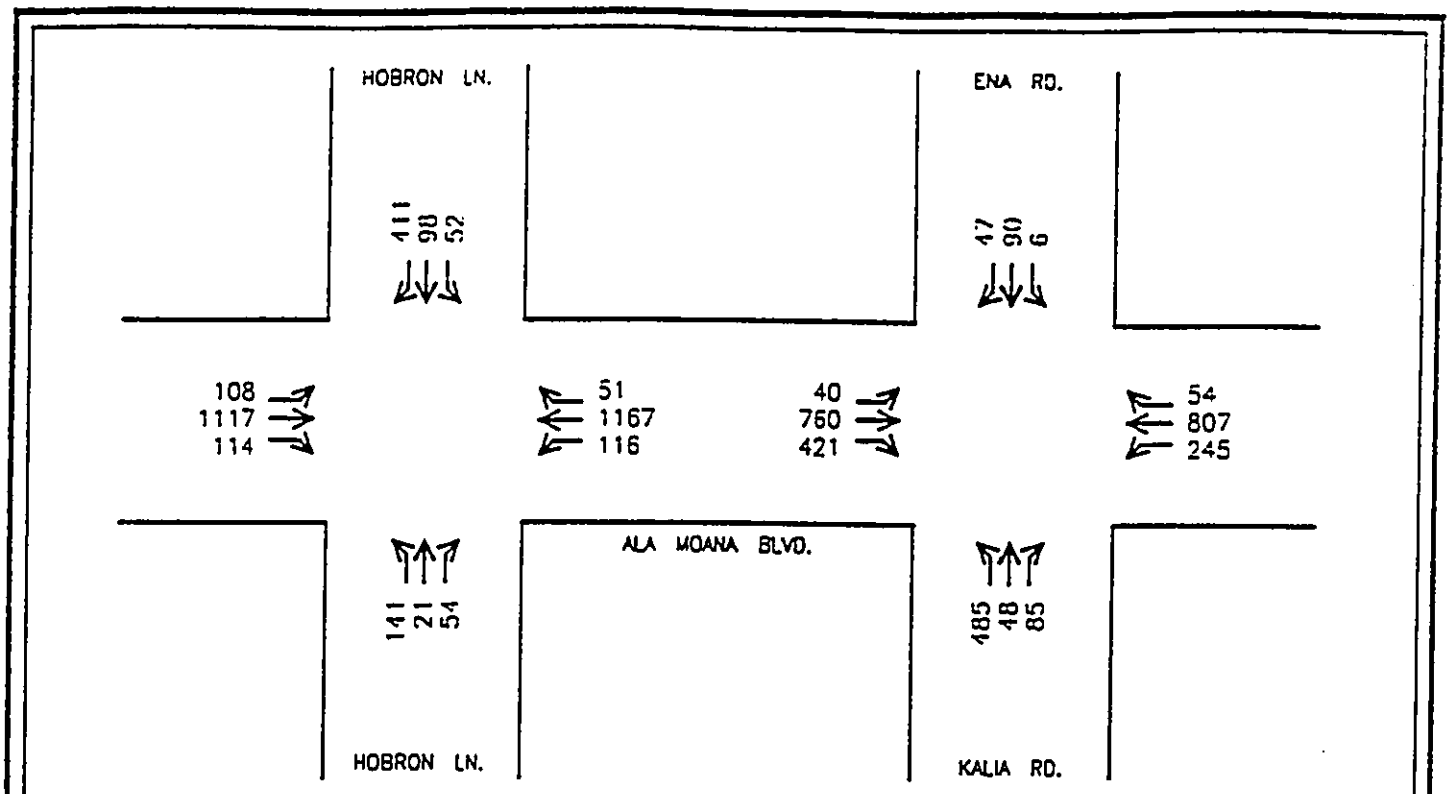
The intersection at Hobron Lane and Ala Moana Boulevard would continue to operate at an acceptable level of service during the AM and PM peak hours. The low volume of project-generated traffic would not affect individual lane movements, or the overall operation of this intersection. Table 5 presents intersection V/C ratio and levels of service estimates.

