DRAFT ENVIRONMENTAL IMPACT STATEMENT
Volume I: APPLICATION, APPENDICES 1-12

July 2009

PRINCESS KA'IULANI RENOVATION & DEVELOPMENT AND THE REPLACEMENT OF THE MOANA SURFRIDER HOTEL DIAMOND HEAD TOWER WITH A NEW TOWER

WAIKIKI, HONOLULU, OAHU, HAWAII

APPLICANT

Kyo-ya Hotel & Resorts, LP
Sheraton Waikiki Hotel, Second Floor
2255 Kalakaua Avenue
Honolulu, Hawaii 96816

AGENT

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

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Appendix 3 Traffic Impact Report dated April 22, 2009, prepared by Wilson Okamoto Corporation

Appendix 4 A Survey of Princess Ka'iulani and Sheraton Waikīkī parking garages, dated April 22, 2009, prepared by Wilson Okamoto Corporation

Appendix 5 Sewer Connection Permit Applications approved March 6, 2009

Appendix 6 Moana Surfrider Shoreline Assessment dated March 24, 2009 for the Diamond Head Tower project prepared by Sea Engineering

Appendix 7 Letter from DPP to Patrick Seguirant dated June 18, 2009

Appendix 8 Flood Hazard Analysis Determination for the Princess Ka'iulani dated May 24, 2007 prepared by Army Corps of Engineers and a Flood Hazard Analysis Determination for the Moana Diamond Head Tower dated April 23, 2009 prepared by Army Corps of Engineers

Appendix 9 Pedestrian Wind Assessment dated July 28, 2009 prepared by RWDI

Appendix 10 John M. Knox & Associates socioeconomic analysis dated June 3, 2009 for the Princess Ka'iulani project

Appendix 11 John M. Knox & Associates socioeconomic analysis dated June 3, 2009 for the proposed Diamond Head Tower project

Appendix 12 John M. Knox & Associates socioeconomic analysis dated June 3, 2009 for the combined Princess Ka'iulani and Diamond Head Tower projects

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Appendix 14 Archaeological Inventory Survey Report for the Proposed Diamond Head Tower Moana Surfrider Hotel Redevelopment Project dated June 2009 prepared by Cultural Surveys Hawai'i, Inc.

Appendix 15 Cultural Impact Assessment Report dated April 2009 for the Proposed Princess Ka'iulani Redevelopment Project dated April 2009 prepared by Cultural Surveys Hawai'i, Inc.

Appendix 16 Cultural Impact Assessment Report dated April 2009 for the Proposed Diamond Head Project dated April 2009 prepared by Cultural Surveys Hawai'i, Inc.

Appendix 17 Letters of support from the community

Appendix 18 Minutes to the meeting of the Waikīkī Neighborhood Board No. 9 dated September 9, 2008.

Appendix 19 Copies of comment letters to EISPN, and corresponding response letters from Kusao & Kurahashi, Inc. on behalf of Kyo-ya.

LIST OF ACRONYMS AND ABBREVIATIONS

APE	Area of Potential Effect
Blvd.	Boulevard
BMP	Best Management Practices
BWS	City Board of Water Supply
City	City and County of Honolulu
CUP	Conditional Use Permit
CMP	Construction Management Plan
CO	carbon monoxide
CSH	Cultural Surveys Hawaii, Inc.
DDC	City Department of Design and Construction
DES	City Department of Environmental Services
DLNR	State Department of Land and Natural Resources
DOE	State Department of Education
DOH	State Department of Health
DP	Development Plan
DPP	City Department of Planning and Permitting
DPR	City Department of Parks and Recreation
Draft EIS	Draft Environmental Impact Statement
EIS	Environmental Impact Statement
EISPN	Environmental Impact Statement Preparation Notice
FAR	Floor Area Ratio
FIRM	Flood Insurance Rate Map
ft	Foot or feet
GET	General Excise Tax
gpd	gallons per day
HABS	Historic American Building Survey
HAR	Hawaii Administrative Rules
HECO	Hawaiian Electric Company
HFD	Honolulu Fire Department
HRS	Hawaii Revised Statutes
Kyo-ya	Kyo-ya Hotels & Resorts, LP
LEED	Leadership in Energy and Environmental Design
LOS	Level of Service
LUO	Land Use Ordinance
NOAA	National Oceanic and Atmospheric Administration
NPDES Permit	National Pollutant Discharge Elimination System Permit
OHA	State Office of Hawaiian Affairs
OIBC	State O'ahu Island Burial Council
PD-R	Planned Development-Resort
PUCDP	Primary Urban Center Development Plan
ROH	Revised Ordinances of Honolulu
RWDI	Rowan Williams Davies and Irwin Inc.
SHPD	State Historic Preservation Department
SMA	Special Management Area
SSV	Shoreline Setback Variance
State	State of Hawaii
TAT	Transient Accommodations Tax
TMP	Traffic Management Plan
WSD	Waikiki Special District

DRAFT ENVIRONMENTAL IMPACT STATEMENT PRINCESS KA'IULANI RENOVATION & DEVELOPMENT AND THE REDEVELOPMENT OF THE DIAMOND HEAD TOWER AT THE MOANA SURFRIDER HOTEL,

WAIKIKI, HONOLULU, OAHU, HAWAII
Tax Map Key: 2-6-22: 1 and 41 and 2-6-1: 12 and 13

1. GENERAL INFORMATION

1.1	**APPLICANT/OWNER**	Kyo-ya Hotel & Resorts, LP Sheraton Waikīkī Hotel, Second Floor 2255 Kalākaua Avenue Honolulu, Hawai'i 96816
1.2	**ACCEPTING AGENCY**	Department of Planning & Permitting City and County of Honolulu 650 South King Street, 7th Floor Honolulu, Hawai'i 96813
1.3	**TAX MAP KEY**	2-6-22: 1 and 41 (Princess Ka'iulani) 2-6-1: 12 and 13 (Moana Surfrider Hotel/ Diamond Head Tower)
1.4	**AGENT**	Kusao & Kurahashi, Inc. Planning and Zoning Consultants 2752 Woodlawn Drive, Suite 5-202 Honolulu, Hawai'i 96822
1.5	**LOCATION**	2352 & 2354 Kalākaua Avenue, corner of Kalākaua Avenue & Ka'iulani Avenue, (Princess Ka'iulani); 2365 Kalākaua Avenue, (Moana Surfrider Hotel/Diamond Head Tower)
1.6	**LOT AREA**	180,920 square feet (Princess Ka'iulani) 136,844 square feet (Diamond Head Tower, Banyan Wing and Surfrider Tower) *(Note: although the lot area includes the land area for the Banyan Wing and the Surfrider Tower, Tax Map Key Nos. 2-6-1: 12 and 13, the new Diamond Head Tower will be located entirely within a portion of parcel 12.)*
1.7	**ZONING**	Resort Mixed Use Precinct
1.8	**STATE LAND USE**	Urban

1.9 DEVELOPMENT PLAN

Resort
Transit Corridor along Kalākaua Avenue

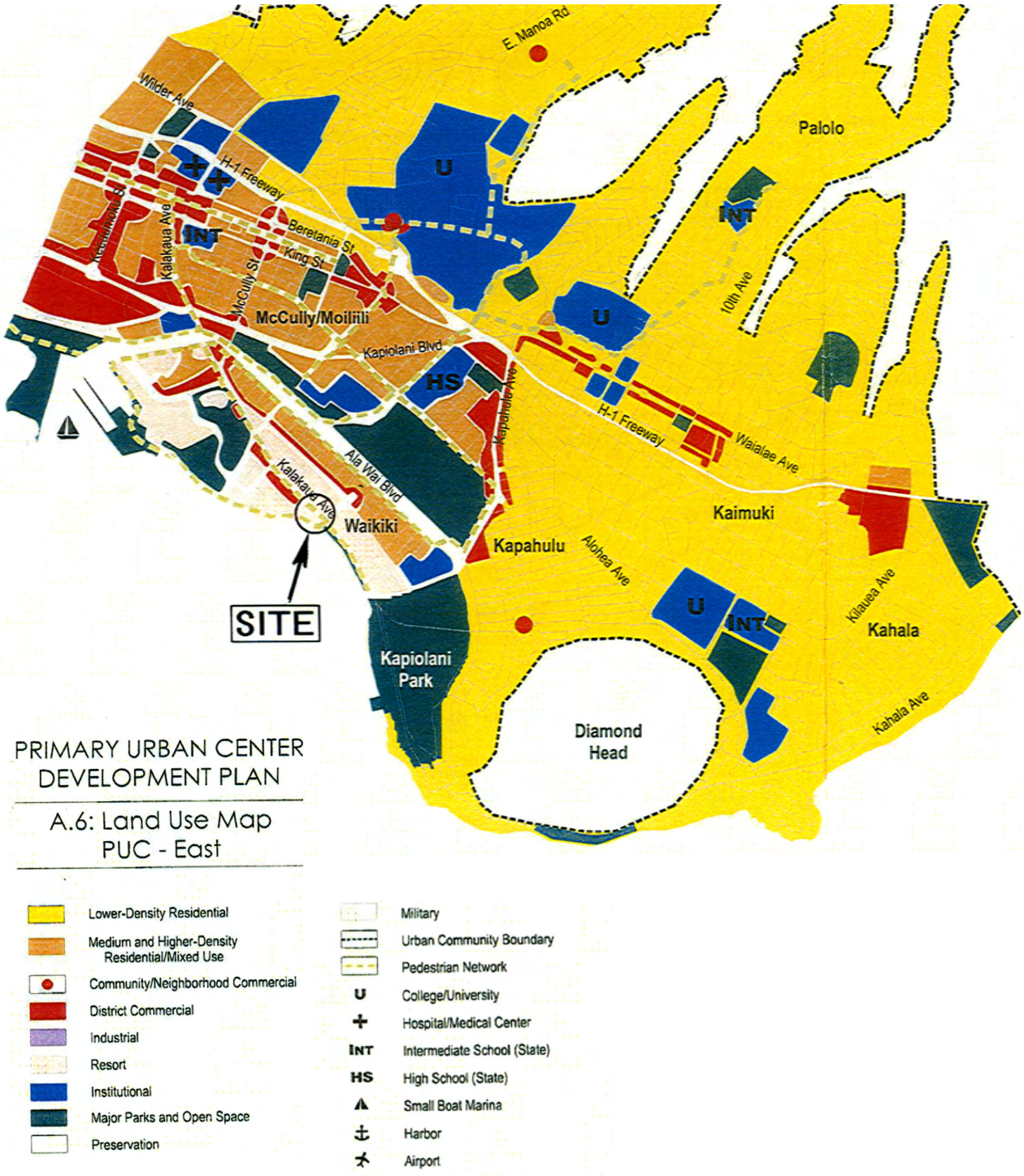


FIGURE 1: DEVELOPMENT PLAN LAND USE MAP

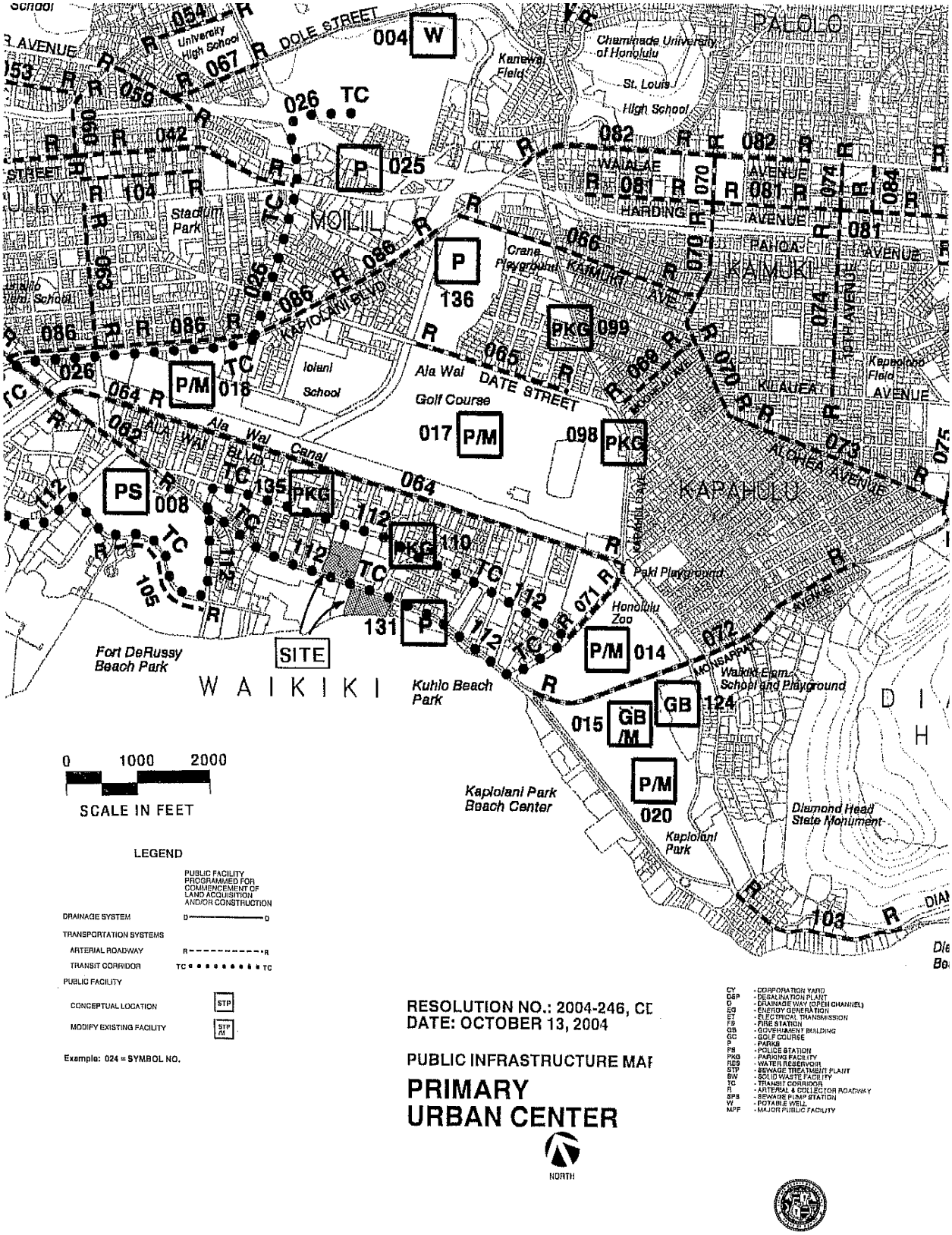
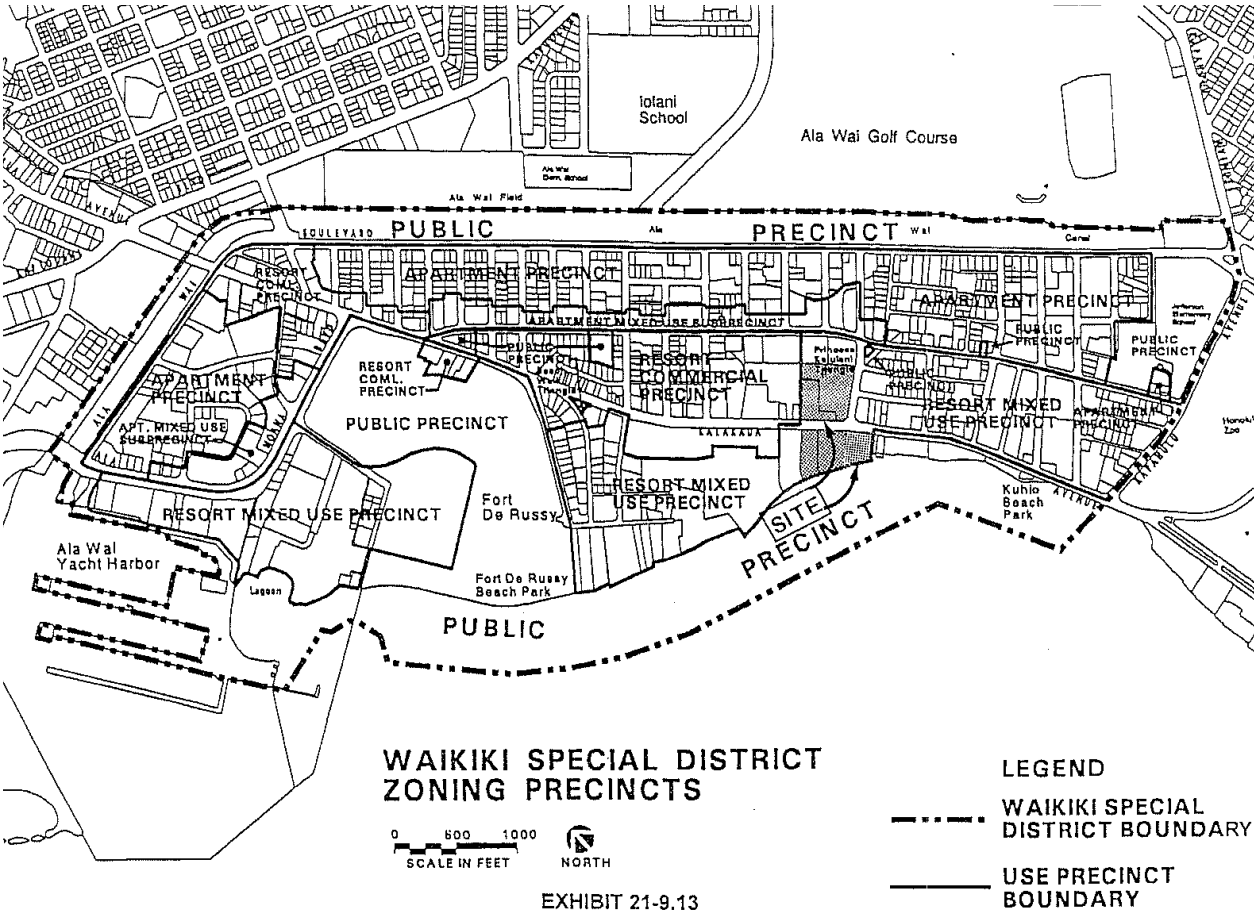


FIGURE 2: PUBLIC INFRASTRUCTURE MAP

1.10 SPECIAL DISTRICT Waikiki Special District



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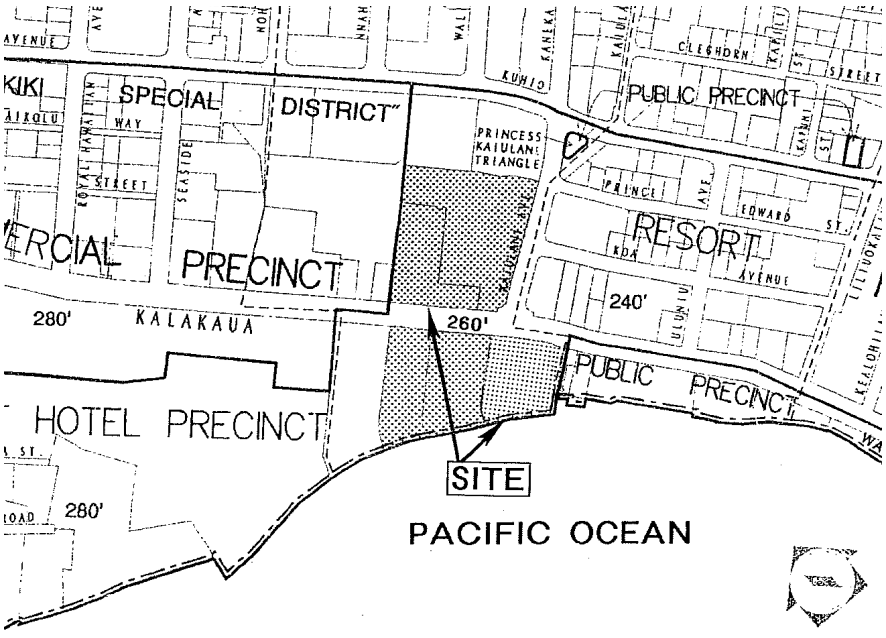


FIGURE 3: WAIKIKI SPECIAL DISTRICT ZONING PRECINCTS

1.11 EXISTING USE

Princess Ka'iulani - consists of 1,140 hotel rooms in 3 hotel towers, a 582-space parking structure, food and beverage establishments, retail space, meeting/banquet space, and a swimming pool and fitness center.

Diamond Head Tower - consists of 141 hotel units and retail establishments on the ground floor.

2. PROJECT INFORMATION SUMMARY

The applicant, Kyo-ya Hotels & Resorts, LP, proposes (i) the renovation and redevelopment of the Princess Ka'iulani site and (ii) the development of a new Diamond Head Tower that will replace the existing Diamond Head Tower located adjacent to the Banyan Wing of the Moana Surfrider Hotel, as more fully described below (collectively the "Projects"). The Moana Surfrider Hotel site includes the Surfrider Tower, the Banyan Wing, and the Diamond Head Tower. However, new development will be restricted to the portion of the site with the existing Diamond Head Tower. Preliminary plans showing the existing development and proposed improvements are provided in Appendix 1.

Kyo-ya is a Honolulu based company established in 1961. In addition to the Princess Ka'iulani Hotel and Moana Surfrider Hotel, Kyo-ya owns the Sheraton Waikīkī Hotel and the Royal Hawaiian, as well as the Sheraton Maui and two properties in California and Florida. In 2007, Kyo-ya completed the renovation and restoration of the historic Banyan Wing of the Moana. Shortly after the completion of the Moana project, Kyo-ya commenced the restoration of the Royal Grounds, a renovation and restoration of the Royal Hawaiian Hotel and the public areas of the Sheraton Waikīkī Hotel. The Royal Hawaiian restoration was completed in December 2008; the final phase of the Sheraton Waikīkī renovation is planned to be completed by year-end 2009. Over the past four years, Kyo-ya's re-investment in Waikīkī exceeds $250 million.

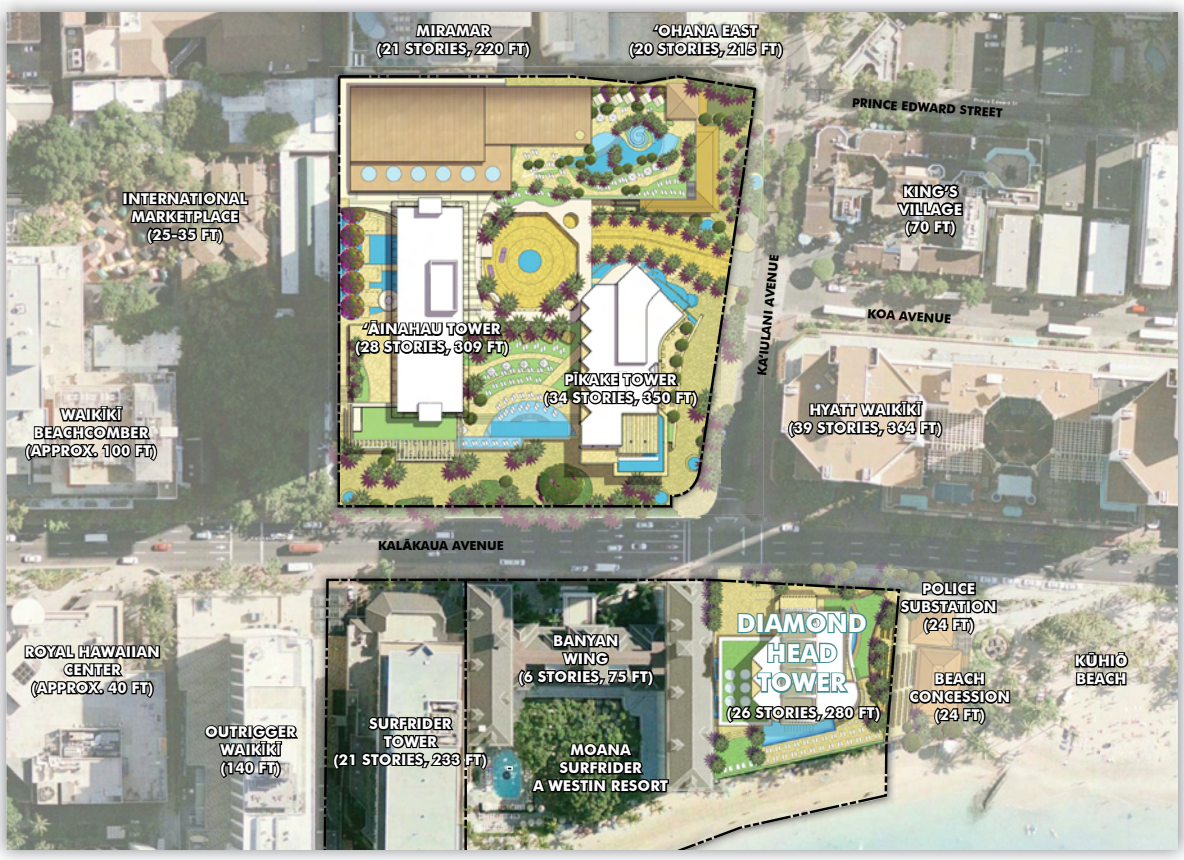


FIGURE 4: PROPOSED DEVELOPMENT

2.1 PRINCESS KA'IULANI RENOVATION AND DEVELOPMENT

- The demolition of two of the existing hotel towers (Princess and Ka'iulani Towers), the existing retail buildings, parking garage and other structures on the property;
- The renovation of the existing 666-room 'Āinahau Tower;
- The development of a new, 34-story condo-hotel and residential tower, to be known as the "Pīkake Tower", consisting of 271 units – approximately 210 condo-hotel suites and 61 fee simple residences (the precise mix of units could be modified based on demand at the time of construction);
- The development of a new 2-level podium that will include retail, food and beverage, approximately 187 below grade parking spaces, recreational amenities, and back of house facilities to service the project; and
- The development of a new parking structure with approximately 625 parking spaces. Accessory uses to the hotel will be located at the top level of the parking structure will include a recreation deck, meeting space and food and beverage facilities. The meeting facilities may be available for public use.

2.2 DIAMOND HEAD TOWER REDEVELOPMENT

- Demolition of the existing 141-room, eight story hotel tower (built in 1952) – the historic Banyan Wing of the Moana Surfrider Hotel will not be altered;
- Development of a new, 26-story hotel and residential tower consisting of 225 units – approximately 185 hotel rooms and 40 residences (the precise mix of units could be modified based on demand at the time of construction);
- Development of a new 2-level podium that will include accessory uses to the hotel such as retail, food and beverage, recreational amenities, and back of house facilities to service the project. Some of these spaces may be available for public use.
- Development of a dedicated auto court at the Diamond Head Tower;
- Establishment of public beach access on the Diamond Head side of the site to include public surfboard racks; and
- Elevation of the project site from the existing 6 feet to 9 feet at the makai lawn and from 9 feet to 12 feet at the lobby. This will require adding approximately 3 feet of fill to the site. The additional elevation will protect the proposed tower from flooding due to storm waves or tidal surges as well as reduce any potential impacts on below grade cultural artifacts, if any.

2.3 DEEP WELL COOLING SYSTEM OR DISTRICT DEEP SEAWATER COOLING SYSTEM

- In conjunction with the Projects, Kyo-ya is exploring the feasibility of developing either (i) a deep well cooling system for the Projects or (ii) a Waikīkī district deep seawater cooling system (both renewable energy technologies). Both systems would provide cool water in a heat exchange process for the cooling/air-conditioning systems. In the case of the deep well cooling system, the cool water would be provided for the Projects and the two remaining buildings at the Moana Surfrider Hotel. For the Waikīkī district deep seawater cooling system, the cool water would be made available to major properties in Waikīkī. The proposed cooling systems will significantly reduce energy demand, water consumption and emissions of carbon in the environment. Additional details about this program are provided in Section 4.2.3.5.

2.4 PUBLIC BENEFITS

- Enhanced public open spaces along Kalākaua and Ka'iulani Avenues;
- Improved view corridors at pedestrian levels and from properties mauka of the Princess Ka'iulani;
- New public, pedestrian access from Kalākaua Avenue to Waikīkī Beach;
- Improved ocean views from pedestrian level along Kalākaua Avenue and Ka'iulani Avenue through new ground level view corridors on both the 'Ewa and Diamond Head sides of the new Diamond Head Tower;
- New surfboard racks for public use on the property adjacent to the existing public surfboard racks;
- Improved traffic and circulation along Kalākaua and Ka'iulani Avenues;
- During the 2 to 3 year construction period, the Projects will create approximately 3,376 person-years of employment on O'ahu and generate approximately $284 million in personal earnings;
- During the operation phase, the Projects will result in approximately 1,503 additional jobs (direct and indirect) and generate $39 million in personal earnings per year; at stabilization, the Projects will result in annual incremental revenues of approximately $6.2 million to the City and $4.7 million to the State as a result of increased property values, and additional GET and TAT; and
- Kyo-ya has been and continues to be in discussion with the DLNR to participate in the DLNR's beach nourishment program (sand replenishment) for the littoral cell extending between Kūhiō Beach and the Royal Hawaiian Hotel (including the area fronting the Diamond Head Tower). Such participation would involve providing up to $500,000 in funding to help pay for the construction costs associated with this program, which funds would be disbursed upon the DLNR's completion of certain milestone events. Upon completion of

such program, it is anticipated that the beach fronting the Diamond Head Tower would be extended seaward by a minimum of 40-feet. This DLNR beach nourishment program is not a part of the Diamond Head Tower project, and compliance with HRS Chapter 343 would be the responsibility of the DLNR.

2.5 ADVERSE IMPACTS

- Encroachment of a portion of the pool at Diamond Head Tower into the 40 foot shoreline setback;
- Encroachment of the Diamond Head Tower into the 100-foot coastal building setback;
- Encroachment of the Diamond Head Tower into the 100-foot coastal building height setback of 1:1;
- Increase in wastewater flow from the Diamond Head Tower (there is a decrease in wastewater flow from Princess Ka'iulani);
- Demolition of the existing Diamond Head Tower and the existing Princess Tower at the Princess Ka'iulani Hotel, both of which are in excess of 50 years old;
- Short term construction impacts related to noise and air quality; and
- The repair and maintenance of the Diamond Head Tower's existing, nonconforming seawall and the addition of 3 feet of fill and a 3 foot retaining wall inside the 40-foot shoreline setback. The additional fill and retaining wall will be located mauka of the existing seawall and are intended to protect the site from the potential of rising tides and/or storm surges. This work was recommended by the DLNR and Sea Engineering.

2.6 MITIGATION MEASURES

- Kyo-ya plans to provide ocean views from Kalākaua Avenue and Ka'iulani Avenue by demolishing the existing Diamond Head Tower and replacing it with a new Diamond Head Tower with a mauka/makai orientation. The new tower will result in ground level view corridors on both the 'Ewa and Diamond Head sides of the site. These new view corridors will be the only public view corridors to the ocean along Kalākaua Avenue, other than across City or State property located Diamond Head of this site. This will further off-set the impacts of the encroachment into the coastal building height setback;
- Kyo-ya proposes to provide up to $500,000 for the DLNR's beach nourishment program, as discussed in Section 2.4;
- Kyo-ya will upgrade the existing 8-inch diameter sewer main serving the Diamond Head Tower, located at the intersection of Ka'iulani and Kalākaua Avenues to accommodate the increase in sewage flow from the Diamond Head Tower project and will connect certain portions of the Princess Ka'iulani redevelopment directly to the existing 18-inch sewer line

on Kūhiō Avenue to accommodate the increase in sewage flow from the Diamond Head Tower Project;

- Archaeological Inventory Surveys were completed for both Project sites in order to minimize potential impact to potential archaeological finds. Based on the recommendations in the AIS, Kyo-ya will implement control measures during excavation to minimize potential impacts;
- Although traffic operations with the Projects in 2012 are expected to remain similar to conditions without the Projects in 2012, traffic mitigation measures are planned to improve traffic circulation around Kalākaua Avenue and Ka'iulani Avenue;
- Construction noise and air quality impacts will be short term and will be mitigated by contractors keeping equipment properly tuned and using mufflers on diesel and gasoline engines and minimizing fugitive dust through a dust management control plan, which include watering, dust screens, covering dirt-hauling trucks, road cleaning and tire washing; and
- The following alternatives were considered: no action, retaining existing outdated facilities; renovation of existing structures; developing in accordance with WSD standards, no PD-R flexibility in standards; other developments with PD-R under various alternatives; and Kyo-ya's proposal.

2.7 UNRESOLVED ISSUES

- For the Diamond Head Tower, a zoning variance from the 100-ft coastal building setback and the 100-ft coastal building height setback of 1:1 will be necessary;
- For the Diamond Head Tower, a shoreline setback variance will be necessary for encroachment into the 40-ft shoreline setback of a portion of the swimming pool and deck. If required by DPP, a shoreline setback variance will also be obtained for separate repair and maintenance work which includes 3 feet of fill and a 3-ft retaining wall; and
- For the Diamond Head Tower, a shoreline certification will be necessary. Kyo-ya will work with the DLNR to certify the shoreline prior to application for a Special Management Area Use Permit and any application for a shoreline setback variance.

2.8 COMPATIBILITY WITH LAND USE PLANS AND POLICIES

- State Land Use - Both project sites are designated Urban under State land use regulations. The existing developments on these properties as well as the proposed Projects are consistent with this Urban designation;
- General Plan - The Projects will comply with policies related to population, improving visitor facilities, prohibiting growth in hotel and resort condominium units, restoration of natural resources (beach area), energy conservation, timing of new development with infrastructure, and beach access and ocean recreation activities;

- PUCDP - The Projects will comply with policies related to protection of natural resources (beach area) and beach access, supporting the visitor industry with updated facilities, enhancing the walking experience in Waikīkī, support with bicycle facilities, and with the land use map designation of Resort; and
- Zoning - The project is permitted with flexibility in certain development standards of the WSD through processing of a PD-R permit and with a zoning variance discussed earlier under Unresolved Issues. The proposed hotel, residential, commercial and resort uses are permitted uses in the Resort Mixed Use Precinct of the WSD for these specific parcels.

2.9 REQUIRED GOVERNMENTAL PERMITS AND APPROVALS

- This Draft EIS is intended to cover both Projects. However, the renovation and development work for each Project will be based upon separate land use permits.

2.9.1 Princess Ka'iulani

- City: PD-R Permit; WSD Permit, Major; Surface Encroachment Variance; Subdivision for Pedestrian Easement; Park Dedication; Construction Dewatering Permit; CUP for Off-Site Parking; Building Permits; Flood Study; Trenching Permit; Grading Permit; Drain Connection; Sewer Connection; Street Usage; and Construction Plan Approval; and
- State: NPDES Permit; Construction Noise Permit; and; Industrial Wastewater Discharge.

2.9.2 Diamond Head Tower

- City: PD-R Permit; WSD Permit, Major; Zoning Variance; SMA Use Permit; Shoreline Setback Variance; Surface Encroachment Variance; Park Dedication; Construction Dewatering Permit; CUP for Off-Site Parking; Building Permits; Flood Study; Trenching Permit; Grading Permit; Drain Connection; Sewer Connection; Street Usage; and Construction Plan Approval; and
- State: NPDES Permit (for construction activities and possibly for construction dewatering); Construction Noise Permit; and Industrial Wastewater Discharge.

2.9.3 Deep Well Cooling System

- Source Well - State Commission on Water Resource Management: Well Construction Permit; Pump Installation Permit; and Water Use Permit;

- Injection Well – State DOH: Underground Injection Control Permit; and
- Well Construction
  - State DOH: Construction Noise Permit; National Pollutant Discharge Elimination System Permit; and Treated Processed Wastewater Associated with Well Drilling Activities;
  - DPP: Building Permits; Trenching Permit; and Grading Permit; and
  - Department of Environmental Services: Effluent Discharge Permit into the City MS4 (Municipal Separate Storm Sewer System).

    This DEIS for the Projects is prepared pursuant to and in accordance with the requirements of Chapter 343, HRS and Chapter 200 of Title 11, HAR - Environmental Impact Statement Rules, and Chapter 25, SMA, ROH. The actions that trigger this assessment are the proposed development in the WSD, use of county lands (improvement to sidewalk areas and infrastructure within the right-of-ways), use within any historic site (although no development planned at the historic Moana Banyan Wing, the Diamond Head Tower is on the same parcel of land), development within the SMA and possibly development within the shoreline setback area.

3. PURPOSE OF AND NEED FOR THE PROJECT

The redevelopment of the Princess Ka'iulani and the Diamond Head Tower represent Kyo-ya's continued commitment to enhancing the visitor and resident experience in Waikīkī. The Projects are necessary given the age and condition of the properties. The existing facilities are dated and not consistent with the demands of transient and convention related guests. The improvements will result in upgraded visitor accommodations, enhanced retail, food and beverage, and recreational facilities.

The Projects will provide a needed boost to the economy of Hawai'i in what is projected to be one of the most severe recessions in recent history. Unemployment rates have increased to historically high levels on O'ahu, visitor arrivals have decreased significantly both domestically and internationally, and construction activity has declined. Based on the Projects, Kyo-ya stands ready to infuse $700 million to stimulate construction and improve two major visitor facilities in Waikīkī. The investment will stimulate short and long-term employment and generate increased visitor spending and State and City Tax revenues.

The new Pīkake Tower and Diamond Head Tower will conform to the "mauka-makai" orientation (the long axis of the building aligned "mauka-makai") as recommended in the WSD Guidelines. These towers will replace existing towers oriented in the 'Ewa-Diamond Head direction in direct conflict with the WSD recommended orientation. This will minimize view impacts in the mauka-makai direction.

The Projects will provide greater and enhanced public open space improving the pedestrian experience in Waikīkī and provide landscape relief from the dense urban form in Waikīkī along Kalākaua Avenue and Ka'iulani Avenue.

The Projects will improve traffic circulation on Kalākaua Avenue and Ka'iulani Avenue by providing greater stacking off-street at both the Princess Ka'iulani and Diamond Head Tower and by providing off-street bus loading and direct access between the valet station and the parking garage at the Princess Ka'iulani.

4. PROJECT DESCRIPTION

4.1 MAP

The Princess Ka'iulani is located in the PUC of Honolulu, generally in the center of Waikīkī and is bounded by the Miramar Waikīkī and Outrigger East hotels to the north, Kalākaua Avenue to the south, Ka'iulani Avenue to the east and the International Marketplace to the west.

The existing Diamond Head Tower fronts Waikīkī Beach on Kalākaua Avenue and is located between the Banyan Wing of the Moana Surfrider Hotel and the Waikīkī Beach Center (Police Sub-Station). The Location Map (See Figure 5) identifies the location of the Princess Ka'iulani and Diamond Head Tower project sites.

FIGURE 5: LOCATION MAP

4.2 GENERAL DESCRIPTION OF THE ACTION

4.2.1 Existing Condition - Princess Ka'iulani

The Princess Ka'iulani project, which consists of two parcels on 4.15 acres of land, is located in Waikīkī and surrounded by modern urban development including high-rise hotels, multi-family dwellings, commercial establishments and public infrastructure and roadways.

The Princess Ka'iulani Hotel, which originally opened for business in 1955, consists of 1,140 guestrooms within 3 hotel towers, the 28-story 'Āinahau Tower (approximately 309' high), the 11-story Princess Tower (approximately 138' high), and the 11-story Ka'iulani Tower (approximately 124' high).

The hotel amenities currently include approximately 27,212 square feet of retail space, 12,798 square feet of meeting space, a 582-space parking structure, swimming pool, fitness center, and food and beverage establishments.

Vehicular access to the site is via Ka'iulani Avenue where there is a covered auto court and a separate driveway leading to the loading dock and parking garage. A plan showing the existing conditions is provided in Appendix 1.

4.2.2 Existing Condition - Diamond Head Tower

The existing 8-story (approximately 95' high), Diamond Head Tower is located between the historic Banyan Wing of the Moana Surfrider Hotel and the Waikīkī Beach Center (Police Sub-Station). There are currently 141 hotel lodging units on the upper floors and retail establishments on the ground floor. The Diamond Head Tower is operated as an annex of the Moana Surfrider Hotel.

Vehicular access to the site is located at the auto court of the Banyan Wing of the Moana Surfrider Hotel; there is currently no dedicated auto court for the Diamond Head Tower. The loading dock for the Diamond Head Tower is located in the Surfrider Tower. This loading dock currently services the Diamond Head Tower via an underground tunnel, and will continue to do so with the proposed redevelopment.

Other structures include a concrete lānai, planters and landscaping as indicated in the survey provided in Appendix 1.

In addition to the Diamond Head Tower, two other hotel structures are located on the Moana Surfrider Hotel property. The six story (approximately 89' high) Banyan Wing is directly Ewa to the Diamond Head Tower. Built in 1901, the structure houses 241 hotel rooms, retail shops, food and beverage outlets, a pool and the main check-in and administrative areas. The Banyan Wing currently serves as the main entry for the resort complex, with a motor court accessed from Kalakaua Avenue.

At the Ewa side of the property is the twenty-one story (approximately 233' high) Surfrider Tower. Built in 1969, the tower houses commercial facilities on the first three levels, and 432 hotel rooms at the upper levels. A vehicular service entry is accessed off of Kalakaua Avenue with an subgrade tunnel that serves all three structures on the property.

FIGURE 6: PRINCESS KA'IULANI PROPOSED SITE PLAN

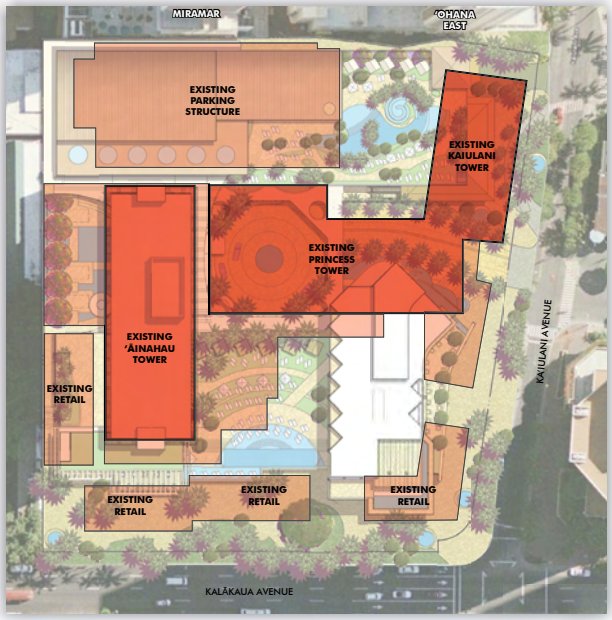


FIGURE 7: PRINCESS KA'IULANI PROPOSED SITE PLAN (EXIST. OVERLAY)

4.2.3 Proposed Development - Princess Ka'iulani

The renovation and redevelopment of the Princess Ka'iulani is planned to include the items listed below. Preliminary plans showing the proposed improvements are provided in Appendix 1:

- The demolition of two of the existing hotel towers (Princess and Ka'iulani Towers), existing retail buildings, parking garage and other structures on the property;
- The renovation of the existing 666-room 'Āinahau Tower;
- The development of a new, 34-story condo-hotel and residential tower called the "Pīkake Tower", consisting of 271 units – approximately 210 condo-hotel suites and 61 fee simple residences (the precise mix of units could be modified based on demand at the time of construction);

- The development of a new 2-level commercial podium that will include retail, food and beverage, approximately 187 below grade parking spaces, recreational amenities, and back of house facilities to service the project;
- The development of a new parking structure with approximately 625 parking spaces. The top level of the parking structure will include a recreation deck, meeting space and food and beverage facilities; and
- The potential development of a deep well cooling system in the lower level of the commercial podium.

4.2.3.1 'Āinahau Tower

The 'Āinahau Tower will consist of approximately 666 hotel rooms. The hotel will be operated as a full-service hotel with a full-service restaurant, a lobby café and bar, meeting facilities, and recreational amenities including a resort pool and fitness center. The hotel will represent a significant improvement over the existing hotel and will cater to individual tourists, in-house group attendees, and attendees of the Hawai'i Convention Center. The new and expanded meeting facilities will cater to local social and meeting functions and the restaurant, lobby café and bar will be open to the public.

4.2.3.2 Pīkake Tower

The Pīkake Tower will include approximately 271 units, consisting of 210 condo-hotel suites and 61 fee simple residences (the precise mix of units could be modified based on demand at the time of construction). As currently planned, the condo-hotel suites will range in size from 470 square foot studio suites to 1,200 square foot, one bedroom suites. It is anticipated that condo-hotel suites will be purchased in large part by individual buyers from the mainland United States, Japan and local Hawai'i residents. The owners of these suites will be obligated to place them in a hotel rental program for a minimum time period and rent them as transient accommodations.

The 61 residences will be fee simple condominiums. As proposed, the residences will include 1,115 square foot, one bedroom suites; 1,115 to 1,975 square foot, two bedroom suites; 2,970 square foot, three bedroom suites and a larger penthouse suite. (See Appendix 1). It is anticipated that the residences will be purchased in large part by second home buyers from the mainland United States and Japan and by local Hawai'i residents.

FIGURE 8: PRINCESS KA'IULANI UNIT SUMMARY

PRELIMINARY PIKAKE TOWER UNIT MIX

Unit Type	Avg Size	Count	Bays/Unit	Bays
Condo-Hotel	470	105	1	105
Condo-Hotel Suite	1230	105	2	210
Hotel Total		210		315
Condo Studio	745	4	1	4
Condo 1BR	1115	4	2	8
Condo 2BR + Den	1975	41	3	123
Condo 3BR	2970	11	4	44
Penthouse	10240	1	11	11
Condominium Total		61		190

Princess Kaiulani Unit Count Summary	EXISTING			PROPOSED		
Hotel / Hotel-Condo	units	bays	floor area	units	bays	floor area
Ainahau Tower	666	700	242,000	666	700	242,000
Princess Tower	295	295	101,100	0	-	-
Kaiulani Tower	179	189	64,420	0	-	-
New Pikake Tower				210	315	188,230
Total Hotel Rooms	1140	1184	407,520	876	1015	430,230
Condominium						
New Pikake Tower				61	190	128,349
Project Total	1140	1184	407,520	937	1205	558,579

* *Floor area excludes lanais, balconies per LUO.*
** *Unit floor areas indicate total floor areas for units and unit level corridors.*
*** *"Bays" are a means of a measurement primarily used for the width or general size of a hotel room or residential unit and is usually a common dimension or denominator.*

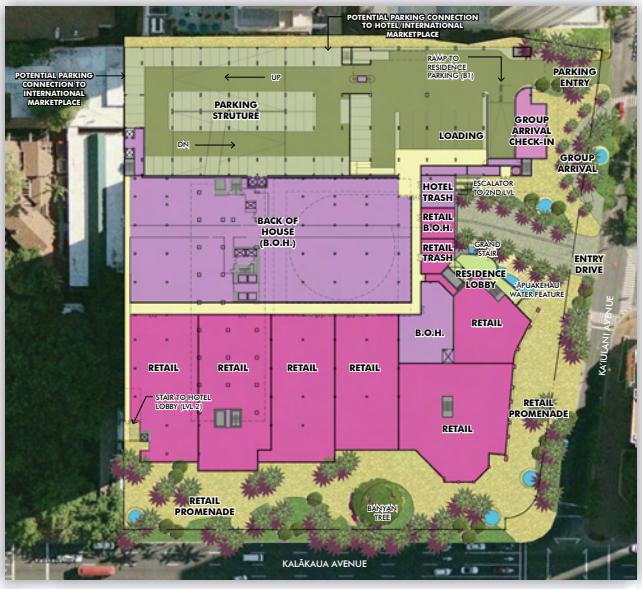


FIGURE 9: PRINCESS KA'IULANI LEVEL 1 PLAN

FIGURE 10: PRINCESS KA'IULANI LEVEL 2 PLAN

4.2.3.3 Commercial Podium

The Commercial Podium will consist of the following:

- Approximately 83,000 square feet of retail and food and beverage facilities, accessible off Kalākaua and/or Ka'iulani Avenues;
- A new auto court located on the second level of the Commercial Podium. The auto court will be accessible off of Ka'iulani Avenue and will replace the existing smaller auto court at street level on Ka'iulani Avenue;
- A new off-street bus and group arrival area will be provided to reduce queuing of buses and traffic along Ka'iulani Avenue;
- Lobby areas for both the 'Āinahau Tower and Pīkake Tower. The lobby facilities will include check-in facilities, hotel related food and beverage facilities, elevator lobbies and back of house services;
- A recreation deck for the Pīkake Tower, including a swimming pool, fitness center and snack bar;
- One level of below grade parking with approximately 187 spaces; and
- Off-street loading dock, receiving and storage facilities, mechanical and electrical equipment, and other back of house facilities. The loading dock will be located in approximately the same location as the existing loading dock.