The major operational problems would continue to exist at the Kalia-Ena Road/Ala Moana Boulevard intersection. During AM peak hour traffic the Kalia-Ena Road/Ala Moana Boulevard intersection operates at an overall LOS D. Traffic generated from the proposed project has no measurable impact on this intersection during the AM peak hour commute.

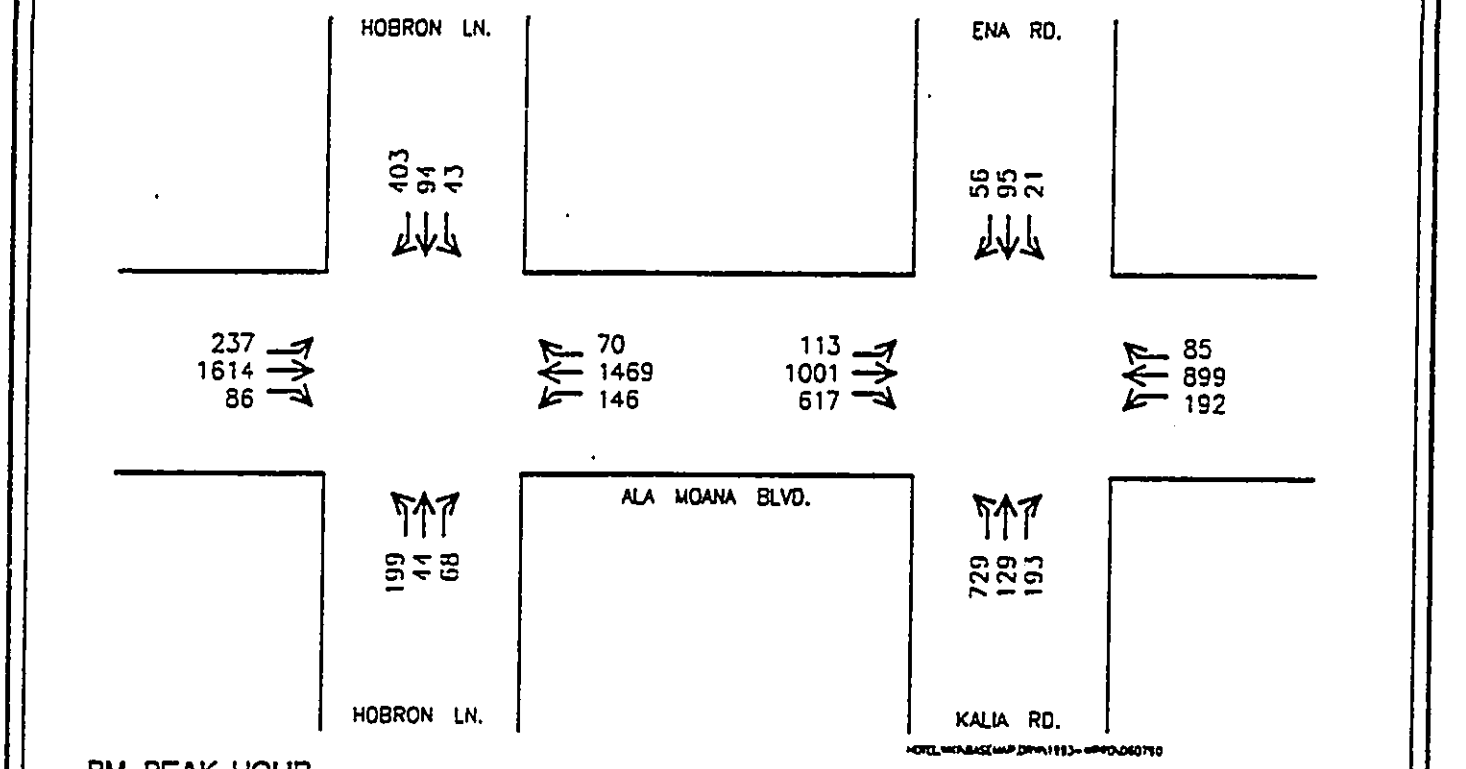
Table 5
LEVELS OF SERVICE AND V/C RATIOS
1993 WITH PROJECT
Waikikian Hotel EIS

	AM Peak Hour		PM Peak Hour	
Signalized Intersection	V/C	LOS	V/C	LOS
Hobron Lane/Ala Moana Blvd.	0.58	C	0.75	D
Kalia-Ena Rd./Ala Moana Blvd.	0.74	D	0.89	E

Wilbur Smith Associates; June, 1990.