4.2.3.4 Parking Structure

The new parking structure will be located in approximately the same location as the existing garage. The parking structure will provide approximately 625 parking spaces (in addition to the 187 spaces in the commercial podium) for the Princess Ka'iulani, the Diamond Head Tower and the Moana Surfrider Hotel. The top level of the parking structure will include approximately 12,000 square feet of meeting space, including an 8,000 square foot ballroom, a resort pool, and a food and beverage outlet.

4.2.3.5 Deep Well Cooling System

In conjunction with the Projects, Kyo-ya is exploring the feasibility of developing either (i) a deep well cooling system for the Projects or (ii) a Waikīkī District deep seawater cooling system (both renewable energy technologies). The deep well cooling system is further described in this section of the Draft EIS. The Waikīkī district deep seawater cooling system would be a more comprehensive District system that would include all of Kyo-ya's properties in Waikīkī and other resort developments in Waikīkī and would involve drawing off-shore deep sea water and distributing this water throughout Waikīkī through a comprehensive distribution system. A system of this size is beyond the scope of this Draft EIS and will require extensive studies and research.

Conventional cooling systems use mechanical chilling equipment coupled with thermal storage systems to provide cold water for air conditioning systems. These conventional systems are powered with fossil fuels and result in consumption of significant levels of energy and potable water. The energy consumption is largely the result of operating the mechanical equipment used to chill water from ground temperature (approximately 70 to 75 degrees Fahrenheit) to the required temperature used in a cooling system (approximately 40 to 45 degrees Fahrenheit). The water consumption is a result of evaporation that occurs from the cooling towers in conventional systems.

Kyo-ya proposes to design and construct a deep well cooling system for the Projects utilizing a deep seawater source well and an injection well on the Princess Ka'iulani Hotel property so that there will be no direct discharge into navigable waters. Deep well cooling systems are an energy and environmentally efficient alternative to conventional air conditioning systems. In addition to the source and injection well, the system will consist of a centralized plant in the lower level of the commercial podium. The plant will include a pumping system to extract cool water from the source well. The cool water will be piped to heat exchangers that will transfer the cold temperatures from the seawater to cool the chilled or condenser water loop serving the spaces within the Projects and the two remaining buildings at the Moana Surfrider Hotel. Depending on the temperatures of the extracted groundwater, the system would reduce the need for air conditioning chillers and cooling towers within the Projects.

The well construction will proceed in two phases; a test bore phase and a production and injection well phase. A test bore will be drilled and the test bore water column profiled for various geophysical parameters. The actual depth of the well is dependent on the seawater temperature profile. Various tests will be conducted to evaluate hydro-geology, salinity, temperature and yield.

If hydro-geophysical testing of the test bore is favorable, Kyo-ya will proceed with the design and construction of the deep well cooling system. If hydro-geophysical testing of the test bore is not favorable, Kyo-ya will discontinue plans for a groundwater cooling system at this location and the test bore will be sealed and the area restored to its original condition.

The well pump will be enclosed within a mechanical space to reduce pump noise. Pump motor controls will be housed in the same mechanical space. Piping will be installed connecting the well pump to the heat exchange equipment and to the injection well.

The deep well groundwater is expected to be of clear and consistent quality; the only change to any environmental resource will be the increase in temperature of the deep well groundwater injectant. The deep extraction and shallow injection well configuration is based on BWS hydro-geology experience in Waikīkī and will not alter the level of the existing water table at the project site. This configuration is specifically designed to prevent settlement impacts to the adjacent building foundations.

4.2.3.6 Floor Area Ratio

PRINCESS KAIULANI RENOVATION AND REDEVELOPMENT

WAIKIKI SPECIAL DISTRICT AND PLANNED DEVELOPMENT RESORT REQUIREMENTS
7/17/2009

LOT

ZONING LOT AREA [1]	180,920	SF
DEVELOPABLE LOT AREA [2]	209,939	SF

ENVELOPE	ALLOWED/REQ STANDARD WSD	EXISTING	ALLOWED/REQ UNDER PDR [2]	PROPOSED UNDER PDR [2]
FAR	2.80	3.76	4.51	4.00
FLOOR AREA (SF)[5]	506,576	680,865	946,825 [664,325][4]	840,000 [557,500][4]
BUILDING HEIGHT				
HEIGHT LIMIT	260 FT	260 FT	350 FT	350 FT
YARDS				
KALAKAUA AVE	20 FT (AVG)	14 FT	20 FT (AVG)	51 FT
KAIULANI AVE	15 FT	5 FT	15 FT	24 FT
EWA SIDE YARD	0 FT	0 FT	15 FT	0 FT
MAUKA SIDE YARD	0 FT	0 FT	15 FT	0 FT
TRANSITIONAL SETBACKS				
KALAKAUA AVE	REQUIRED	CONFORMING	REQUIRED	CONFORMING
KAIULANI AVE	REQUIRED	NON-CONFORMING	REQUIRED	CONFORMING
OPEN SPACE				
PERCENTAGE	50%	26%	50%	24%
AREA (SF)	90,460	47,925	90,460	44,452
PUBLIC OPEN SPACE				
PERCENTAGE		3%		16%
AREA (SF)		5,310		29,163

1 - PARCELS 1 & 41
2 - PARCELS 1 & 41 PLUS ONE-HALF AREA OF ABUTTING STREETS
3 - FIGURE SUBJECT TO CHANGE DEPENDENT ON FINAL EVALUATION OF SITE PLAN, BUILDING LAYOUT AND DESIGN
4 - TOTAL NEW AREA EXCLUDING LANAI (EXISTING AINAHAU TO REMAIN = 282,500)
5 - FLOOR AREAS EXCLUDE LANAIS AND BALCONIES PER WSD PRECINCT DEVELOPMENT STANDARDS

FIGURE 11: PRINCESS KA'IULANI FAR ANALYSIS

4.2.4 Proposed Development – Diamond Head Tower

FIGURE 12: DIAMOND HEAD TOWER PROPOSED SITE PLAN

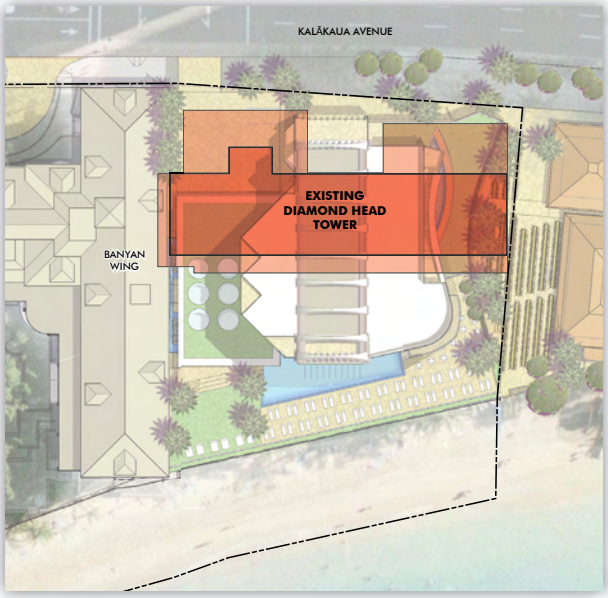


FIGURE 13: DIAMOND HEAD TOWER PROPOSED SITE PLAN (EXIST. OVERLAY)

The proposed Diamond Head Tower will be the first new, beach front hotel development in Waikīkī in nearly 30 years. The development is planned to include the items listed below. Preliminary plans showing the proposed improvements are provided in Appendix 1:

- Demolition of the existing 141-room, eight story hotel tower (built in 1952) – the historic Banyan Wing of the Moana Surfrider Hotel will not be altered;
- Development of a new, 26-story hotel and residential tower consisting of 225 units – approximately 185 hotel rooms and 40 residences (the precise mix of units could be modified based on demand at the time of construction);
- Development of a new 2-level podium that will include retail, food and beverage, recreational amenities, and back of house facilities to service the project;
- Development of a dedicated auto court at the Diamond Head Tower;
- Provide of public beach access on the Diamond Head side of the site to include public surfboard racks; and
- Elevation of the project site from the existing 6 feet to 9 feet at the makai lawn and from 9 feet to 12 feet at the lobby. This will require adding approximately 3 feet of fill to the site. The additional elevation will protect the proposed tower from flooding due to storm waves or tidal surges as well as reduce any potential impacts on below grade cultural artifacts.

4.2.4.1 Hotel

The proposed 185-room hotel will be operated as a full-service hotel with a full-service restaurant, a lobby bar, meeting facilities, retail spaces and recreational amenities including a pool and a fitness center. The new meeting facilities will be open to public reservations and the restaurant and lobby bar will be open to the public. Unlike the existing Diamond Head Tower, the proposed hotel will be operated as a stand alone facility separate from the Moana Surfrider Hotel. The hotel will have its own arrival, auto court, front desk operation and support facilities. The hotel will employ significantly more employees than the existing tower due to the additional facilities and the higher level of service than currently provided at the existing Diamond Head Tower.

FIGURE 14: DIAMOND HEAD TOWER TYPICAL HOTEL LEVEL (LEVELS 3-15)

FIGURE 15: DIAMOND HEAD TOWER TYPICAL RESIDENCE LEVEL (LEVELS 16-25)

All portions of the proposed development, including the proposed infinity-edge pool will be developed mauka of the existing seawall on the property. The applicant received a letter from DPP dated June 18, 2009, recognizing the existing sea wall and walkway structures within the shoreline setback as nonconforming structures built before the 1966 adoption of Ordinance 2837 ("Setback from Zone of Wave Action") (See Appendix 7). Based on recommendations from DLNR and to minimize potential impacts from storm waves and tidal surges, Kyo-ya proposes to repair and maintain the existing seawall by adding 3 feet of fill and a 3 foot retaining wall. The retaining wall will serve as a buffer against potential flooding. In addition, the elevation of the makai portion of the site is proposed to be elevated from its current elevation of approximately 6 feet to approximately 9 feet.

The hotel component of the Diamond Head Tower will represent a significant improvement over the existing hotel and will cater to individual tourists, and in-house group attendees, as well as attendees of conventions at the Hawai'i Convention Center (See Appendix 1).

4.2.4.2 Residences

The 40 fee simple residences will be whole ownership condominiums. Amenities for the residences will include an elevated recreation deck with a swimming pool and fitness facilities. The residences will consist of a mix of one, two and three bedroom suites (See Appendix 1), ranging in size from 1,475 to 1,980 square feet, and a larger penthouse suite. It is anticipated that the residences will be second home buyers from the mainland United States and Japan and to local Hawai'i residents.

FIGURE 16: DIAMOND HEAD TOWER UNIT SUMMARY

PRELIMINARY DIAMOND HEAD TOWER UNIT MIX				
Unit Type	**Avg Size**	**Count**	**Bays/Unit**	**Bays**
Hotel	500	167	1	167
Hotel Suite	980	18	2	36
Hotel Total		185		203
Condo 1BR	1475	1	2	2
Condo 2BR	1580	9	3	27
Condo 2BR + Den	1870	19	4	76
Condo 3BR	1980	10	4	40
Penthouse	7800	1	9	9
Condominium Total		40		154

Moana Surfrider - A Westin Resort	EXISTING			PROPOSED		
Unit Count Summary						
Hotel / Hotel-Condo	units	bays	floor area	units	bays	floor area
Surfrider Tower	432	450	261,654	432	450	261,654
Banyan Wing	241	242	64,617	241	242	64,617
Diamond Head Tower	141	150	45,948	185	203	102,199
Total Hotel Rooms	814	842	372,219	858	895	428,470
Condominium						
Diamond Head Tower				40	154	79,743
Project Total	814	842	372,219	898	1049	508,213

* *Floor area excludes lanais, balconies per LUO.*
** *Unit floor areas indicate total floor areas for units and unit level corridors.*
*** *"Bays" are a means of a measurement primarily used for the width or general size of a hotel room or residential unit and is usually a common dimension or denominator.*

4.2.4.3 Vehicular Access

The development includes a new auto court located on the 'Ewa side of the Diamond Head Tower Project along Kalākaua Avenue. The new auto court will allow the stacking of vehicles on site. The development will not require service access on Kalākaua Avenue. Service access, including loading and unloading of supplies will continue to be provided from the basement level of the Surfrider Tower (See Appendix 1). The loading dock at the Surfrider Tower is accessible via a ramp off of Kalākaua Avenue to allow for off-street loading and unloading. All supplies are then transferred to the Diamond Head Tower through an existing underground tunnel.

4.2.4.4 Floor Area Ratio

DIAMOND HEAD TOWER REDEVELOPMENT

WAIKIKI SPECIAL DISTRICT AND PLANNED DEVELOPMENT RESORT REQUIREMENTS
7/31/2009

LOT

ZONING LOT AREA [1]	136,844	SF
DEVELOPABLE LOT AREA [2]	159,761	SF

ENVELOPE	ALLOWED/REQ STANDARD WSD	EXISTING	ALLOWED/REQ UNDER PDR [2]	PROPOSED UNDER PDR [2]
FAR	2.80	3.93	4.72	4.72
FLOOR AREA (SF)[4]	383,163	538,253	754,072	754,072
			[299,072][3]	[299,072][3]
BUILDING HEIGHT				
HEIGHT LIMIT	260 FT	260 FT	350 FT	300 FT
YARDS				
KALAKAUA BLVD	20 FT (AVG)	14 FT (AVG)	20 FT (AVG)	28 FT (AVG)
EWA SIDE YARD	0 FT	0 FT	15 FT	0 FT
DH SIDE YARD	0 FT	0 FT	15 FT	11 FT - 25 FT
SHORELINE SETBACK				
40' SETBACK	REQUIRED	CONFORMING	REQUIRED	SSV
100' SETBACK	REQUIRED	CONFORMING	REQUIRED	PDR
TRANSITIONAL SETBACKS				
KALAKAUA BLVD	REQUIRED	CONFORMING	REQUIRED	CONFORMING
DIAMOND HEAD	REQUIRED	NON-CONFORMING	REQUIRED	CONFORMING
COASTAL SETBACK	REQUIRED	CONFORMING	REQUIRED	PDR
OPEN SPACE				
PERCENTAGE	50%	42%	50%	45%
AREA (SF)	68,422	58,575	68,422	61,547
PUBLIC OPEN SPACE				
PERCENTAGE		2%		6%
AREA (SF)		3,223		8,069

1 - PARCELS 12 & 13
2 - PARCELS 12 & 13 PLUS ONE-HALF AREA OF ABUTTING STREETS
3 - TOTAL NEW AREA EXCLUDING LANAI (EXISTING BANYAN AND SURFRIDER TOWER TO REMAIN = 455,000)
4 - FLOOR AREAS EXCLUDE LANAIS AND BALCONIES PER WSD PRECINCT DEVELOPMENT STANDARDS

FIGURE 17: DIAMOND HEAD TOWER F.A.R. ANALYSIS

4.3 USE OF PUBLIC FUNDS OR LANDS

Kyo-ya will upgrade the existing 8-inch diameter sewer main serving the Diamond Head Tower, located at the intersection of Ka'iulani and Kalākaua Avenues to accommodate the increase in sewage flow from the Diamond Head Tower and will connect certain portions of the Princess Ka'iulani redevelopment directly to the existing 18-inch sewer line on Kūhiō Avenue to accommodate the net increase in flow from the Projects. These improvements will be made within the City right-of-way for Kalākaua Avenue, Ka'iulani Avenue and Kūhiō Avenue.

Kyo-ya plans to relocate a portion of the existing City sidewalk along Ka'iulani Avenue onto the Princess Ka'iulani property and provide a continuous sidewalk and a separate bus loading area and landscaping within the City right-of-way to provide off-street bus loading for both the Princess Ka'iulani and the Diamond Head Tower. A surface encroachment variance will be required to construct non-standard improvements within the right-of-ways owned by the City at Kalākaua Avenue and Ka'iulani Avenue, abutting the proposed projects.

4.4 PHASING AND TIMING OF ACTION

The development of each of the Projects will be constructed over a period of approximately 24 to 36 months.

Construction is anticipated to begin on the Princess Ka'iulani site once Kyo-ya receives the required approvals, including acceptance of the Final EIS, a PD-R approval from the City Council, approval of the project design under the WSD provisions by the DPP, a surface encroachment variance, subdivision for a pedestrian easement, construction dewatering permit, building permits, trenching permits, grading permit, NPDES Permit, and construction noise permit, and upon obtaining project financing. The Princess Ka'iulani project site, including the 'Āinahau Tower will be closed during the construction phase on the Princess Ka'iulani site.

Construction of the deep well cooling system will require the following additional permits: well construction permit, pump installation permit, water use permit, underground injection control permit, and effluent discharge permit.

Construction is anticipated to begin on the Diamond Head Tower once Kyo-ya receives the required approvals, including acceptance of the Final EIS, a PD-R approval from the City Council, certification of a shoreline survey, an SMA Use Permit, a shoreline setback variance, approval of the project design under the WSD provisions by the DPP, subdivision for a pedestrian easement, construction dewatering permit, building permits, trenching permits, grading permit, NPDES Permit, and construction noise permit, and upon obtaining project financing.

4.5 SUMMARY OF TECHNICAL DATA, DIAGRAMS

4.5.1 Use and Physical Characteristics - Princess Ka'iulani Hotel

The renovated and redeveloped Princess Ka'iulani is proposed to include the following uses as detailed in plans provided in Appendix 1:

- 666-room, full-service hotel in the 'Āinahau Tower a restaurant, a lobby bar, bar/café, and fitness center;
- 210 condo-hotel suites and 61 residences in the Pīkake Tower. The Pīkake Tower will also include 1 cafe/bar, approximately 3,900 square feet of meeting space, 2 recreation decks with 2 swimming pools and fitness centers. The condo-hotel unit owners will be obligated to be in a hotel rental program for a minimum time period for transient use;
- Approximately 83,000 square feet of retail space;
- Approximately 812 parking spaces (will serve the Princess Ka'iulani, Diamond Head Tower and the Moana Surfrider Hotel). The development of a new 4–level parking structure with approximately 625 parking spaces and approximately 187 basement parking spaces.
- Accessory uses to the hotel will be located at the top level of the parking structure will include a recreation deck with swimming pool, 12,000 square feet of meeting space and food and beverage facilities. The meeting facilities will also be open to public use.
- A new off-street auto court and bus arrival area;
- The project site consists of 180,920 square feet of lot area (4.15 acres). The project will encompass approximately 840,000 square feet, 100,000 square feet less than allowed under a PDR. The development represents a 23% increase over the existing floor area of 680,865 square feet. Including the half area of the abutting streets, the FAR is estimated to be 4.00 (See Figure 11)
- The 28-story 'Āinahau Tower will remain in place and be renovated. The 11-story Princess and Ka'iulani Towers will be demolished. The other structures located on the site, including the existing parking structure and retail buildings will also be demolished;
- The new structures will include the 34-story Pīkake Tower. The Pīkake Tower is planned to be 350 feet in height and oriented in a mauka/makai direction. An expanded basement area will include approximately 187 parking spaces and back-of-house facilities; and
- Other new structures include a 2-level Commercial Podium. Retail areas, which may include food and beverage establishments are for both public and resort use, oriented toward the street frontages at Kalākaua Avenue and Ka'iulani Avenue.

4.5.2 Use and Physical Characteristics - Diamond Head Tower

The project is proposed to include the following uses, described in plans provided in Appendix 1:

- 185-room, full-service luxury hotel with a restaurant, a lobby bar, a snack bar, approximately 2,200 square feet of meeting space, a swimming pool and fitness center; food & beverage facilities are accessory to hotel use, but open to public as well.
- 40 fee simple residences with a recreation deck, including a swimming pool and fitness center;
- Approximately 3,000 square feet of retail space; and
- A new off-street auto court.

The new Diamond Head Tower will be situated on a portion of Tax Map Key No. 2-6-01: 12 (Parcel 12), consisting of approximately 34,460 square feet of lot area. The existing Banyan Wing of the Moana Surfrider Hotel is situated on the other portion of Parcel 12, consisting of approximately 61,003 square feet of lot area. The Surfrider Tower is situated on the adjacent Tax Map Key No. 2-6-01: 13 (Parcel 13), consisting of approximately 41,381 square feet of lot area. The combined lot area for Parcel 12 and Parcel 13 is approximately 136,844 square feet. The floor area of the proposed new Diamond Head Tower would represent a 38% increase over the floor area of the existing developments on Parcels 12 and 13. Including the half area of the abutting streets, the proposed floor area will result in an FAR of 4.23 (See Figure 17).

As discussed previously, the existing Diamond Head Tower will be demolished. The new Diamond Head Tower would be developed in a mauka/makai orientation, and would be 282 feet in height. A basement area will provide additional back-of-house facilities.

Retail spaces will be provided along Kalākaua Avenue at the ground level. The lobby will have an open floor plan with large breezeways providing a spacious and inviting character. Recreational amenities including a pool, jacuzzi and open lawn area will be oriented toward the ocean. The proposed pool will take into account the potential for wave run-up and sediment deposition in the area immediately landward of the existing seawall. In order to minimize impacts to the site, Kyo-ya proposes to raise the elevation of the pool area and construct a retaining wall mauka of the existing seawall.

The planned public surfboard racks at the Diamond Head side of the property will allow for continuity and expansion of the existing public surf board racks on the adjacent Waikīkī Beach Center (Police Sub-Station) property.

Meeting rooms, kitchen areas, food and beverage establishments and administrative offices will be located on the second level. The hotel rooms and residences will be located above the second level. Preliminary plans showing a conceptual floor plan are provided in Appendix 1. Parking for the Moana Surfrider Hotel, including the Diamond Head Tower, is currently provided on the Princess Ka'iulani site. As part of the Projects, additional parking will be provided at the Princess Ka'iulani to meet the parking requirements of the Princess Ka'iulani, Diamond Head Tower and the Moana Surfrider Hotel. See parking summary in Section 7.5.2.1.4 and Section 7.5.2.2.4.

4.6 HISTORIC PERSPECTIVE

Waikīkī has long been a center of population and political power prior to the arrival of Europeans. Historians have documented that royal residences and the ruling chiefs occupied Waikīkī over an extended period. The following summarizes the historic and cultural information regarding possible cultural resources, including human burial remains that may be associated with the project sites.

- In addition to chiefly residences Waikīkī supported a vast system of irrigated taro fields which extended across the littoral plain from Waikīkī to lower Mānoa and Pālolo Valleys. This agricultural system utilized streams descending from the valleys allowing the cultivation of a variety of crops and provided a source of fresh water. Fish ponds and coconut groves dotted the landscape. A sizable population developed amidst this cultivated abundance.
- With the emergence of Honolulu and its harbor as the center for trade and other activities the population of Waikīkī declined.
- A portion of the Princess Ka'iulani project site was part of the 'Āinahau Estate in the late 1800's. Other portions of the site were occupied by a school, church and graveyard, and 'Āpuakēhau Stream.
- Subsequently, both the Princess Ka'iulani and The Moana Surfrider Hotel development site were developed with structures related primarily to resort use.
- In the Mid-nineteenth century the process of the Mahele, which introduced private property into Hawaiian society allowed private property in Waikīkī to be claimed by commoners and others who could prove residency on and use of the land.
- In the mid to late nineteenth century, Waikīkī was becoming a popular site among foreigners, primarily Americans. With the emergence of the fledgling visitor destination came the loss or modification of traditional land uses.
- During the early part of the twentieth century the landscape of Waikīkī was transformed with the draining and filling of ponds and irrigated fields for the purpose of implementing a planned urbanization of the area.
- At the onset of World War II, in the 1940's, Waikīkī was transformed into a recreational area for military personnel. During the 1950's there were numerous dwellings, hotels, apart-

ments and retail establishments in Waikīkī, stretching from the Kālia area to the far end of Kapi'olani Park.

4.6.1 Site History - Princess Ka'iulani Hotel

The Princess Ka'iulani project site is identified on historic maps as a portion of 'Āinahau, the Waikīkī estate of Archibald Cleghorn, his wife Princess Miriam Likelike and their daughter, Princess Ka'iulani. The estate was named 'Āinahau, believed to mean "land of cool breezes", or "cool land" which may be a reference to the cool wind that passed through this area created by the many hau trees that grew along 'Āpuakēhau Stream. The estate in 1872 had several native grass huts, which Cleghorn removed and replaced with Hawaiian-style bungalow. He later replaced the bungalow with a new, large two-story Victorian style house (See Figure 18).

FIGURE 18: 'ĀINAHAU ESTATE

The Princess Ka'iulani site encompasses only the southwestern-most corner of the 'Āinahau Estate (located on the northeast corner of the project area) which contained no structures and was likely the location of the access drive from Kalākaua Avenue. In addition to the 'Āinahau Estate, 'Āpuakēhau Stream crossed over a portion of the Princess Ka'iulani project site (See Figure 19).

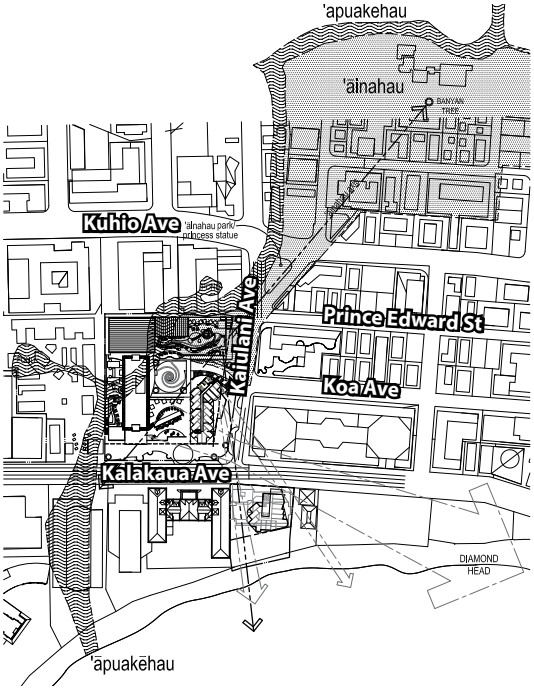


FIGURE 19: 'ĀPUAKĒHAU STREAM

In the late 1800's and early 1900's historic maps indicated structures on the Princess Ka'iulani site labeled Kalawila Church, Waikīkī Public School, and several Moana Surfrider Hotel related structures. The former Church is recognized as one of the ten branches of Kawaiaha'o Church. A search of the Kawaiaha'o Church Archives revealed that in 1916 the Church sold the cemetery land around the Waikīkī Branch to real estate developers and a total of 39 individuals, originally buried between 1880 to 1907 were removed from the Waikīkī Cemetery and probably reinterred at the Kawaiaha'o Cemetery.

In January 1954, Matson Navigation Company commenced construction of the Princess Ka'iulani Hotel. The hotel opened on Kamehameha Day on June 11, 1955. The hotel originally consisted of 264 rooms in what is currently known as the Princess Tower. Matson subsequently sold the hotel, along with the Royal Hawaiian, Moana Surfrider Hotel and the Surfrider Hotel to Sheraton Corporation in 1959. Sheraton then commenced an expansion of the hotel with the addition of the 210-room Ka'iulani Tower and a 275-car garage. Sheraton sold the Princess Ka'iulani to Kyo-ya in August 1963. In 1968, Kyo-ya announced the construction of a 28-story tower (currently the 'Āinahau Tower). The expansion opened in 1971. Since 1971, the hotel has been operated in its current configuration with modest renovations over time.

4.6.2 Site History - Moana Surfrider Hotel

Prior to the construction of the Ala Wai Canal 'Āpuakēhau Stream emptied into the sea within Waikīkī. To the east of this stream the land was known as Ulukou, translated as "the kou tree grove;" the Moana Hotel was built in this area. In the eighteenth and nineteenth century, Hawaiian chiefs and members of the monarchy had thatched houses in Waikīkī, including at Ulukou.

Oliver G. Traphagen, the architect, built a four-story hotel with an additional fifth story in the central tower, in the Beaux Art Style. The wooden hotel had 75 rooms, most with their own private bath and telephone, an unheard of luxury for that day. The first floor of the hotel had a billiard room, saloon, a parlor, a library, and a dining room that extended out towards the beach; the five floors were serviced by the first electric-powered elevator in the territory. In 1986, wealthy Honolulu landowner, Walter Chamberlain Peacock incorporated the Moana Hotel Company. In 1905, Peacock sold the hotel to Alexander Young, who had an interest in several other Hawaiian hotels. The Peacock cottage remained on the site for a while. Thrum noted that the owners planned to use it for a clubhouse.

In 1918, the Moana Hotel added 100 more rooms in two wings, creating a courtyard facing the sea.

Young's estate managed the hotel until 1932, when it was purchased by the Matson Navigation Company. Matson purchased the hotel to cater to the new steamship tourists that were flocking to Hawai'i as a vacation spot. During World War II, the hotel remained open and housed both visitors and many military personnel. After World War II, the Moana Hotel became a favored spot for the new airline passengers who came to Hawai'i.

In 1950, Matson razed the Hustace Villa and built a new hotel adjacent to the Moana Hotel on the east side, called the Diamond Head Tower (formerly known as the Surfrider Hotel). Matson sold all of its Waikīkī hotel properties to the Sheraton Company in 1959. Sheraton constructed a new 21- story building, called the Tower Wing (Surfrider Tower) on the Moana's west side in

1969, on the filled-in bed of the old ʻĀpuakēhau Stream. In total the three wings (Banyan Wing, Diamond Head Tower, and Surfrider Tower) have 793 rooms, including 46 suites.

In 1963, the hotel was sold to Kyo-ya. In 1989, a $50 million renovation, designed by Hawai'i architect Virginia D. Murison, restored the Moana to its 1901 appearance and incorporated the two adjacent buildings into one beachfront resort with a common lobby, renaming the entire property the Moana Surfrider. The renovation project received numerous local and national awards including the President's Historic Preservation Award, the National Preservation Honor Award, Hawai'i Renaissance Award, and the Hotel Sales and Marketing Association International Golden Bell Award. In 2007, a multi-million dollar restoration of the Banyan Wing guestrooms and public spaces was completed. Following the renovation, the complex was rebranded as the Moana Surfrider, a Westin Resort.

5. ALTERNATIVES

As mentioned throughout this Draft EIS, the Projects are not anticipated to have a significant impact on the surrounding area in terms of public services and the environment primarily because of the proposed net reduction in the total units on the combined properties. Positive socio-economic impacts are projected with the redevelopment of the resort complex, with increases in construction and long-term hotel operation and retail employment. The Projects are also anticipated to generate increased demand for resort and retail services, resulting in significant tax revenue generation for the City and the State.

5.1 NO ACTION

This alternative was considered and rejected as the existing structures are dated and need to be upgraded to be competitive in today's dynamic visitor industry. Many forces are pushing the hospitality industry to respond to growing customer demands. Visitors to Hawai'i are demanding larger guestrooms and bathrooms, enhanced amenities, accommodations for families and ocean views. Increased competition from other destinations, including the neighbor islands and international resort destinations require hospitality providers to upgrade properties to meet consumer demands and expectations. Accordingly, the existing facilities, many of which were constructed in the mid 1950's need to be significantly upgraded to continue to attract customers. The "no action" alternative is not an economically viable alternative.

5.2 RENOVATION OF THE EXISTING STRUCTURES

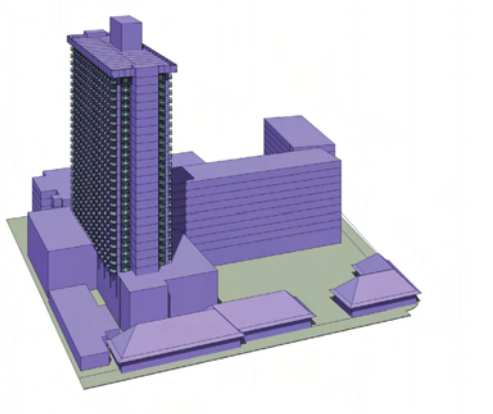
Kyo-ya also considered renovating the existing structures on both the Princess Ka'iulani and Diamond Head Tower sites; however, the size and orientation of the existing guestrooms do not lend themselves to an economically viable alternative. Existing guestrooms in the three towers proposed for demolition are undersized with small bathrooms and do not serve the visitor demand and expectations. Additionally, many of these rooms do not provide ocean views. While a renovation of the guestrooms would improve the quality of the interior finishes expected in the visitor industry, size of the guestrooms and bathrooms could not be addressed and view orientations could not be improved.

5.3 ALTERNATIVE I (NO PD-R)

5.3.1 Princess Ka'iulani

Existing FAR, Kalākaua Avenue setback, Ka'iulani Avenue setback, Ka'iulani Transitional Height Setback, and open space requirements are non-conforming. A development that follows the general criteria set in the LUO for Resort Mixed Use Precinct under the WSD Development Standards is not possible without application through the PD-R process (See Figure 20). Since the existing development already exceeds the FAR allowed by the LUO, a redevelopment for less density is not economically feasible.

Maximum Allowable FAR Available for PK through PDR:	664,325 sf
Maximum Allowable FAR Available for PK through PDR:	**0 sf** (Non-Conforming)
LUO/WSD/PDR Compliance	
350' Height Limit (PDR)	Yes
20' Front Yard Setback	Yes
15' Side Yard Setback	Yes



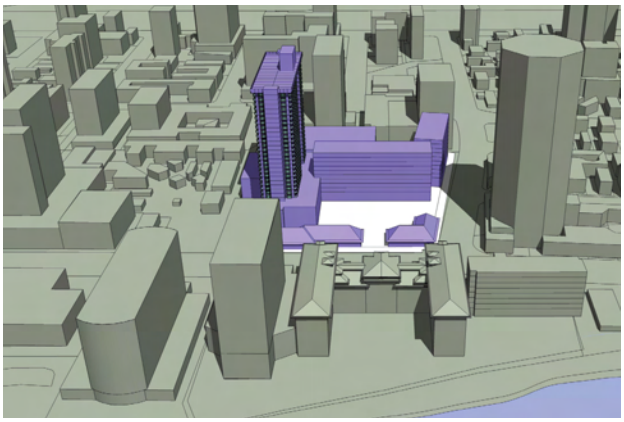
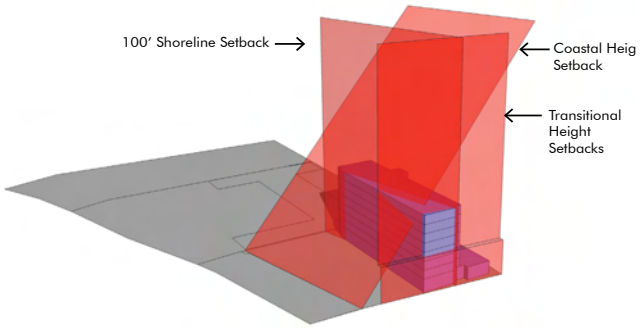


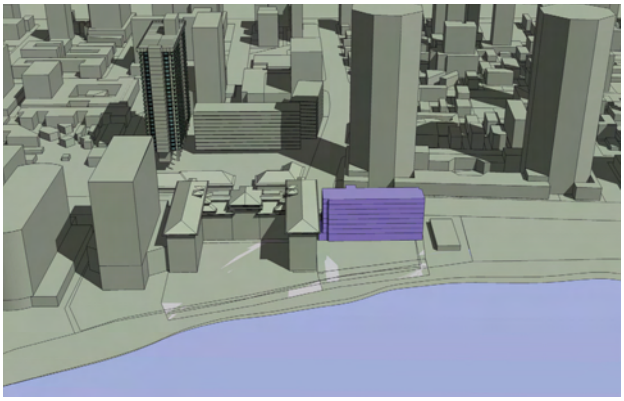
FIGURE 20: PRINCESS KA'IULANI ALTERNATIVE I

5.3.2 Diamond Head Tower

Existing FAR, Diamond Head transitional setback, and open space requirements are non-conforming. A development that follows the general criteria set in the LUO for Resort Mixed Use Precinct under the WSD Development Standards is not possible without application through the PD-R process (See Figure 21). Since the existing development already exceeds the FAR allowed by the LUO, this alternative of redevelopment for less density is not economically feasible.

Maximum Allowable FAR Available for DHT through PDR:	299,072 sf
Maximum Allowable FAR Available for DHT through PDR:	**0 sf** (Non-Conforming)
LUO/WSD/PDR Compliance	
350′ Height Limit (PDR)	Yes
20′ Front Yard Setback (Averaged)	Yes
100′ Shoreline Building Setback	No
40′ Shoreline Setback	Yes
Coastal Height Setback	No
Front Transitional Height Setback (6′)	Yes
Side Transitional Height Setback (6′)	No
50% Open Space	Yes





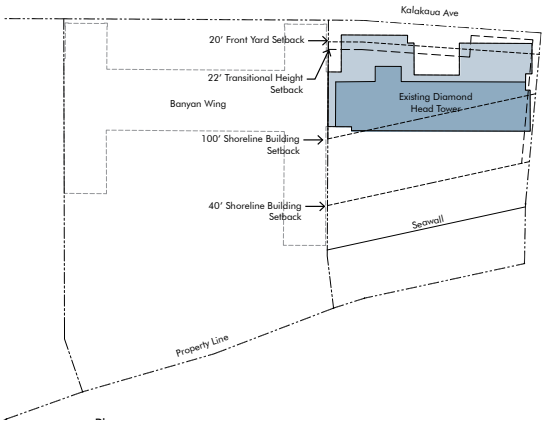


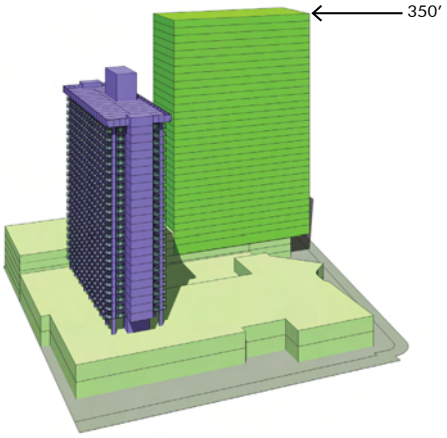
FIGURE 21: DIAMOND HEAD TOWER ALTERNATIVE I

5.4 ALTERNATIVE II (VARIOUS ALLOWANCES BY PD-R)

5.4.1 Princess Ka'iulani

Kyo-ya determined that the existing 'Āinahau Tower is the only structure feasible to retain and refurbish on the site and that a reduction of the existing FAR is not economically feasible. Any redevelopment of the Princess Ka'iulani would need to include an increase in the existing FAR to make the project viable. An alternative to the proposed project was studied that locates the Pīkake Tower further mauka on the site, above the parking garage. (See Figure 22) The tower would span in a 'Ewa-Diamond Head direction, contrary to WSD recommendations. The tower would impact views from both high and low rise developments mauka of the site. A building in this location would also result in potential shadowing effects that would impact the mauka side neighboring properties. This alternative does not meet the intent of the WSD and PD-R and would result in undesirable view corridors for guests and adjacent properties.

Maximum Allowable FAR Available for PK through PDR: (Excluding Ainahau Tower)	664,325 sf
Total Proposed FAR: (Excluding Ainahau Tower)	**557,500 sf**
LUO/WSD/PDR Compliance	
350′ Height Limit (PDR)	Yes
20′ Front Yard Setback	Yes
15′ Side Yard Setback	Yes



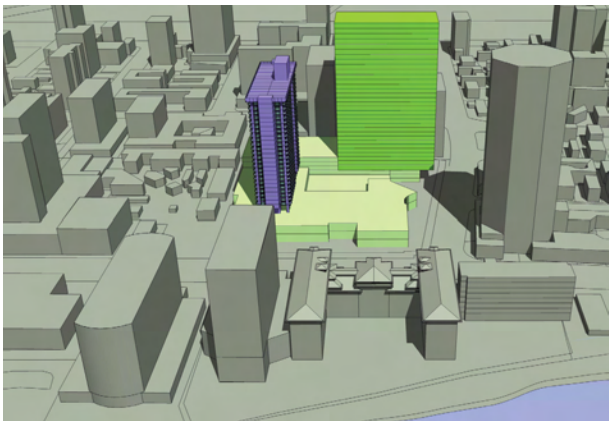


FIGURE 22: PRINCESS KA'IULANI ALTERNATIVE II

5.4.2 Diamond Head Tower

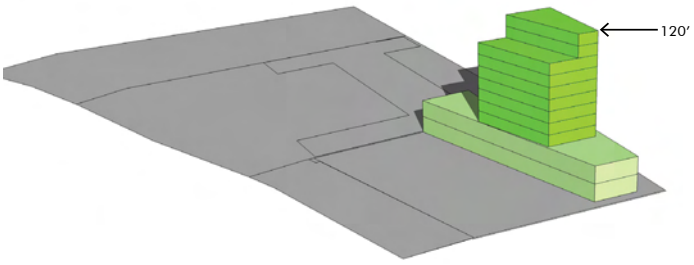
Kyo-ya determined that the historic Banyan Wing of the Moana Surfrider Hotel should not be considered for redevelopment. The most economically viable redevelopment of the overall site would include increasing density by removing the Banyan Wing; however, because of the historical significance of the property, Kyo-ya focused on the redevelopment alternatives for the Diamond Head Tower exclusively. Through flexibility allowed by the PD-R process, three alternatives have been explored with varying degrees of relief from standards required:

Alternative IIA

Alternative IIA is a building study that complies with all requirements except for open space and FAR. (See Figure 23) The result is a 140' high structure which mimics the existing Diamond Head Tower, with a decreased floor area. This building continues to be oriented in the 'Ewa-Diamond Head direction, with no view corridors or building relief and as such, does not meet the intent of the WSD and PD-R. With a reduced total floor area, this alternative is not economically feasible to develop.

Maximum Allowable FAR Available for DHT through PDR:	299,072 sf
Level 1-2	(8,700 x 2) 17,400 sf
Level 3-9	(3,770 x 7) 26,390 sf
Levels 3-9	(2,030 x 7) 4,060 sf
Total FAR	**47,850 sf**

LUO/WSD/PDR Compliance	
350' Height Limit (PDR)	Yes
20' Front Yard Setback (Averaged)	Yes
100' Shoreline Building Setback	Yes
40' Shoreline Setback	Yes
Coastal Height Setback	Yes
Front Transitional Height Setback (6')	Yes



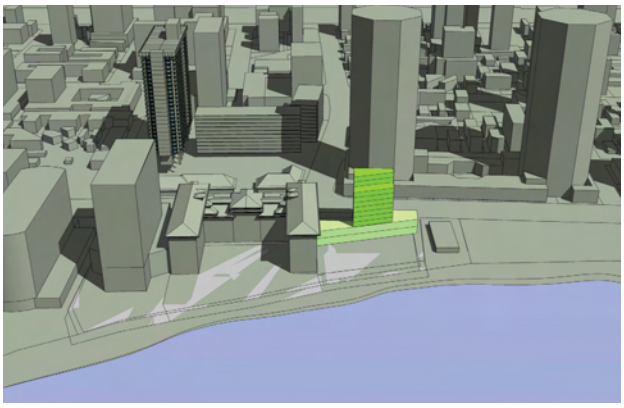


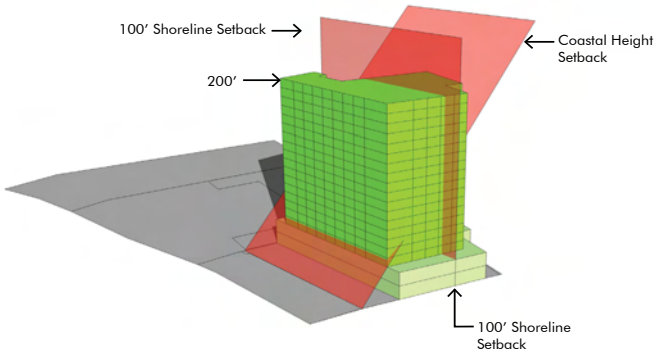
FIGURE 23: DIAMOND HEAD TOWER ALTERNATIVE IIA

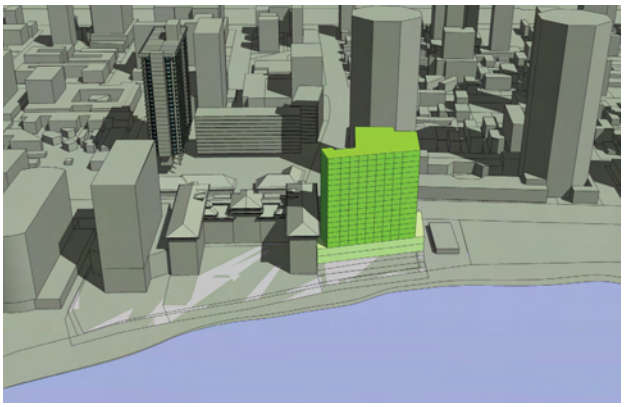
Alternative IIB

Alternative IIB is a building study that complies with all requirements except for open space, FAR, 100' Setback and Coastal Height Setbacks, but maintains a building height of 200' high. (See Figure 24) With a program driven total floor area similar to the proposal, this building holds a larger footprint and has an asymmetrical form, with no view corridors or building relief and as such, does not meet the intent of the WSD and PD-R.