AM PEAK HOUR



PM PEAK HOUR

WSA

1993 PEAK HOUR TRAFFIC VOLUMES
WITH PROPOSED PROJECT
Waikikian Hotel EIS Traffic Study

5

Project generated traffic at the Kalia-Ena Road/Ala Moana Boulevard intersection is estimated to increase overall PM peak hour traffic by 35 vehicles. This relatively small volume would have a minor effect on overall intersection operation during the PM peak hour. The intersection would continue to operate at LOS E with an overall delay of 46.3 seconds per vehicle.

As previously noted, operations problems occur with left-turn movements at this intersection. Left-turn lanes on both sides of Ala Moana Boulevard as well as from Kalia Road operate at LOS F during afternoon peak hours. Left-turns from Kalia Road to Ala Moana are estimated at 730 vehicles during the weekday PM peak hour. Traffic generated from the proposed project has no effect on this turning movement. The Ala Moana Boulevard ewa direction left-turn lane operates at LOS F and is not affected by project-generated traffic. In the case of Ala Moana Boulevard Diamond Head bound left-turn movements, project-generated traffic is estimated to add 13 vehicles to the left-turn lanes. The project traffic increases delay for left-turn vehicles in this lane from approximately 70 seconds per vehicle without the project to 80 seconds per vehicle with the project.

Within the study area, the project would not impact AM or PM peak hour traffic by as much as one percent. The morning peak hour traffic conditions within the project vicinity are the less critical. Afternoon peak hour traffic at the Kalia-Ena Road/Ala Moana Boulevard intersection will experience operational problems with or without the proposed project.

At present both left-turn storage lanes on the Ala Moana Boulevard approaches at the Kalia-Ena Road intersection are about 175 feet long. This is not sufficient to accommodate afternoon peak volumes without stacking traffic into and blocking the adjacent through lane. For the Diamond Head direction traffic the short length results in recurring stacking of left-turn vehicles into and blockage of the through lane adjacent to the median. Based on the methodology from the *Highway Capacity Manual* for estimating the required length of storage bays it is recommended that the Ala Moana Boulevard left-turn lane be extended at the Diamond Head direction approach from the present 175 feet to 250 feet in length.

Appendix I

Impact on Utilities and Services

Hida, Okamoto & Associates, Inc.

PROPOSED WAIKIKIAN HOTEL

Waikiki, Oahu, Hawaii

IMPACT ON UTILITIES AND SERVICES

Prepared for

TYRONE T. KUSAO, INC.

By

HIDA, OKAMOTO & ASSOCIATES, INC.
Consulting Engineers
The Commerce Tower, Suite 915
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August 1990

SEWAGE DISPOSAL

Existing Conditions

Presently, the wastewater generated by the existing facilities of the Waikikian Hotel is discharged into an existing 6" lateral and then to an existing 12" sewer line under Ala Moana Boulevard running toward the Mauka direction. Near the intersection at Kalia Road, 12" line is connected to an existing 18" main along Ala Moana Boulevard, which transmits sewerage to the Fort DeRussy Pump Station and to the Sand Island Treatment Facility.

Proposed Action

The average daily wastewater expected to be discharged by the proposed development is estimated to be approximately (300 gpd/hotel unit x 264 units) 79,200 gallons per day (gpd). This generation of sewage volume represents a 33,300 gpd increase from the existing volume of (300 gpd/hotel unit x 132 units) 39,600 gpd. However, preliminary indications by the Wastewater Management Division of the City are that the capacity of lines under Ala Moana Boulevard are adequate to handle the estimated discharge from the site.

Impact and Mitigating Measures

The Sand Island Sewage Treatment Plant (STP) serves the urbanized areas of Honolulu, including Waikiki. The City Department of Public Works, Division of Wastewater Management, has determined that the Sand Island STP has adequate capacity to treat the additional wastewater that will be generated by the proposed project.