Maximum Allowable FAR Available for DHT through PDR:	299,072 sf
Level 1	22,032 sf
Level 2	22,032 sf
Levels 3-19	(14,664 x 17) 234,624 sf
Total FAR	**293,352 sf**

LUO/WSD/PDR Compliance	
350' Height Limit (PDR)	Yes
20' Front Yard Setback (Averaged)	Yes
100' Shoreline Building Setback	No
40' Shoreline Setback	Yes
Coastal Height Setback	No
Front Transitional Height Setback (15')	Yes





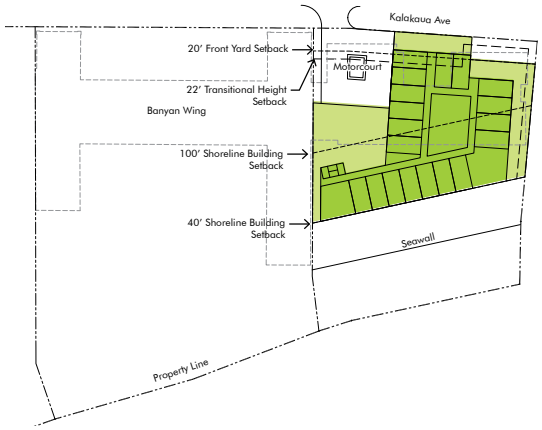


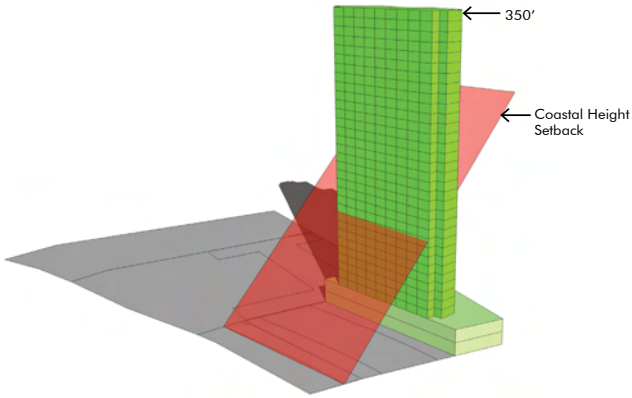
FIGURE 24: DIAMOND HEAD TOWER ALTERNATIVE IIB

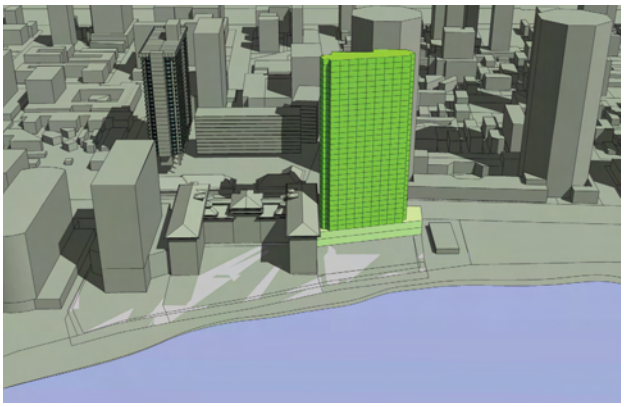
Alternative IIC

Alternative IIC is a building study that complies with all requirements except for Open Space, FAR, and Coastal Height Setbacks, but in contrast to the previous alternative, complies with the 100' shoreline setback. The resultant is a single loaded building with reduced total floor area and a building height of 350' high, (See Figure 25). Again, this building continues to be oriented in the 'Ewa-Diamond Head direction, with no view corridors or building relief and as such, does not meet the intent of the WSD and PD-R.

Maximum Allowable FAR Available for DHT through PDR:	299,072 sf
Level 1	12,366 sf
Level 2	12,366 sf
Levels 3-34	(6,234 x 32) 44,730 sf
Total FAR	**224,220 sf**

LUO/WSD/PDR Compliance	
350' Height Limit (PDR)	Yes
20' Front Yard Setback (Averaged)	Yes
100' Shoreline Building Setback	Yes
40' Shoreline Setback	Yes
Coastal Height Setback	No
Front Transitional Height Setback (31')	Yes





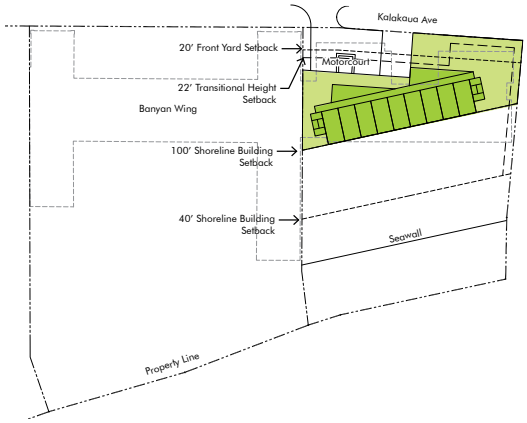


FIGURE 25: DIAMOND HEAD TOWER ALTERNATIVE IIC

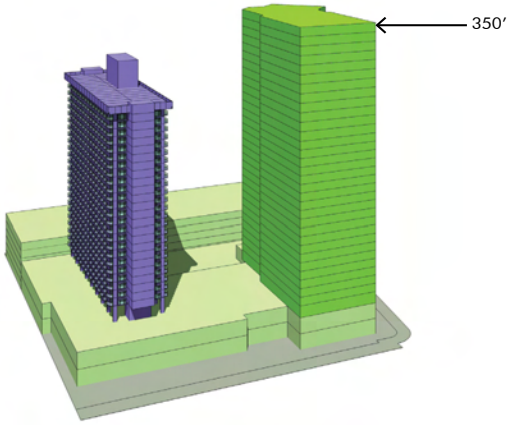
5.5 APPLICANT'S PROPOSAL – PREFERRED ALTERNATIVE

The improvements in the Projects are geared toward achieving the intent of the WSD and PD-R guidelines as well as incorporating tested urban planning concepts that will enhance public open space and public view corridors.

5.5.1 Princess Ka'iulani

The proposed alternative for the Princess Ka'iulani described in Section 4.2.3 of this Draft EIS was selected because it will allow for the redevelopment of physically obsolete buildings at this important corner in the center of Waikīkī and provide significant public benefits. The increase in public open space along Kalākaua and Ka'iulani avenues will create an area for gathering and a focal point for this hub. The large front yard along Kalākaua Avenue will wrap around Ka'iulani Avenue providing an inviting introduction to the new retail establishments along this street frontage (See Figure 26). The congestion and mix of pedestrian and vehicles will be minimized by creating an internal auto court for staging with remote pick up and drop off, as well as an area for tour buses to pull off of Ka'iulani Avenue. The removal of the existing Princess and Ka'iulani Towers and the Mauka/Makai orientation of the proposed Pīkake Tower will considerably improve public as well as private view corridors.

Maximum Allowable FAR Available for PK through PDR: (Excluding Ainahau Tower)	664,325 sf
Total Proposed FAR: (Excluding Ainahau Tower)	**557,500 sf**
LUO/WSD/PDR Compliance	
350′ Height Limit (PDR)	Yes
20′ Front Yard Setback	Yes
15′ Side Yard Setback	Yes



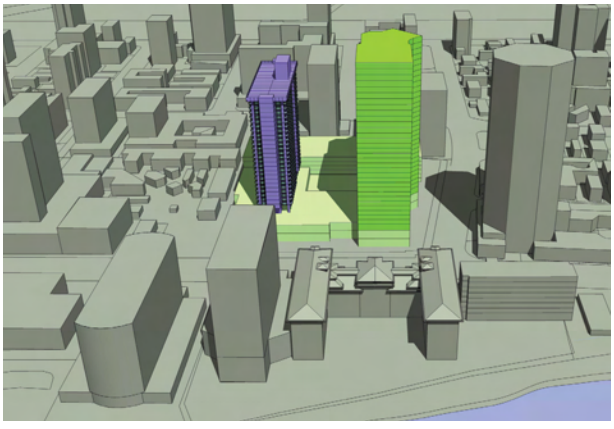


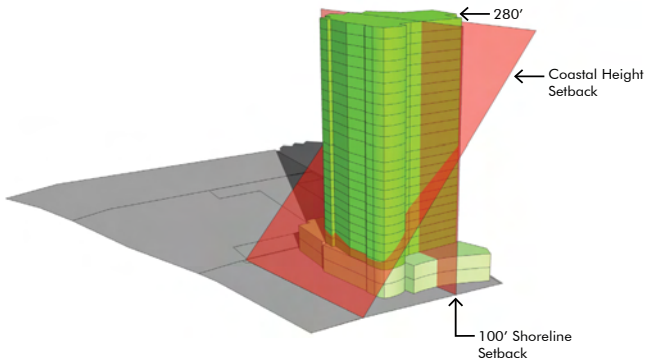
FIGURE 26: PRINCESS KA'IULANI PREFERRED ALTERNATIVE

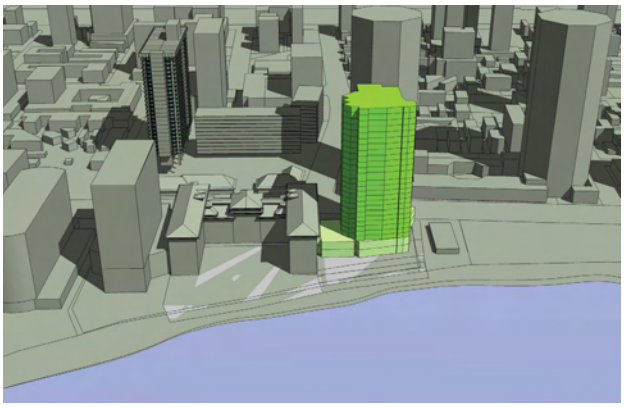
5.5.2 Diamond Head Tower

The redevelopment of Diamond Head Tower, as described in Section 4.2.4 of this Draft EIS, will result in the removal of a dated and obsolete hotel tower that blocks public view corridors from Kalākaua Avenue. The new Diamond Head Tower will be the first new resort hotel on Waikīkī Beach in nearly 30-years, greatly improving the overall hotel product in Waikīkī. The tower will be oriented in a Mauka/Makai orientation, opening up view corridors at the public or pedestrian level (See Figure 27). The improved orientation of the building will permit the creation of a new auto court, which will positively redistribute some of the traffic along Kalākaua Avenue near the existing entrance. As additional public benefits, Kyo-ya is proposing to provide a public access to Waikīkī Beach, public surfboard racks, and public art celebrating the ahupua'a of Waikīkī and its beach culture.

Maximum Allowable FAR Available for DHT through PDR:	299,072 sf
Level 1	16,937 sf
Level 2	14,079 sf
Levels 3-14	(11,484 x 12) 137,808 sf
Levels 15-26	(10,854 x 12) 130,248 sf
Total FAR	**299,072 sf**

LUO/WSD/PDR Compliance	
350' Height Limit (PDR)	Yes
20' Front Yard Setback (Averaged)	Yes
100' Shoreline Building Setback	No
40' Shoreline Setback	Yes
Coastal Height Setback	No





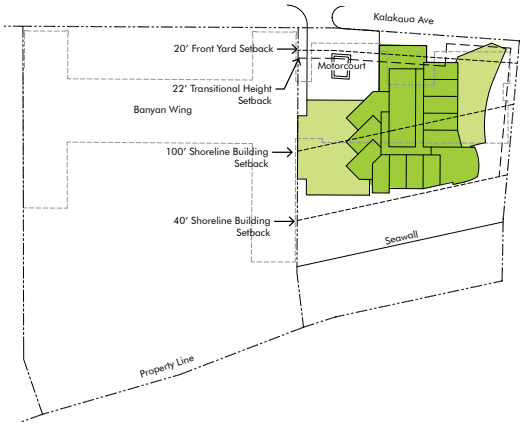


FIGURE 27: DIAMOND HEAD TOWER PREFERRED ALTERNATIVE

6. ENVIRONMENTAL SETTING

6.1 LOCAL AND REGIONAL PERSPECTIVE

6.1.1 Location

The Princess Ka'iulani is located in the Primary Urban Center of Honolulu, generally in the center of Waikīkī and is bounded by the Miramar Waikīkī and Outrigger East hotels to the north, Kalākaua Avenue to the south, Ka'iulani Avenue to the east and the International Marketplace to the west.

The existing Diamond Head Tower fronts Waikīkī Beach on Kalākaua Avenue and is located between the Banyan Wing of the Moana Surfrider Hotel and the Waikīkī Beach Center (Police Sub-Station).

The Location Map (See Figure 28) identifies the location of the Princess Ka'iulani and Diamond Head Tower project sites.

FIGURE 28: PROJECT LOCATION MAP

6.1.2 Surrounding Area

The surrounding area includes numerous other resort and resort support uses such as retail and restaurant establishments. These include the International Market Place, the Outrigger East Hotel, Miramar Hotel, Hyatt Regency Waikīkī, King's Village, the Waikīkī Police Sub-station and Waikīkī Beach Center (Police Sub-Station) and the Banyan Wing of the Moana Surfrider Hotel.

6.2 RARE OR UNIQUE ENVIRONMENTAL RESOURCES

6.2.1 Flora

Vegetation on both the Princess Ka'iulani and the Diamond Head Tower sites consist primarily of introduced species. Because the sites have been urbanized for many years, native endangered or threatened species are not expected to naturally occur in this environment. The large Banyan tree located in the makai courtyard of the Banyan Wing of the Moana Surfrider Hotel will not be affected by the proposed Diamond Head Tower development.

6.2.2 Fauna

Native land and water birds are not expected to be found at this site or at the surrounding properties because the area lacks any suitable habitat that could support these types of animals. A recent avifaunal and feral mammal survey done on an adjacent site, the International Market Place, did not find threatened and endangered species (federal list) on that property.

6.3 RELATED PROJECTS IN THE REGION

In addition to the Project, there are three other projects in the area which will be addressed in the Final EIS. Several of those are mentioned below. Others that may become evident and more defined (such as the International Marketplace) as the project progresses, will be included in the Final EIS.

6.3.1 Gray's Beach Restoration Project

According to the Environmental Assessment/Environmental Impact Statement Preparation Notice for the "Gray's Beach Restoration Project" Kyo-ya is proposing to restore and stabilize a sand beach fronting the Sheraton Waikīkī Hotel property, approximately 1,500 feet west of the Moana Surfrider Hotel development site. All of the proposed work for this project is located within the State Land Use Conservation District (See Figure 29). The proposal calls for the following:

- Construction of rock T-head groins along the shoreline fronting the Sheraton Waikīkī Hotel, with the eastern-most groin replacing the existing Royal Hawaiian groin; and
- Replacement of sand fill between the groins to create a beach with a minimum horizontal crest width of 30-feet at the +5.2 foot elevation extending from the seawall, and a IV:10H slope from the crest to the sea bottom.

FIGURE 29: GRAY'S BEACH RESTORATION PROJECT

This project is intended to enhance recreational and aesthetic enjoyment of the area and provide protection for the backshore. The restored beach is expected to facilitate lateral access along the shoreline and enhance recreational opportunities. Pending receipt of the required permits and approvals, project construction is expected to begin in early 2011 and be completed by the end of 2011.

The potential impacts of the proposed Gray's Beach Restoration project will be reviewed as the environmental disclosure process proceeds, to determine if there is the potential for cumulative impacts between that project and the proposed Princess Ka'iulani and new Diamond Head Tower projects.

6.3.2 Waikīkī Shopping Plaza Alteration and Addition

The Waikīkī Shopping Plaza alteration and addition is located at the corner of Royal Hawaiian Avenue and Kalākaua Avenue. This project involves redevelopment of that site to replace some existing commercial floor area. The Final Environmental Assessment for the project found that there would be no significant impacts as a result of the project, since there would be no net increase in commercial floor area. Subsequent to satisfying the Chapter 343, HRS requirements for environmental disclosure, Kyo-ya will pursue a WSD Permit, Minor. Demolition commenced in April 2009. Construction is anticipated to commence in July 2009 and be completed in 2010. The construction phase for this project will precede that of the proposed Princess Ka'iulani and Diamond Head Tower redevelopments. Accordingly, cumulative impacts between the proposed Projects and the Waikīkī Shopping Plaza alteration and addition project are not anticipated (See Figure 30).

FIGURE 30: WAIKĪKĪ SHOPPING PLAZA

6.3.3 Royal Hawaiian Hotel and Sheraton Waikīkī Master Plan

The Sheraton Waikīkī Hotel Master Plan improvements will be substantially complete by year-end 2009. Based on the December 2007 Final Environmental Assessment, the project includes improvements to the arrival areas, interior renovations to the lobby level, enhancements to ground floor food and beverage facilities, and the renovation and development of recreational amenities, including 2 new pools. Since the improvements at the Sheraton Waikīkī Hotel will be completed by year-end 2009, there will be no cumulative impacts between the proposed Projects and the Sheraton Waikīkī Hotel (See Figure 31).

The Environmental Assessment for the Sheraton Waikīkī also included the improvements at the Royal Hawaiian Hotel. The improvements at the Royal Hawaiian Hotel are complete and there will be no cumulative impacts between the proposed Project and the Royal Hawaiian Hotel improvements.

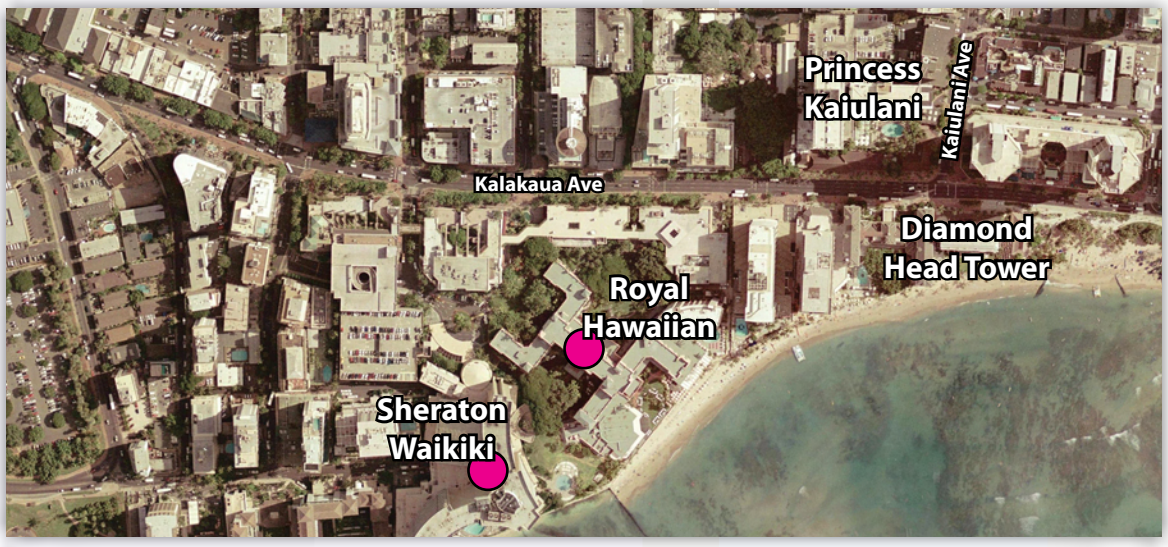


FIGURE 31: ROYAL HAWAIIAN HOTEL AND SHERATON WAIKĪKĪ

6.4 POPULATION AND GROWTH CHARACTERISTICS

The Princess Ka'iulani project will result in 61 new residential units and the Diamond Head Tower project will result in 40 new residential units. These new units may result in an increase to the residential population in the Waikīkī area. Based on DPP standards for dwellings in Waikīkī, the average household size is estimated at 1.72 which translates to an increase of about 174 residents on the properties (105 at the Princess Ka'iulani and 69 at the Diamond Head Tower). Based on the DPP's "Annual Report on the Status of Land Use on O'ahu, Fiscal Year 2007", the Year 2000 population for the PUC is approximately 419,300 which is approximately 47.9% of the Year 2000 island-wide population. Although the 419,300 population Figure is slightly over the 46% General Plan Benchmark for 2025, the DPP projects that the PUC percentage of the island wide population will be 44.7% in 2020 with a projected population of 463,332 and 44.1% in 2025 with a projected population of 475,696. The proposed 101 residences will provide for some of this projected population increase to the Year 2020. The population increase may be less than a typical 101 unit multi-family development, since a certain percentage of buyers may be transient owners and second home or vacation home buyers.

7. RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

7.1 STATE LAND USE

Both project sites are designated Urban under State land use regulations. The existing developments on the Princess Ka'iulani and Diamond Head Tower properties as well as the proposed Projects are consistent with this Urban designation.

7.2 GENERAL PLAN

The compliance of both Projects with the General Plan objectives is discussed as follows:

7.2.1 Population

General Plan Objective C *- To establish a pattern of population distribution that will allow the people of O'ahu to live and work in harmony.*

Policy 1 *- Facilitate the full development of the PUC.*

Policy 4 *- Direct growth according to Policies 1, 2, and 3 above by providing land development capacity and needed infrastructure to seek a 2025 distribution of O'ahu's residential population as follows:*

Distribution of Residential Population (% Share of 2025)

Location	Island Wide Population
PUC	46%

- The Princess Ka'iulani project will result in approximately 61 new residential units and the Diamond Head Tower project will result in approximately 40 new residential units. These new units may result in an increase to the residential population in the Waikīkī area. Based on DPP standards for dwellings in Waikīkī, the average household size is estimated at 1.72 which translates to an increase of about 174 residents on the properties (105 at the Princess Ka'iulani and 69 at the Diamond Head Tower). Based on the DPP's "Annual Report on the Status of Land Use on O'ahu, Fiscal Year 2007", the Year 2000 population for the PUC is approximately 419,300 which is approximately 47.9% of the Year 2000 island-wide population. Although the 419,300 population figure is slightly over the 46% General Plan Benchmark for 2025, the DPP projects that the PUC percentage of the island wide population will be 44.7% in 2020 with a projected population of 463,332 and 44.1% in 2025 with a projected population of 475,696. The proposed 101 residences will provide for some of this projected population increase to the Year 2020. The population increase may be less than a typical 101 unit multi-family development, since a certain percentage of buyers may be transient owners and second home or vacation home buyers.

7.2.2 Economic Activity

General Plan Objective B *- To maintain the viability of O'ahu's visitor industry.*

Policy 2 *- Provide for a high quality and safe environment for visitors and residents in Waikīkī.*

- The Projects will upgrade existing facilities to provide a high quality and safe environment for visitors and residents in Waikīkī. Kyo-ya proposes to spend approximately $550 million to redevelop the Princess Ka'iulani and approximately $150 million to redevelop the Diamond Head Tower. The Projects will be of significantly higher quality than the existing facilities and will incorporate modern standards for safety.

Policy 3 *- Encourage private participation in improvements to facilities in Waikīkī.*

- Kyo-ya proposes to upgrade an existing 8-inch sewer line in Kalākaua Avenue and provide a new sewer line connection to Kūhiō Avenue to support the Diamond Head Tower project.
- Kyo-ya plans to provide a public beach access along the Diamond Head side of the Diamond Head Tower, including the addition of public surfboard racks. Additional public open space will also be provided at the Princess Ka'iulani and Diamond Head Tower, allowing visitors and residents improved public access to privately owned property.
- Kyo-ya proposes to provide up to $500,000 for the DLNR's beach nourishment program, as discussed in Section 2.4.

Policy 5 *- Prohibit further growth in the permitted number of hotel and resort condominium units in Waikīkī.*

- The Princess Ka'iulani project will result in a reduction of approximately 264 hotel rooms and an increase of 61 residences. The Diamond Head Tower project will result in an increase of 44 hotel rooms and 40 residences. Combined, the Projects will result in a reduction of 220 hotel rooms and an increase of 101 residences. The net reduction in the number of hotel units is consistent with this policy to prohibit the further growth of hotel and resort condominium units in Waikīkī.

Policy 9 *- Encourage the visitor industry to provide a high level of service to visitors.*

- The Projects will result in higher quality visitor products and significantly enhance levels of service to guests. The Diamond Head Tower will become the first luxury hotel developed in Waikīkī since the Halekūlani nearly 30 years ago and will be operated at a significantly higher standard than the existing Diamond Head Tower. The condo-hotel suites at the Princess Ka'iulani will provide visitors and residents with residential style accommodations that are currently not readily available in Waikīkī. These suites will meet the requirements of families and extended-stay guests.

7.2.3 Natural Environment

General Plan Objective A - To protect and preserve the natural environment.

Policy 2 - Seek the restoration of environmentally damaged areas and natural resources.

- Kyo-ya has been and continues to be in discussion with the DLNR to participate in the DLNR's beach nourishment program (sand replenishment) for the littoral cell extending between Kūhiō Beach and the Royal Hawaiian Hotel (including the area fronting the Diamond Head Tower). Such participation would involve providing up to $500,000 in funding to help pay for the construction costs associated with this program, which funds would be disbursed upon the DLNR's completion of certain milestone events. Upon completion of such program, it is anticipated that the beach fronting the Diamond Head Tower would be extended seaward by approximately 40-feet. Waikīkī Beach is a very important natural resource to visitors and residents and Kyo-ya will continue to be a strong supporter of beach nourishment and maintenance in Waikīkī.

Policy 5 - Require sufficient setbacks of improvements in unstable shoreline areas to avoid the future need for protective structures.

- The beach nourishment (sand replenishment) program discussed above will provide a natural barrier to unstable shoreline conditions. The Diamond Head Tower site is also buffered by an existing seawall built in the early 1900s. Kyo-ya will not need to develop any additional protective structures makai of the existing seawall.

Policy 9 - Protect mature trees on public and private lands and encourage their integration into new developments.

- As part of the Princess Ka'iulani project, Kyo-ya plans to either maintain the existing banyan tree located on the makai side of Kalākaua Avenue or introduce a new banyan tree along Kalākaua Avenue. The banyan tree in the makai courtyard of the Banyan Wing of the Moana Surfrider Hotel will not be impacted by the Projects.

General Plan Objective B - To preserve and enhance the natural monuments and scenic views of O'ahu for the benefit of both residents and visitors.

Policy 2 - Protect O'ahu's scenic views, especially those seen from highly developed and heavily travelled areas.

- Kyo-ya plans to provide ocean views from Kalākaua Avenue and Ka'iulani Avenue by demolishing the existing Diamond Head Tower and replacing it with a new Diamond Head Tower with a mauka/makai orientation. The new tower will result in ground level view corridors on both the 'Ewa and Diamond Head sides of the site. These new view corridors will

be the only public view corridors to the ocean along Kalākaua Avenue, other than across City or State property located Diamond Head of this site.

- The mauka/makai orientation of the Pīkake Tower at the Princess Ka'iulani will enhance view corridors from the buildings located mauka of the site that are currently obstructed by the existing Princess Tower.

7.2.4 Energy

General Plan Objective A *- To maintain an adequate, dependable, and economical supply of energy for O'ahu residents.*

Policy 3 *- Support programs and projects which contribute to the attainment of energy self-sufficiency on O'ahu.*

- Kyo-ya hopes to utilize a deep well cooling system to provide cool water for the air conditioning systems at the Projects and the remaining two buildings at the Moana Surfrider Hotel. The deep well cooling system will result in a significant reduction in energy and potable water consumption.
- The existing buildings that are proposed to be demolished were built in the 1950s and do not incorporate the energy savings measures that will be introduced in the newly developed structures. Kyo-ya plans to incorporate the application of LEED standards and strategies, to the extent economically feasible, as discussed in Section 8.3.2 of this Draft EIS.

General Plan Objective B *- To conserve energy through the more efficient management of its use.*

Policy 3 *- Carry out public, and promote private, programs to more efficiently use energy in existing buildings and outdoor facilities.*

- As discussed previously, Kyo-ya hopes to utilize a deep well cooling system to reduce energy consumption at the Projects and the two remaining buildings at the Moana Hotel.

7.2.5 Physical Development And Urban Design

General Plan Objective A *- To coordinate changes in the physical environment of O'ahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.*

Policy 2 *- Coordinate the location and timing of new development with the availability of adequate water supply, sewage treatment, drainage, transportation, and public safety facilities.*

- The various public service agencies have indicated that water supply, sewage treatment, quasi-public utilities and public safety facilities are adequate to support the Projects, subject to Kyo-ya providing for on-site fire protection water and access, as needed, and certain off-site sewer transmission facilities in the immediate vicinity to upgrade sewer transmission for the proposed development. Drainage impacts will be reduced with the provision of additional landscaped open space and the reduction in overall units (decrease in hotel units and increase in residential units).

- Traffic impacts will be reduced based on the reduction in overall units. In addition, Kyo-ya plans to take additional measures to reduce traffic impacts. At the Princess Ka'iulani, Kyo-ya plans to develop an auto court in the center of the site to allow for additional off-street stacking and queuing of automobiles. Access to the parking garage will be provided from the auto court, eliminating the need to drive along Ka'iulani Avenue to access the garage (as currently required). Kyo-ya also proposes a new bus loading area located off of Ka'iulani Avenue, eliminating on street bus loading for the Princess Ka'iulani.

- At the Diamond Head Tower, traffic impacts will be reduced by the addition of a new auto court servicing the Diamond Head Tower. The current Diamond Head Tower is serviced by the auto court at the adjacent Banyan Wing. The new auto court will reduce stacking along Kalākaua Avenue and allow queuing within the site.

- Additional measures to reduce traffic impacts will be adopted based on the recommendations provided in the Traffic Impact Report prepared by Wilson Okamoto. The Traffic Impact Report is attached as Appendix 3.

Policy 3 *- Phase the construction of new developments so that they do not require more regional supporting services than are available.*

- The phasing of the Projects will not require more supporting services than are available, as discussed in the previous section.

Policy 5 *- Provide for more compact development and intensive use of urban lands where compatible with the physical and social character of existing communities.*

- The Projects incorporate a more compact development and intensive use of urban lands in Waikīkī, an area of relatively intensive urban development which is compatible with the surrounding developments. The additional height proposed at both the Pīkake Tower at the Princess Ka'iulani and the Diamond Head Tower allow for a smaller structural footprint and enable additional public open space and ground level view corridors.

7.2.6 Culture and Recreation

General Plan Objective D *- To provide a wide range of recreational facilities and services that are readily available to all residents of O'ahu.*

Policy 6 *- Provide convenient access to all beaches and inland recreation areas.*

Policy 8 *- Encourage ocean and water-oriented recreation activities that do not adversely impact on the natural environment.*

- Kyo-ya plans to provide a public beach access on the Diamond Head side of the Diamond Head Tower project. In addition, Kyo-ya plans to provide public surfboard racks on the project property. The improved public access and facilities will be available to residents and visitors and will improve access and enjoyment of the beach.
- Kyo-ya proposes to provide up to $500,000 for the DLNR's beach nourishment program, as discussed in Section 2.4.

Policy 9 *- Require all new developments to provide their residents with adequate recreation space.*

Policy 10 *- Encourage the private provision of recreation and leisure-time facilities and services.*

- As part of the Projects, Kyo-ya plans to develop 5 new swimming pools and 5 fitness and recreation areas for the residents and hotel guests. These facilities will be in addition to the ground floor open space and recreational areas provided for park dedication.

7.3 PUC DEVELOPMENT PLAN

The Project's compliance with the PUC Development Plan is discussed as follows:

7.3.1 The Vision For The PUC's Future

7.3.1.1 Honolulu's Natural, Cultural and Scenic Resources are Protected and Enhanced

"The mountain lands and shorelines that frame the city are protected and preserved, as are the natural, cultural and scenic areas and resources that lie within the urban area. Beaches and coastal waters, as well as historic sites and mountain lands, are actively managed and improved. Physical access to the mountains, the shoreline, streams and other resources is assured and continually enhanced."

- Kyo-ya plans to provide a public beach access on the Diamond Head side of the Diamond Head Tower project. The improved public access and facilities will be available to residents and visitors and will improve access and enjoyment of the beach.
- Kyo-ya proposes to provide greater separation between the existing Banyan Wing of the Moana Surfrider Hotel and the new Diamond Head Tower. The Banyan Wing

is currently physically attached to the existing Diamond Head Tower. Kyo-ya plans to provide approximately 60 feet of separation between the towers and to restore the east facade of the Banyan Wing which will have greater visibility from Kalākaua Avenue. This separation will improve the historic integrity of the Banyan Wing by minimizing the connection between the two structures.

- The arrival pavilion of the new Diamond Head Tower will also serve as a covered pedestrian connection between the Banyan Wing and the new tower. Appropriate measures will be used to preserve, protect and restore as necessary the unveiled area of the historic Diamond Head facing facade. The new arrival pavilion will be designed to minimize impact to the façade. The resulting improvements will showcase the beauty of the currently concealed historic facade, and provide relief from the Banyan Wing with a complimentary connection between the properties.

7.3.1.2 Honolulu is the Pacific's Leading City and Travel Destination

"With ongoing redevelopment and improvement, Waikīkī remains the State's largest and most popular visitor destination."

- Kyo-ya plans to redevelop the Princess Ka'iulani and the Diamond Head Tower in keeping with this important vision statement. The DPP, in comments on the EISPN, noted that: "The proposed action is consistent with the key element in the PUC DP vision which emphasizes the importance of Honolulu as the Pacific's leading city and travel destination. The vision states that with ongoing redevelopment and improvement, Waikīkī will remain the State's largest and most popular visitor destination."

7.3.1.3 Land Use and Transportation

7.3.1.3.1 Scenic Views

Figure 32 depicts View Corridors for mauka views, which include Magic Island, Fort DeRussy and from the Ala Wai Promenade. (See Figure 3.1: View Corridors on page 3-4 of the PUC DP). Mauka views are not depicted along Waikīkī Beach or along Kalākaua Avenue near the proposed developments. Because the Diamond Head Tower and the proposed Pīkake Tower are located in areas with existing buildings of similar or taller heights, they will not have a significant impact on panoramic views of the urban skyline, as seen from arrival points by air or sea, from above the Koolaus, or from outlying areas to the east and west. These distant panoramic views will not be significantly impacted by the Projects.

FIGURE 32: AERIAL PERSPECTIVE OF PROPOSED DEVELOPMENT

- The mauka/makai orientation of the Diamond Head Tower will provide mauka views along Waikīkī Beach in the area between the Banyan Wing and Diamond Head Tower.

7.3.1.3.2 Visitor Industry

"The need to upgrade Waikīkī. Waikīkī is competing in the global market and, as a mature destination, needs to be refurbished and improved. In addition to upgrading streets and public spaces, the City and State need to adopt policies that will elicit private reinvestment in Waikīkī's physical plant."

- Kyo-ya proposes to invest approximately $550 million to redevelop the Princess Ka'iulani and $150 million to redevelop the Diamond Head Tower. The Projects are a continuation of Kyo-ya's reinvestment in the Waikīkī visitor industry. Over the past four years, Kyo-ya has spent over $250 million renovating and repositioning the Sheraton Waikīkī, Royal Hawaiian and the Moana Surfrider. Kyo-ya's proposal represents a significant improvement and modernization of Kyo-ya's physical plant in Waikīkī. The Projects are consistent with the renovations and redevelopments undertaken by Kyo-ya, Outrigger, Hilton and the Royal Hawaiian Center in the past few years.

7.3.1.3.3 Walking

"Regional pedestrian networks are appropriate for the central Honolulu and Pearl Harbor areas. Districts with existing high levels of pedestrian activity include Waikīkī and Downtown. . . Additional elements of the network are new promenades and other pedestrian improvements to city streets (e.g., Punchbowl Street, Nimitz Highway in the Downtown area, Ward Avenue, Young Street, Keeaumoku Street and Kalākaua Avenue."

- Kyo-ya plans to improve the pedestrian experience along Kalākaua Avenue with significant public open spaces and greater setbacks than the existing conditions. The setback at the Princess Ka'iulani along Kalākaua Avenue will increase from an average of approximately 14 feet to approximately 51 feet. The Kalākaua Avenue setbacks will far exceed the requirement of 20 feet. The setback along Ka'iulani Avenue will increase from distances as narrow as 5 feet, to approximately 24 feet. The Ka'iulani Avenue setbacks will far exceed the requirement of 15 feet. These extended setback areas will be part of the increased public open space provided on the property.
- At the Diamond Head Tower, the setback along Kalākaua Avenue will increase from an average of approximately 14 feet to approximately 28 feet. The Kalākaua setbacks will far exceed the requirement of 20 feet. The setback on the Diamond Head side of the lot will increase from 0 feet to a range of 11 to 25 feet.
- This significant increase in public open space and landscaping along this major thoroughfare will greatly enhance the pedestrian experience through Waikīkī by providing relief from the urban forms that congest the street level experience in Waikīkī.

7.3.1.3.4 Bicycles

"To encourage bicycle ridership, the City has employed a Bicycle Coordinator, installed bike racks on all its buses and on many of Honolulu's streets, and has planned and partially developed a system of bikeways."

- The Honolulu Bicycle Master Plan (dated April 1999) proposes a bike lane along the makai side of Kalākaua Avenue from Ala Moana Boulevard to Kapahulu Avenue. Based on a discussion with the City's Bicycle Coordinator, the bike lane has been included in this year's budget proposal and is planned to be developed within the next two years.
- Kyo-ya plans to provide bicycle racks in the Princess Ka'iulani parking garage on the property to accommodate employees that may bicycle to

work, using the new bike lane planned for Kalākaua Avenue. In addition, Kyo-ya will provide lockers and showers for use by employees that bicycle to work, in keeping with concepts supported in the Plan.

7.4 LAND USE MAP PUC - EAST

As noted by DPP in comments on the EISPN, "The proposed project is located in an area designated Resort on the PUC DP Land Use Map (PUC - East) and is consistent with this designation."

7.5 ZONING

7.5.1 Uses

Both the Princess Ka'iulani and the Diamond Head Tower are situated within the Waikiki Special District, Resort Mixed Use Precinct, which has a 260-foot height limit. The proposed uses in both Projects are consistent with this zoning precinct, which allows hotels and commercial establishments.

The existing Princess Ka'iulani site is occupied by a resort hotel complex of three (3) existing towers mostly comprised of lodging units. The existing 'Āinahau Tower of approximately 666 hotel units will remain while the other two existing towers will be demolished. The proposed new Pīkake Tower will add 61 residential dwelling units, 105 hotel dwelling units and 105 hotel lodging units to the remaining 666 hotel units. The resulting project will continue to be a hotel complex, and may be considered a hotel as defined by the Land Use Ordinance. The hotel complex will also contain ancillary retail, ballroom, and eating establishments.

The existing Moana Surfrider Hotel complex is also occupied by a resort hotel complex of three (3) existing buildings, almost entirely comprised of lodging units. The existing Surfrider Tower and Banyan Wing, of approximately 673 hotel lodging units combined, will remain while the existing Diamond Head Tower will be demolished. The proposed new Diamond Head Tower will add 40 residential dwelling units and 185 hotel lodging units to the remaining 673 hotel lodging units. The resulting project will continue to be a hotel complex, and may be considered a hotel as defined by the Land Use Ordinance. The hotel complex will also contain ancillary retail, ballroom, and eating establishments.

Kyo-ya will be requesting zoning variances from the 100-foot coastal building setback and the 100-foot coastal building height setback of 1:1 development standards of the WSD in the LUO. Kyo-ya has decided to proceed with this request because the setbacks would reduce the buildable portion of the property to less than 50% of the lot area, and the resulting building envelope would limit the applicant to constructing a building that is approximately 4,000 square

feet smaller than the existing Diamond Head Tower. Furthermore, the resulting building would extend lot line to lot line, eliminate pedestrian view corridors, and reduce public open space.

The Diamond Head Tower site is among the narrowest parcels of land along Waikīkī Beach that is subject to the Coastal Height Setback; hence, the impact of this regulation on this particular parcel is greater than on any other parcel along Waikīkī Beach.

Other reasons for continuing with the proposed zoning variance are the following community benefits that will result from the redevelopment of the Diamond Head Tower:

- Enhanced public open spaces along Kalākaua Avenue.
- Improved ocean views from pedestrian level along Kalākaua Avenue and Ka'iulani Avenue through new ground level view corridors on both the 'Ewa and Diamond Head sides of the new Diamond Head Tower.
- New surfboard racks for public use on the property adjacent to the existing public surfboard racks.
- Improved traffic and circulation along Kalākaua Avenue.
- The Projects together will create approximately 3,376 person-years of employment on O'ahu and generate $284 million in personal earnings during the 2 to 3 year construction period.
- During the operation phase, the Projects will result in 1,503 additional jobs (direct and indirect) and generate $39 million in personal earnings per year. At stabilization, the Projects will result in annual incremental revenues of approximately $6.2 million to the County and $4.7 million to the State as a result of increased property values, and additional GET and TAT.
- See discussion in Section 2.4 above regarding the DLNR's beach nourishment program (sand replenishment) for the littoral cell extending between Kūhiō Beach and the Royal Hawaiian Hotel (including the area fronting the Diamond Head Tower).

Kyo-ya will be seeking flexibility on some of the development standards of the Resort Mixed Use Precinct under the provisions of the PD-R process established in Section 21-9.80-4(d) of the LUO. This section states that the purpose of the PD-R option is as follows: *"...to provide opportunities for creative redevelopment not possible under a strict adherence to the development standards of the special district. Flexibility may be provided for project density, height, precinct transitional height setbacks, yards, open space and landscaping when timely, demonstrable contributions benefitting the community and the stability, function, and overall ambiance and appearance of Waikīkī are produced."*

7.5.2 Waikīkī Special District

The proposed development will satisfy the objectives and standards of the WSD as follows:

7.5.2.1 Princess Ka'iulani

7.5.2.1.1 Hawaiian Sense of Place

The renovated and redeveloped Princess Ka'iulani will significantly enhance the "Hawaiian Sense of Place" of the area. Cognizant and respectful of the history of the area, its special features and its past inhabitants, the project will look to celebrate and reinterpret many of its iconic elements through design.

"Spouting water", expansive lo'i and 'Āpuakēhau will be expressed through new water features in the public domain. New and enhanced landscaping will look to incorporate both native plant species and introduced tropical plants brought to Hawai'i and cultivated by Archibald Cleghorn including a Banyan tree along Kalākaua Avenue. New structures and building elements will look to many references ranging from the Princess's historic home, 'Āinahau, to her favorite flower and bird "pīkake" for guidance and inspiration.

In addition, the proposed Princess Ka'iulani renovation will improve the experience of its guests, visitors, and surrounding neighbors, by reconfiguring its massing and facades to provide a front plaza larger than most other plazas along Kalākaua Avenue. The redevelopment will provide greater setbacks along both Kalākaua Avenue and Ka'iulani Avenue than currently exist. The entry drive up to the upper level auto court will be lined with landscaping with the center of the auto court featuring a generous landscaped core. The proposed landscaping along the street frontages will add to the tropical ambiance of the project. The podium level amenities including the landscaping and variety of pools will provide an attractive view from above.

Decorative and varied materials, patterns and landscaping will be integrated into the redevelopment to enhance the streetscape and create a tropical Hawaiian sense of place.

Kyo-ya's design includes significant amounts of articulation which will provide rich visual textures by contrasting light and shadows on surfaces of the buildings to further the Hawaiian sense of place.

7.5.2.1.2 Orientation & Form

The planned Princess Ka'iulani is a mix of varied-height structure including high-rise towers, and terraced podium spaces with intermittent areas of both open space and public open space. The towers are slender, with their long axes oriented mauka-makai. The towers are shaped and located to minimize impact on neighbors' view corridors (See Figure 33). The orientation may allow neighboring properties directly mauka of the project to have some improved views.

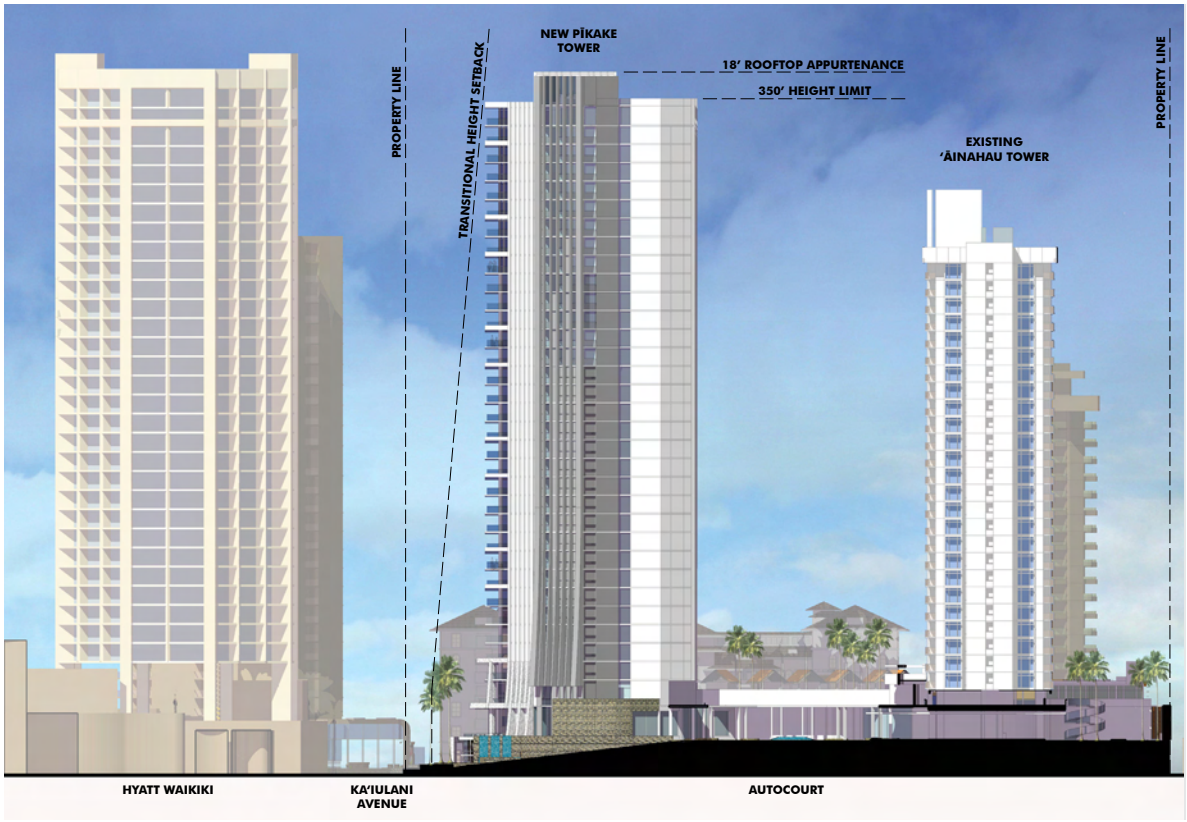


FIGURE 33: PRINCESS KA'IULANI MAUKA ELEVATION

The asymmetrical configuration of the facades will add interest and soften building massing, particularly for pedestrians. Podium facades maximize pedestrian access and are staggered and varied in massing to create visual interest and pockets of activity. The podium is set back further than that found on other properties to create a large plaza that becomes a node for Waikīkī when approaching from a variety of directions. This will provide much visual and experiential relief at a heavily travelled pedestrian intersection in Waikīkī.

7.5.2.1.3 Open Space

The proposed development of the Princess Ka'iulani will result in additional public open space that is usable and visible to the public and that creates visual relief from neighboring buildings. Publicly accessible or public open space is open space available for public use. Private open space is open space on the property intended for use by guests of the property, but not the general public.

The public open space will increase from approximately 5,310 square feet to 29,163 square feet (a 449% increase in public open space). Although the overall open space (public and private open space) will slightly decrease from 47,925 square feet to 44,452 square feet (a 7% decrease), the majority of this open space has been moved to the landscaped public promenades along Kalākaua Avenue and Ka'iulani Avenue. This resulting area, combined with the open area from property line to edge of curb creates an environment that allows expansive walkways with extensive landscaping. These publicly accessible open space provisions are an important component of this proposed redevelopment, a marked improvement over the existing open space that is located internally on the property (See Figures 34 & 35). A portion of this open space may be dedicated to public use as part of the WSD Permit and/or as part of Kyo-ya's park dedication requirements.