DRAINAGE

Existing Conditions

There are no unique topographical features on the project site and it is relatively level. The major part of the project site, currently is drained by means of sheet flow. Drainage toward the Ala Moana Boulevard frontage is through an existing catch basin and to the existing 8′ x 7′ box drain culvert. There is minor drainage toward the Hilton Lagoon.

Proposed Action

No change in the drainage patterns of the site are anticipated. The addition of landscaped areas to the site will decrease runoff from the site slightly. Catch basins to accommodate on-site drainage will be directly connected into the existing drainage system then into the existing 8 feet by 7 feet box drain culvert along Ala Moana Boulevard.

Impact and Mitigating Measures

Anticipated impacts include short term construction related impacts such as noise, dust, traffic disruption and air pollution due to use of diesel equipment. Long term impacts should be an improvement in the drainage throughout the project area, a lessening of particulate matter discharged into the Ala Wai Canal or Hilton Lagoon during periods of stormwater runoff, and the visual impact.

Drainage improvements will be developed to the City and County standards to ensure that adequate and appropriate improvements are made. Impact from short term construction activities will comply with the Department of Health Noise requirements as well as the City and County Grading Ordinances which will feature protective measures to mitigate dust and erosion.

Visual impacts of the proposed drainage improvements will be subject to the overall design criteria for the proposed hotel. These design criteria are expected to include landscaping requirements, setbacks as well as material and texturing requirements which can be used to mitigate changes in visual impacts.

WATER DISTRIBUTION

Existing Conditions

The Honolulu Board of Water Supply (BWS) currently provides potable water for the existing Waikikian Hotel. BWS distribution system includes an existing 3-inch meter and 12-inch water main under Ala Moana Boulevard.

Proposed Action

The total water demand for the project site is estimated to be 92,400 gpd (350 gpd/unit x 264 units). Consumption of water on the site is expected to increase by 46,200 gpd. Additional water consumed by irrigation of landscaping and maintenance were considered to be minimal.

Water for the project site will be provided through the existing 3-inch meter. Preliminary indications by the BWS are that the required amount of water will be available.

A private water system for the fire protection with detector check meter and all appurtenances, hydrant spacing and fire flow requirements will meet the BWS standards. In addition, a fire access road to within 150 feet of the first floor of the most remote structure will be provided.

Impact and Mitigating Measures

The anticipated impact from short term construction activities will comply with the State Department of Health Noise requirements as well as the City and County Grading Ordinances which will feature protective measures to mitigate dust and erosion.

SOLID WASTE

Existing Conditions

Presently, solid waste generated at Waikikian Hotel is not collected by the City and County of Honolulu, Department of Public Works, Refuse Division. Solid waste generated on the property is disposed of by a private refuse collection firm.

Proposed Action

It is anticipated that proposed development will generate a de facto population of 568, who will each generate approximately 2.32 to 4 pounds of refuse each day, for a total of 0.66 tons of solid waste each day. Solid waste will be continually be collected by private collection companies and disposed at public or private landfills.

Impact and Mitigating Measures

The proposed development at the project site will place additional demand on County waste disposal facilities. It is expected that State and City revenues derived from the completed hotel will be sufficient to finance the hotel's fair share of the cost for major capital improvements such as solid waste disposal facilities, and to provide the same level of per-unit services. The County has future plans to construct a solid waste transfer station. Solid waste collected at this transfer station will be hauled either to a sanitary landfill site for disposal or to a proposed refuse-to-energy plant.

ELECTRICAL AND TELEPHONE SERVICES

Existing Conditions

Power and telephone service to the site is currently supplied by an underground system along Ala Moana Boulevard. Power to these lines is supplied by the Waikiki Substation which has adequate capacity to serve the proposed development.

Proposed Action

The existing electrical and telephone infrastructure has sufficient capacity. The assumed average daily power requirement is estimated to be approximately 750 KVA.

Impact and Mitigating Measures

No other mitigating measures are necessary since the electric company has indicated that adequate service can be provided.

The developer will maintain contact with Hawaiian Telephone Company to assure necessary service levels.