The setback along Kalākaua Avenue will increase from an average of approximately 14 feet to approximately 51 feet. The Kalākaua Avenue setbacks will far exceed the requirement of 20 feet. The setback along Ka'iulani Avenue will increase from distances as narrow as 5 feet, to approximately 24 feet. The Ka'iulani Avenue setbacks will far exceed the requirement of 15 feet. These extended setback areas will be part of the increased public open space provided on the property. This significant increase in public open space and landscaping along this major thoroughfare will greatly enhance the pedestrian experience through Waikīkī by providing relief from the urban forms that congest the street level experience in Waikīkī.

Elevated areas that are not subject to open space calculations are expected to improve views of the project from the elevated areas of neighboring properties. These open air decks or 'visual open spaces', will be used for pedestrian and vehicular access, recreation, pool, outdoor dining, and will use a combination of hardscape, landscape and water features that reduce the visual impact of the development. Functions such as service and loading areas that are currently visible, will occur at covered or shielded areas.

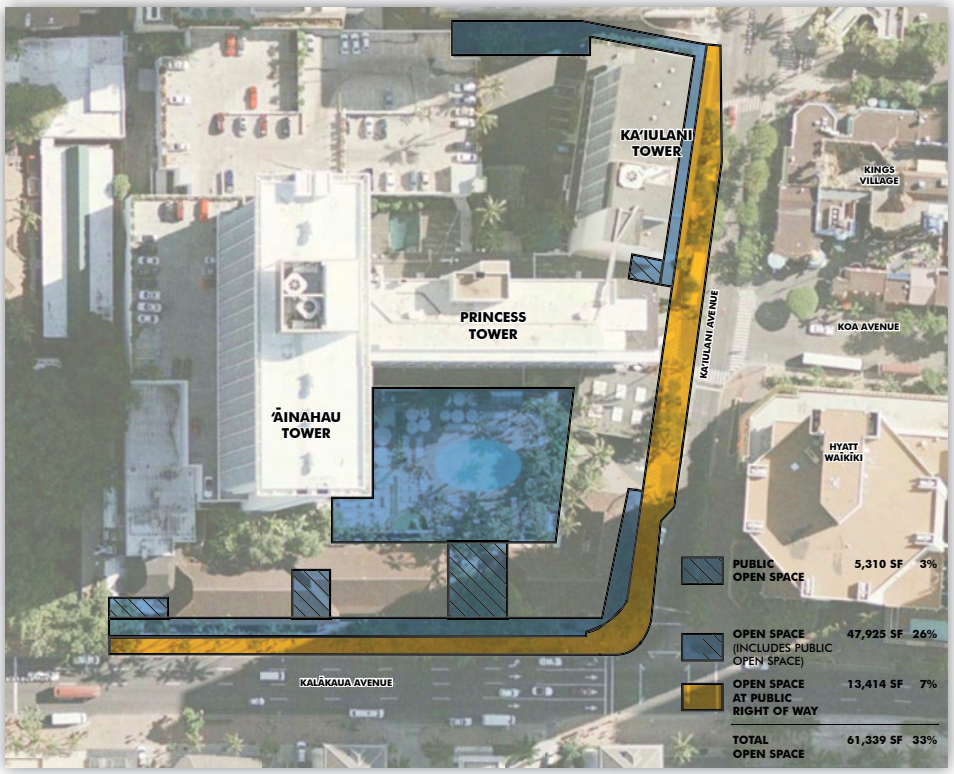


FIGURE 34: PRINCESS KA'IULANI EXISTING OPEN SPACE

FIGURE 35: PRINCESS KA'IULANI PROPOSED OPEN SPACE

7.5.2.1.4 Parking Facilities

The parking facilities for the Projects will be located at the Princess Ka'iulani as indicated on the plans provided in Appendix 1. The parking will be located in the lower level of the Commercial Podium and on the mauka border of the Princess Ka'iulani site. No parking will be located along street frontages. The Princess Ka'iulani Project will meet all parking and loading standards as required by Land Use Ordinance – Waikiki Special District:

FIGURE 36: PRINCESS KA'IULANI PROPOSED PERSPECTIVE

7.5.2.1.5 Articulation, Scale, Material Color

As indicated on the plans provided in Appendix 1, the building facade for the Princess Ka'iulani will be varied and articulated to create visual interest and reduce the bulk of the building (See Figure 36). The towers will be asymmetrical to contribute to the visual interest of the development.

The retail establishments proposed at the first and second level along the street frontages for the Princess Ka'iulani will be developed with human scale comfortable for the anticipated pedestrian traffic (See Figure 37). Efforts will be made to minimize continuous extended length walls that are visible to the public. Articulation and material use will be considered in breaking down building massing.

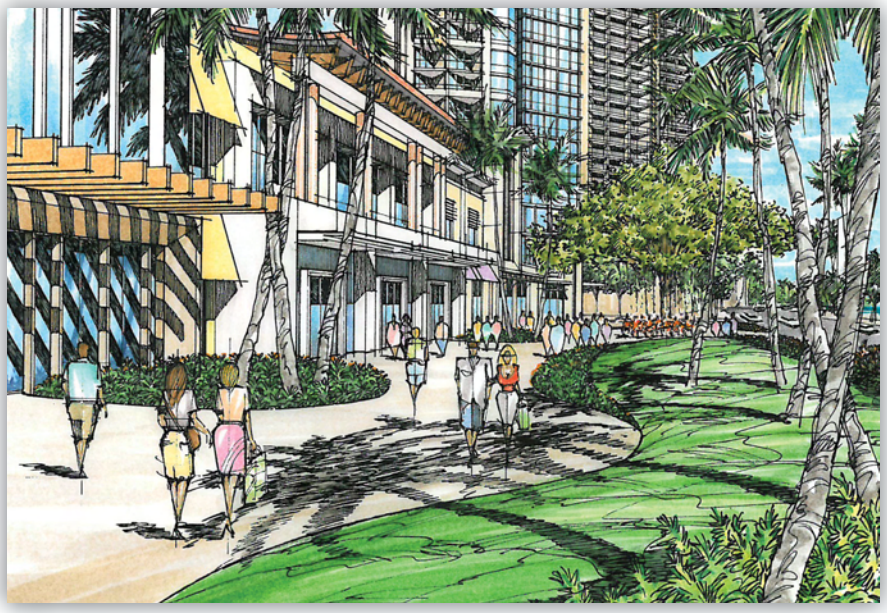


FIGURE 37: PRINCESS KA'IULANI RETAIL PROMENADE

A variety of building materials, including natural materials, and textured concrete and plaster. The use of reflective materials will be limited. Exterior colors will contribute to the tropical resort ambiance and complement the added landscaping. Generally neutral tones are being considered for the high-rise tower with more vibrant and pronounced colors being used for accenting.

7.5.2.1.6 Entries, Lobbies & Arcades

All of the ground level retail establishments will be oriented to the public streets to create an attractive linkage between the public pedestrian areas and the private commercial establishments. The pedestrian promenade will be enhances with landscape and hardscape that evokes an open plaza type environment in contrast to a sidewalk or mall.

7.5.2.1.7 Visual Links

Ground level spaces and entries along Kalākaua Avenue are designed to provide visual links generally into the proposed retail spaces. The large open space area at the corner of Kalākaua and Ka'iulani Avenues is intended to be a gathering spot that will establish a focal point from all directions.

The proposed auto court access at Ka'iulani Avenue is located directly across Koa Avenue, providing a visual cue for pedestrian access up a landscaped grand stair from the heavily travelled Ka'iulani Avenue and from people approaching from Koa Avenue. The existing Ka'iulani Tower which currently creates a visual barrier will be razed providing a landscaped link and access to the 'Āinahau Tower, Pīkake Tower and associated facilities.

7.5.2.1.8 Features in Required Yards

As shown on the plans provided in Appendix 1, the proposal provides generous yards including a public plaza along Kalākaua and Ka'iulani Avenues. This plan provides a visually interesting and more usable open space area allowing a substantial increase in landscaping that provides a visual and noise buffer from vehicular traffic, minimizing pedestrian interaction with the curb side. The landscape will provide shade and a natural visual relief of color and softness to the urban context.

- **Auto Court** - The proposed Princess Ka'iulani renovation auto court is located on the upper podium level and therefore will not be a dominant ground level feature of the property. The location of the auto court in the center of the property will reduce congestion and queuing of vehicles along Ka'iulani Avenue. The drive to the auto court will be landscaped and add to the visual beauty of the area. The proposed location will reduce the pedestrian-vehicular conflict and in turn increase the promenade area for the public. The retail and commercial frontage along Kalākaua Avenue and Ka'iulani Avenue will likewise be improved and pedestrian friendly.
- **Walls & Fences** - Decorative walls and fences will be used where appropriate, and landscaping will be integrated, as per the WSD Guidelines.
- **Shading Devices** - Shading devices such as trellises and eaves are proposed, and will encroach into the required yards no more that the amount permitted by the LUO. A banyan tree is also proposed along Kalākaua Avenue to provide additional shading.
- **Outdoor Dining** - Outdoor dining facilities are proposed in the Pīkake Tower (Level 2, overlooking Ka'iulani Avenue), the 'Āinahau Tower (Level 3, overlooking Kalākaua Avenue), and on two pools (Level 3 of the Commercial Podium and the top level of the Parking Deck). These dining areas are not within required yards.
- **Rooftop Design and Equipment Screening** - Machinery, equipment and utility installations may exceed the established height limit as permitted by the LUO, but will be screened as suggested by the WSD Guidelines. The rooftops of the Commercial Podium and Parking Deck will include significant landscaping and pool decks to enhance visual impacts from adjacent buildings.

- **Landscaping** - As indicated in the plans, landscaping will be provided to enhance the streetscape along Kalākaua and Ka'iulani Avenues. In addition the entry to the auto court area will be landscaped. Landscaping will also be featured at the podium levels along with the recreational amenities. Kyo-ya will incorporate a variety of plant material including fragrant, lush, tropical and native plant species.

- **Water Features & Artwork** - "Spouting water", expansive lo'i and 'Āpuakēhau will be expressed through new water features in the hotel lobby, auto court and the entry driveway.

- **Sidewalk & Paving** - Private walkways will be developed with patterned and/or textured paving materials to provide a sense of scale and rhythm appropriate to the surrounding buildings. Public walkways will be constructed to match the existing sidewalks on Kalākaua Avenue and Ka'iulani Avenue. Kyo-ya proposes to eliminate one curb cut by providing an entry drive leading up to the auto court that will replace the existing two curb cuts at the existing auto court. A bus loading area off of Ka'iulani Avenue and adjacent to the auto court entry drive, will continue to keep pedestrians and vehicular traffic separate, while providing relief for traffic currently impacted by staging and loading that occurs on Ka'iulani Avenue. A landscaped buffer will create visual relief to this area of Ka'iulani Avenue. The existing curb cut to the loading and parking structure will remain.

- **Signage** - Kyo-ya has not designed the proposed signs for the Princess Ka'iulani, however, the proposed signs will meet LUO requirements. The signage will be designed to contribute to the sense of place and will not dominate the facade. If illuminated, the lighting will comply with the WSD guidelines.

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

7.5.2.2 Diamond Head Tower

7.5.2.2.1 Hawaiian Sense of Place

The Diamond Head Tower will significantly enhance the Hawaiian sense of place of the area. Cognizant and respectful of the history of the area, its special features and its past inhabitants, the project will look to celebrate and reinterpret many of its iconic elements through design. Located on legendary Waikīkī Beach, the redeveloped hotel will aspire to capture the spirit of the ocean and its sporting history. Surfing and fishing, paddling and navigation will be cel-

ebrated through the creation of new access, both physical and visual, while the new structures and building elements will look to references of these sports including surfboards, canoes and fishing implements for sources of inspiration. The rolling surf of Waikīkī will be expressed through new pool water features while the landscaping will look to mostly native species known to thrive in ocean environments.

The Diamond Head Tower development redesigns the existing hotel to improve the experience of its guests, visitors, and surrounding neighbors, by reconfiguring its massing and facades to provide a narrower building front and improved views around and through the ground floor of the structure. The redevelopment will provide greater setbacks along Kalākaua Avenue than currently exist. The auto court will provide an opportunity to improve ocean views for pedestrians and motorists traveling makai bound on Ka'iulani Avenue. Greater landscaping within the planned setback areas will improve the pedestrian experience along Kalākaua Avenue. This proposed landscaping will add to the tropical ambiance of the project. Decorative and varied materials, patterns and landscaping will be integrated into the redevelopment to enhance the streetscape and create a tropical Hawaiian sense of place. Kyoya's design includes significant amounts of articulation which will provide rich visual textures by contrasting light and shadows on surfaces of the buildings to further the Hawaiian sense of place.

7.5.2.2.2 Orientation & Form

The new Diamond Head Tower will provide a mix of varied height structures and footprints that is complimentary to the rest of the Moana Surfrider development (See Figures 38 & 39). The existing Diamond Head Tower is approximately 100' in height, and extends from the face of the historic Banyan Wing, to the Diamond Head property line, blocking view corridors from Kalākaua Avenue to the beach and blocking the visibility of the historic façade of the Banyan Wing. The historic Banyan Wing is a lower structure with a large courtyard on its makai face and a lesser massing relief on the Kalākaua frontage. The proposed Diamond Head Tower is being redeveloped to eliminate an 'Ewa-Diamond Head oriented structure that stretches to its fullest extent on this portion of the Moana Surfrider lot, opening views as well as a similar massing relief along the street corridor.

The new Diamond Head Tower will be oriented in the preferred mauka-makai direction improving views from pedestrian levels as well as from properties beyond. As illustrated in (See Figure 40), from a pedestrian and vehicular

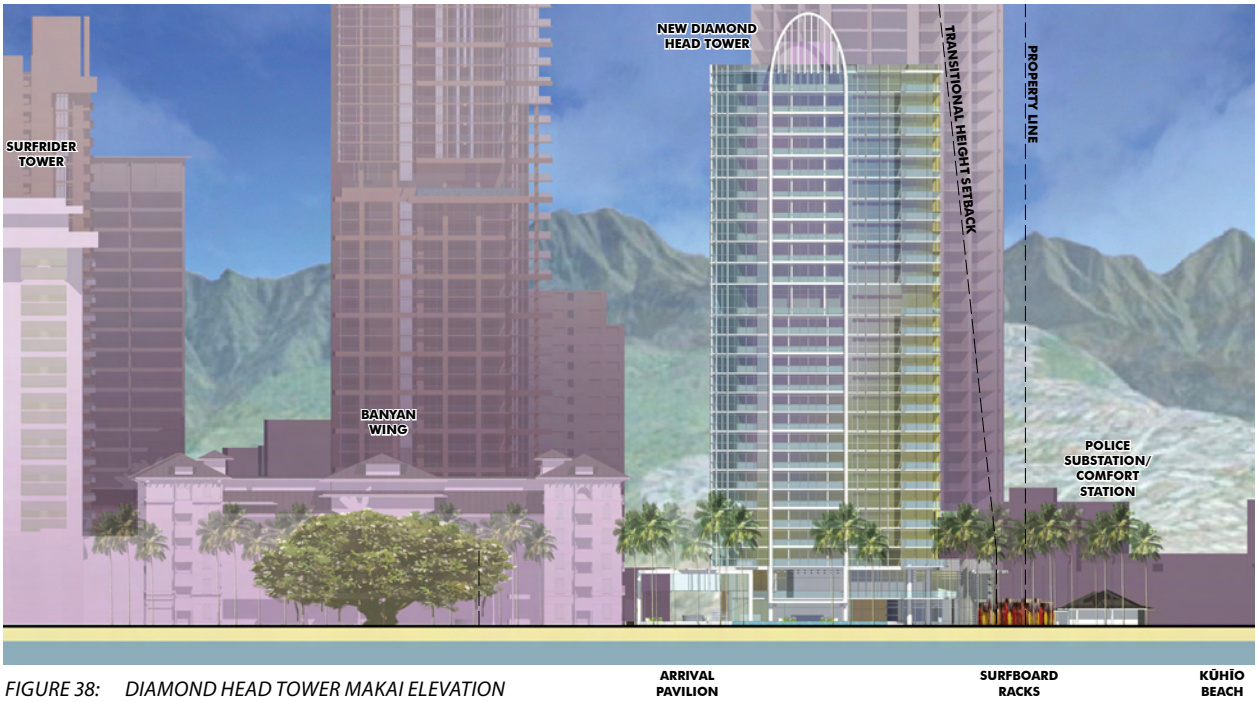


FIGURE 38: DIAMOND HEAD TOWER MAKAI ELEVATION

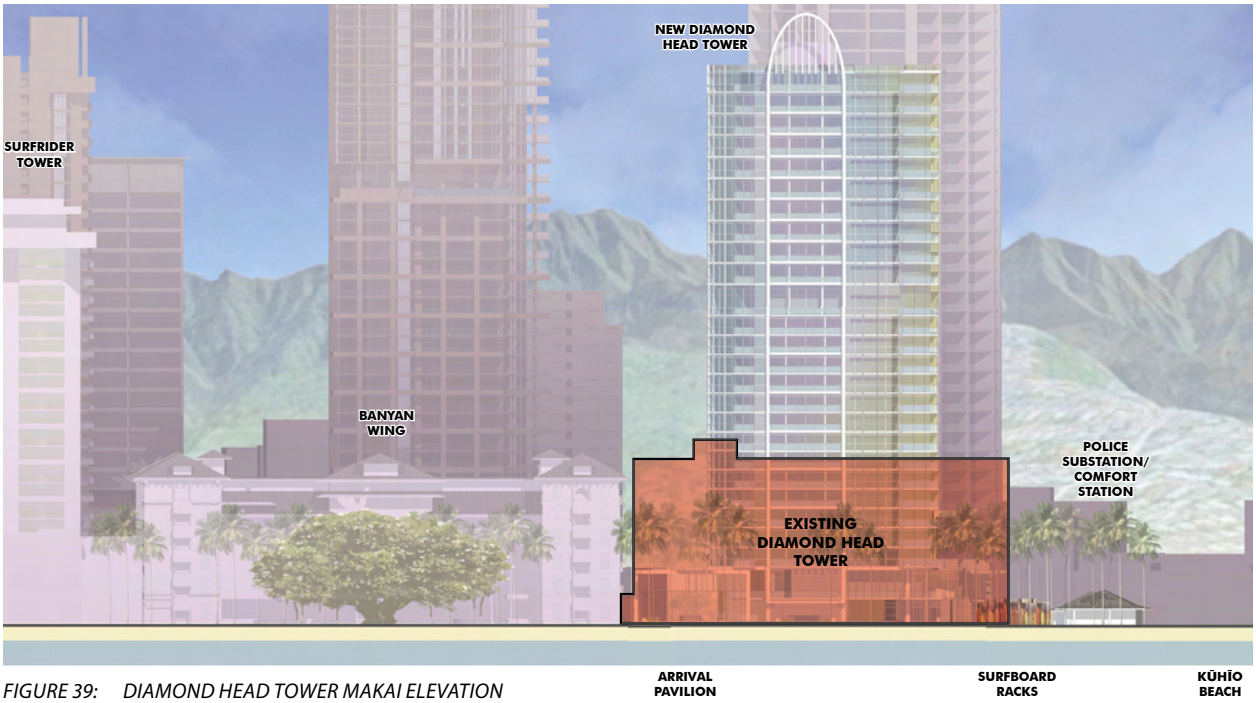


FIGURE 39: DIAMOND HEAD TOWER MAKAI ELEVATION (EXIST. OVERLAY)

perspective on Kalākaua Avenue, the proposed development opens views to the beach through the auto court & arrival pavilion, through the ground level breezeways, and through a building setback from the Diamond Head property line. The proposed development creates a mauka-makai view from Ka'iulani Avenue, a major pedestrian thoroughfare from the mauka side of Waikīkī, thus

FIGURE 40: DIAMOND HEAD TOWER PROPOSEDARRIVAL PAVILION (LOOKING MAKAI)

FIGURE 41: DIAMOND HEAD TOWER PROPOSED ARRIVAL PAVILION (LOOKING MAUKA)

addressing an objective of the WSD Guidelines (See Figures 40 & 41). In addition, the orientation of the proposed structures will allow the Diamond Head façade of the historic Banyan Wing to be visible from Kalākaua Avenue.

The new auto court and arrival pavilion allow a relief of mass and setback for pedestrians and vehicles on Kalākaua Avenue . The presence of a continuous street front barrier is eliminated when the existing tower is razed and redeveloped.

The tower facade will be articulated to provide varied texture and massing at different sections, which help in breaking down building mass to avoid the appearance of a solid continuous building footprint. Expressions of open lānais, solids, structure assist in this affect. Solid walls will allow for further articulation with motifs or expressions befitting of the design concepts. A two story podium level will allow the building to respond to the adjacent human scale environment, with relief created by building articulation, façade stepping and views through breezeways.

7.5.2.2.3 Open Space

The new site plan for the Diamond Head Tower replacement will provide additional public open space that is usable and allows better accessibility for the public. The public open space will significantly increase from approximately 3,223 square feet to 8,069 square feet (a 150% increase in public open space). The open space will increase from 58,575 square feet to 61,547 square feet (a 5% increase). This open space will be primarily maintained along Kalākaua Avenue allowing it to be visually combined with the open area from property line to edge of curb. This creates an environment that allows expanded walkways with landscaping, providing relief from the view, sound and noise as well as provide public safety from Waikīkī's main thoroughfare. The visual open space at the pedestrian level of Kalākaua Avenue is improved with a mauka-makai oriented building footprint which creates relief in the massing, and brings open area into the auto court with a visual link through to the beach (See Figures 42 & 43).

This significant increase in public open space will be achieved by increasing the setbacks along Kalākaua Avenue and the Diamond Head side of the lot, as well as by incorporating a public access corridor, and public surfboard racks on the site. The setback along Kalākaua Avenue will increase from an average of approximately 14 feet to approximately 28 feet. The Kalākaua setbacks will far exceed the requirement of 20 feet. The setback on the Diamond Head side of the lot will increase from 0 feet to a range of 11 to 25 feet.

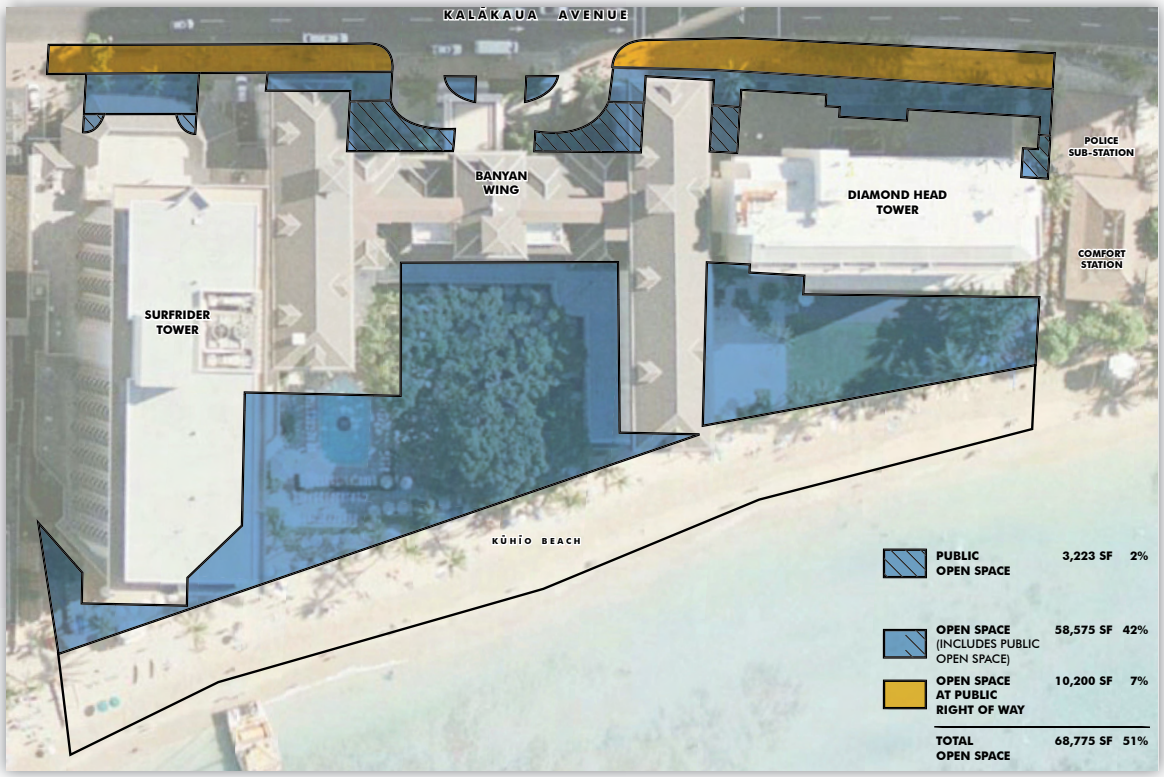


FIGURE 42: DIAMOND HEAD TOWER EXISTING OPEN SPACE

FIGURE 43: DIAMOND HEAD TOWER PROPOSED OPEN SPACE

7.5.2.2.4 Parking Facilities

The parking facilities for the Projects will be located at the Princess Ka'iulani as indicated on the plans provided in Appendix 1. The parking will be located in the lower level of the Commercial Podium and on the mauka border of the Princess Ka'iulani site. No parking will be located along street frontages.

As currently operated, the Diamond Head Tower project will meet all off-street parking standards as required by the Land Use Ordinance – Waikiki Special District through use of a CUP for off-site parking.

The existing service/loading function for the Moana Surfrider Hotel complex is located at the basement of the Surfrider Tower. This serves as the central receiving area, with distribution and service through a sub-grade access that connects to all three wings of the development: Surfrider Tower, Banyan Wing and the Diamond Head Tower. The loading area for the Moana Surfrider Hotel is non-conforming since all three wings were constructed prior to the creation of the City and County of Honolulu's Land Use Ordinance Loading Requirements. The property has been served by the existing loading area for 35+ years.

The proposed Diamond Head Tower project includes the addition of the following uses:

- 40 new condominium units
- 2,208 sf of new commercial area
- 58,062 sf of new hotel floor area

This addition would require two more loading stalls than the current requirements as set by the LUO. (For breakdown of loading requirements, see Figures 44, 45, 46 & 47)

The applicant proposes to implement a service/loading management plan as a mitigative measure in lieu of providing additional loading stalls. The plan retains the existing location for primary loading functions and will manage supplemental loading activities at the auto court of the proposed Diamond Head Tower at off-peak hours. The intent of the proposed service/loading management strategy is to minimize impact on pedestrians and traffic and in turn achieve proposed improvements such as increased public open space, introduction of view corridors, and improved shoreline access.

FIGURE 44: PRINCESS KA'IULANI PARKING SUMMARY

Princess Kaiulani	EXISTING		PROPOSED	
Parking Summary	Count/Area	Spaces	Count/Area	Spaces
Ainahau Tower Existing Provisions				
Number of Hotel Units	666	167	666	167
Retail (sf)	0	0	816	2
Food & Beverage (sf)	0	0	9,766	13
Meeting Space / Ballroom (sf)	12,798	64	11,827	60
Princess Tower				
Number of Hotel Units	295	74		
Retail (sf)	0	0		
Food & Beverage (sf)	0	0		
Meeting Space / Ballroom (sf)	0	0		
Kaiulani Tower				
Number of Hotel Units	179	45		
Retail (sf)	0	0		
Food & Beverage (sf)	0	0		
Meeting Space / Ballroom (sf)	0	0		
New Pikake Tower				
Number of Hotel Units			210	53
Number of Dwelling Units			61	61
Retail (sf)			0	0
Food & Beverage (sf)			7,211	10
Meeting Space / Ballroom (sf)			3,614	19
Kalakaua - Kaiulani Upper Level Retail				
Retail (sf)	0	0	34,727	44
Princess Kaiulani Sub Total		350		429
Moana Surfrider Parking Requirement		290		355
Total Stalls Required		640		784
Total Stalls Provided		582		812

Count/Area represent non-ground floor and non-basement uses, other than dwelling uses.

FIGURE 45: PRINCESS KA'IULANI LOADING SUMMARY

Princess Kaiulani	EXISTING		PROPOSED	
Off- Street Loading Requirements				
Commercial Area (sf)	40,536	4	100,600	5
Hotel Area (sf)	407,520	6	430,230	6
Office Area (sf)	3,880	0	2,820	0
Number of Multifamily Dwellings	0	0	61	1
Total Off-Street Loading Required		10		12
Min 50% Large Loading Spaces				
Total Off-Street Loading Provided		4		12
Large Loading Spaces		2		6
Small Loading Spaces		2		6

FIGURE 46: DIAMOND HEAD TOWER PARKING SUMMARY

Moana Surfrider - A Westin Resort	EXISTING		PROPOSED	
Parking Summary	Count/Area	Spaces	Count/Area	Spaces
Surfrider Tower Existing Provisions				
Number of Hotel Units	432	108	432	108
Retail (sf)	15796	20	15,796	20
Meeting Space / Ballroom (sf)	11632	59	11,632	59
Banyan Wing				
Number of Hotel Units	241	61	241	61
Retail (sf)	0	0	0	0
Food & Beverage (sf)	0	0	0	0
Meeting Space / Ballroom (sf)	0	0	0	0
Diamond Head Tower				
Number of Hotel Units	141	36	185	47
Number of Dwelling Units	0	0	40	40
Retail (sf)	0	0	0	0
Food & Beverage (sf)	4,200	6	7,294	10
Meeting Space / Ballroom (sf)	0	0	1,811	10
Total Stalls Required		290		355
Total Stalls Provided		0		0
	Offsite Parking at Princess Kaiulani		Offsite Parking at Princess Kaiulani	

Count/Area represent non-ground floor and non-basement uses, other than dwelling uses.

FIGURE 47: DIAMOND HEAD TOWER LOADING SUMMARY

Moana Surfrider - A Westin Resort	EXISTING		PROPOSED	
Off- Street Loading Requirements				
Commercial Area (sf)	37,430	3	39,638	3
Hotel Area (sf)	383,851	6	441,913	6
Office Area (sf)	0	0	0	0
Number of Multifamily Dwellings	0	0	40	1
Total Off-Street Loading Required		9		10
Min 50% Large Loading Spaces				
Total Off-Street Loading Provided		2		3**
			**Service/Loading Management Plan See Sec. 7.5.2.2.4 for additional info	

FIGURE 48: DIAMOND HEAD TOWER PROPOSED PERSPECTIVE

7.5.2.2.5 Articulation, Scale, Material Color

As indicated on the plans provided in Appendix I, the building facade for Diamond Head Tower will be varied and articulated to create visual interest and reduce the bulk of the building. The tower will be asymmetrical to contribute to the visual interest of the development.

The retail establishments proposed at the first and second level along the street frontages for the Diamond Head Tower will be developed with human scale comfortable for the anticipated pedestrian traffic. Efforts will be made to minimize continuous extended length walls that are visible to the public. Articulation and material use will be considered in breaking down building massing.

A variety of building materials, including natural materials, and textured concrete and plaster will be used. The use of reflective materials will be limited. Exterior colors will contribute to the tropical resort ambiance and complement the added landscaping. Generally neutral tones are being considered for the high-rise tower with more vibrant and pronounced colors being used for accenting (See Figure 48).

7.5.2.2.6 Entries, Lobbies & Arcades

The ground level lobby will provide an open inviting feel with extensive use of glass which will also serve to enhance views of the ocean through the lobby. The lobby is also planned with an increased ceiling height increasing views, natural light, tradewinds and a more visible link to the beach.

7.5.2.2.7 Visual Links

The ground level lobby will provide a visual link and open feeling with extensive use of glass. The building will improve views of the ocean around and through the building versus the existing structure which stretches lot-line to lot-line with no views around or through the existing building. The proposed building orientation and footprint allows for a visual link to the beach environment that does not exist along Kalākaua Avenue until Kūhiō Beach. Through these building setbacks, stepping, and proposed interior breezeways, pedestrian and vehicular visual links will be improved along the Kalākaua frontage, as well as a primary mauka-makai visual link from Ka'iulani Avenue, a major connection from the mauka side of Waikīkī.

7.5.2.2.8 Features in Required Yards

As shown on the plans provided in Appendix 1, the proposal provides a generous yard along Kalākaua Avenue. This plan provides a visually interesting and more usable open space area that provides improved landscape and hardscape areas. The landscape will provide natural visual relief of color and softness to the urban context.

- **Auto Court** - The Diamond Head Tower will include a new auto court located at ground level. The auto court will provide views to the ocean from Kalākaua and Ka'iulani Avenues. The auto court will reduce congestion along Kalākaua Avenue and at the auto court of the Moana Surfrider Hotel.
- **Walls & Fences** - Decorative walls and fences will be used where appropriate, and landscaping will be integrated, as per the WSD Guidelines. Wind shields will be used to mitigate any anticipated gusts during inclement weather, while maintaining visual links as possible.
- **Shading Devices** - Shading devices such as trellises and eaves are proposed, and will encroach into the required yards no more that the amount permitted by the LUO.
- **Outdoor Dining** - As currently planned, there will be a restaurant on the second level that will provide an outdoor dining area. A pool snack bar will provide outdoor dining at the pool level.

- **Rooftop Design and Equipment Screening** - Machinery, equipment and utility installations may exceed the established height limit as permitted by the LUO, but will be screened as suggested by the WSD Guidelines.
- **Landscaping** - As indicated in the plans, landscaping will be provided to enhance the streetscape along Kalākaua Avenue. In addition the entry to the auto court area itself will be landscaped. Kyo-ya will incorporate a variety of plant material including fragrant, lush, tropical and native plant species.
- **Water Features & Artwork** - A mural depicting the history of the surfing culture in Waikīkī is proposed on the Diamond Head façade of the tower. In addition, the rolling surf of Waikīkī will be expressed through new pool water features.
- **Sidewalk & Paving** - Private walkways will be developed with patterned and/or textured paving materials to provide a sense of scale and rhythm appropriate to the surrounding buildings. Public walkways will be constructed to match the existing sidewalks on Kalākaua Avenue.
- **Signage** - Kyo-ya has not designed the proposed signs for the Diamond Head Tower, however, the proposed signs will meet LUO requirements. The signage will be designed to contribute to the sense of place and will not dominate the facade. If illuminated, the lighting will comply with the WSD guidelines.
- **Lighting** – The lighting for the Diamond Head Tower will be utilized to contribute to public safety and to enhance the nighttime ambiance of the outdoor recreational and open space areas on the property. Outdoor lighting will be subdued or shielded so as not to provide spillage onto surrounding properties or public rights-of-way.

7.5.3 Urban Design Controls

7.5.3.1 Waikīkī Gateways and Fort DeRussy

Neither development is situated near any of the five Waikīkī Gateways nor are they situated near Fort DeRussy.

7.5.3.2 Major Streets

Kalākaua Avenue is identified as a Major Street in the WSD Design Guidelines. Due to the enlarged plaza at the Princess Ka'iulani and increase in front yards, the proposed design will improve pedestrian flow and offer visual relief for motorists. Landscaping and shading trees will be located to accentuate the tropical outdoor experience.

7.5.3.3 Waikīkī Promenade

The Princess Ka'iulani renovation is not situated along the Waikīkī Promenade.

The Diamond Head Tower is situated along the Waikīkī Promenade and the area fronting the promenade will be planted with coconut palms and will include a private recreational area and swimming pool, consistent with the recommended open space intended for areas fronting on the promenade.

7.5.3.4 Coastal Height Setback

The Princess Ka'iulani renovation is not located near the shoreline; therefore it is not subject to a coastal height setback.

The Diamond Head Tower development is located near the shoreline, but due to the relatively narrow shape of the lot and the proposal to reorient the building in a mauka-makai direction, Kyo-ya will be seeking a coastal height setback variance.

In order to mitigate the impact of the coastal height setback encroachment, Kyo-ya has been and continues to be in discussion with the DLNR to participate in the DLNR's beach nourishment program (sand replenishment) for the littoral cell extending between Kūhiō Beach and the Royal Hawaiian Hotel (including the area fronting the Diamond Head Tower). Such participation would involve providing up to $500,000 in funding to help pay for the construction costs associated with this program, which funds would be disbursed upon the DLNR's completion of certain milestone events. Upon completion of such program, it is anticipated that the beach fronting the Diamond Head Tower would be extended seaward by approximately 40-feet. This would be a significant benefit to residents and visitors.

7.5.3.5 Mini Parks

Though not adjacent to the Princess Ka'iulani Park, various cultural and educational programs and design elements of the Princess Ka'iulani renovation will make cultural ties to the mini park located across Ka'iulani Avenue and inspire visitors and guests to visit the park. The large public open space along the street frontages will offer some of the same benefits as the existing mini parks. Kyo-ya is proposing improved public access from Kalākaua Avenue to Waikīkī Beach on the Diamond Head side of the Diamond Head Tower. In addition, Kyo-ya plans to provide public surfboard racks on site.

7.5.3.6 Significant Public Views

The Princess Ka'iulani renovation will not impact the significant views that are identified in the WSD Design Guidelines and Section 9.80-3(a) of the LUO.

The Diamond Head Tower development will not impact the significant views that are identified in the WSD Design Guidelines and Section 9.80-3(a) of the LUO. Views of the ocean along Kalākaua Avenue will be improved significantly by replacing the existing building with one that is oriented in the mauka-makai direction. This orientation of the building will allow public view corridors from Kalākaua Avenue on both Diamond Head and 'Ewa sides of the building.

7.5.3.7 Public Pedestrian Access

The Princess Ka'iulani site does not have any existing public access points.

The Diamond Head Tower site does not have any existing public access points. Kyo-ya proposes a new public, pedestrian access from Kalakaua Avenue to Waikiki Beach on the Diamond Head side of the site, significantly improving public pedestrian access to the beach.

7.5.3.8 Historic Structures, Significant Sites and Landmarks

The Princess Ka'iulani and the Diamond Head Tower are not listed as historic, however, based on discussions with the DLNR, Kyo-ya has provided Historic American Buildings Surveys for both sites with plans to mitigate the loss of these structures (See Appendix 2).

The Banyan Wing of the Moana Surfrider Hotel is recognized on the National Register of Historic Places.. The Banyan Wing is currently negatively impacted by the existing Diamond Head Tower because of its proximity. The proposed redevelopment of the Diamond Head Tower will have a positive impact by providing separation and relief between the new tower, the Banyan Wing. This separation will allow the historic façade to be visible from the public thoroughfare at Kalākaua Avenue. Based on consultation with SHPD, Kyo-ya plans to enhance the historical and cultural displays at the historic Banyan Wing.

7.6 LIST OF NECESSARY APPROVALS

The Projects will require acceptance of the Final EIS. The following is a preliminary list of the anticipated permits, approvals and reviews that are required prior to construction of the Projects. To date, only the sewer connection permits for both the Princess Ka'iulani and Diamond Head Tower have been approved.

7.6.1 Princess Ka'iulani

The Princess Ka'iulani redevelopment will require the following governmental permits or approvals:

7.6.1.1 City and County of Honolulu

- PD-R permit
- WSD permit, Major
- Surface encroachment variance
- Subdivision for pedestrian easement
- Park dedication
- Construction dewatering permit
- CUP for off-site parking
- Building permits
- Flood study
- Trenching permit
- Grading permit
- Drain connection
- Sewer connection
- Street usage
- Construction plan approval

7.6.1.2 State of Hawaii

- NPDES permit
- Construction noise permit
- Industrial wastewater discharge permit

7.6.2 Diamond Head Tower

The Diamond Head Tower redevelopment will require the following governmental permits or approvals:

7.6.2.1 City and County of Honolulu

- PD-R permit
- WSD permit, Major
- Zoning variance
- SMA use permit
- Shoreline setback variance
- Surface encroachment variance
- Park dedication
- Construction dewatering permit
- CUP for off-site parking
- Building permits
- Flood study
- Trenching permit
- Grading permit
- Drain connection
- Sewer connection
- Street usage
- Construction plan approval

7.6.2.2 State of Hawaii

- NPDES permit (For construction activities and possibly for construction dewatering.)
- Construction noise permit
- Industrial Wastewater Discharge

7.6.3 Deep Well Cooling System

The deep well cooling system will require the following governmental permits or approvals:

7.6.3.1 Source Well - State Commission on Water Resource Management

- Well construction permit
- Pump installation permit
- Water use permit

7.6.3.2 Injection Well – State DOH

- Underground injection control permit

7.6.3.3 Well Construction – State DOH

- Construction noise permit
- NPDES permit
- Treated processed wastewater associated with well drilling activities
- Building permits
- Trenching permit
- Grading permit
- Effluent discharge permit into the City MS4 (Municipal Separate Storm Sewer System)

8. PROBABLE IMPACT

8.1 IMPACTS OF THE NATURAL OR HUMAN ENVIRONMENT ON THE PROJECT

Perhaps the most significant impact of the natural or human environment on the Projects will be the impact of the shoreline and the Banyan Wing on the Diamond Head Tower project.

As noted elsewhere herein, the Diamond Head Tower is adjacent to the historic Banyan Wing of the Moana Surfrider Hotel. Based on the allowable floor area, Kyo-ya could develop a new, 304,260 square foot tower at the site of the Banyan Wing that meets all of the LUO, WSD and PD-R requirements. Rather than removing this historic structure to allow for a higher density tower, Kyo-ya has elected to redevelop the Diamond Head Tower, a tower that does not have a historic designation or such significance in the history of Waikīkī. No site in Waikīkī other than the Diamond Head Tower shares a TMK with a historic structure with allowable density. The Diamond Head Tower site is also among the narrowest parcels of land along Waikīkī Beach. The narrowness of this parcel is exacerbated, in part, by the absence of the substantial beach which was to have been built by the State under the terms of that certain Surfrider-Royal Hawaiian Sector Beach Agreement, dated as of May 28, 1965, and recorded in the Bureau of Conveyances in Liber 5219, Page 181 (the "1965 Beach Agreement").

Under the 1965 Beach Agreement between the State of Hawai'i and the owners of certain beach front parcels from the Moana Surfrider Hotel through and including the Royal Hawaiian Hotel, the State committed to do, among other things, the following (the quoted terms used below have the definitions ascribed thereto in the 1965 Beach Agreement):

- Use best efforts to construct the beach seaward of "Line B" in the "SurfRider-Royal Hawaiian Sector" in accordance with the "Cooperative Project";
- Protect and preserve all existing beach between "Line A" and "Line B" from any diminution whatsoever as a result of any work in connection with the Cooperative Project; and
- Maintain and keep all public beach seaward of Line B and also the area between Lines A and B subject to a public easement in a neat and sanitary condition. (See Figure 49)

In consideration of the State's commitment to fulfill the tasks described above, the owners of the subject beach front properties agreed to, among other things, bring their respective beach areas between Lines A and B up to finished grade of and equivalent quality to the beach constructed by the State seaward of Line B. However, the contemplated beach was never constructed by the State, and as a result the owners were never able to bring their respective beach areas between Lines A and B up to the finished grade of the State's contemplated beach. Had the beach been constructed by the State, as contemplated by the 1965 Beach Agreement, it is likely that the beach fronting the Diamond Head

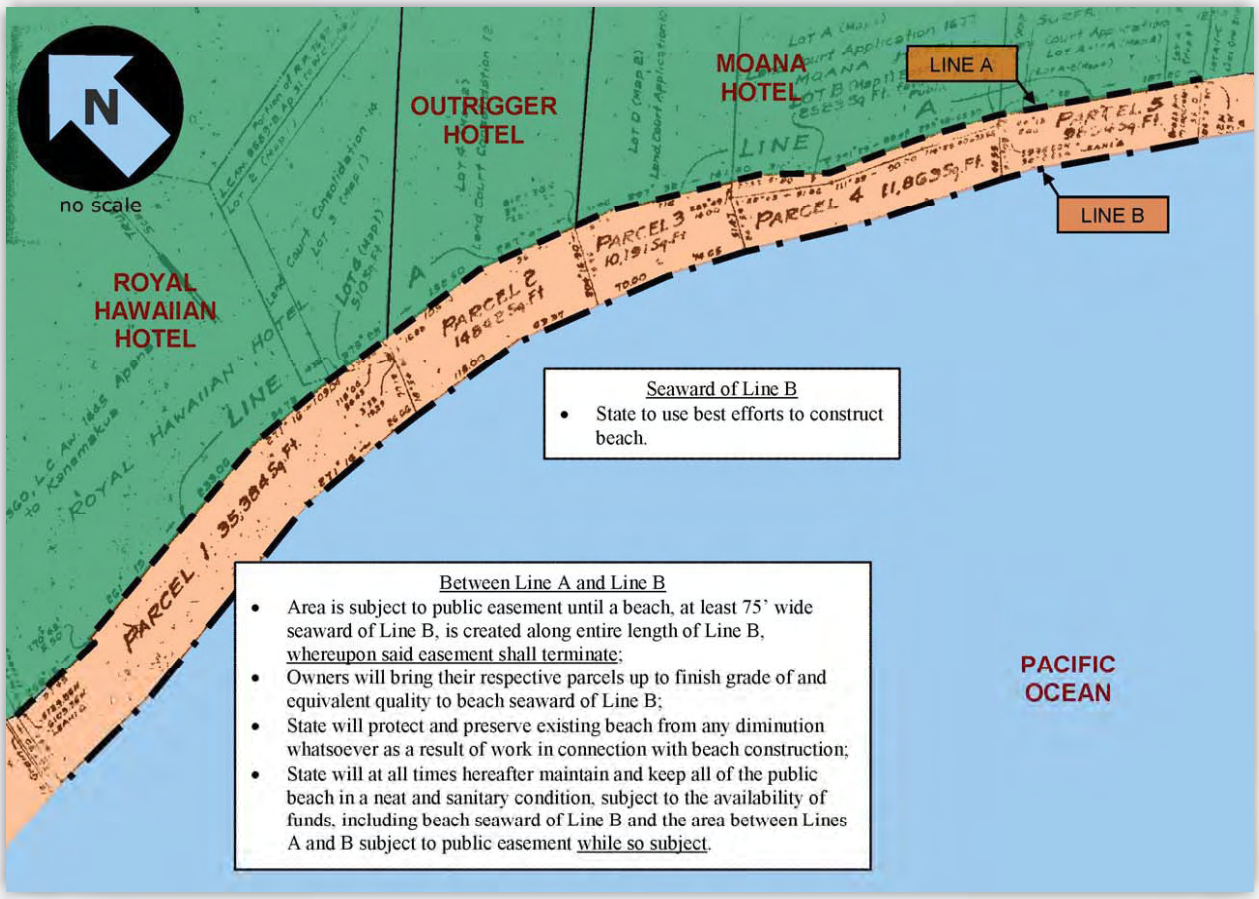


FIGURE 49: SURFRIDER-ROYAL HAWAIIAN BEACH SECTOR BEACH AGREEMENT

Tower site would be approximately 180 feet wider than it is today. This, in turn, would have had a profound impact on the location of the certified shoreline, perhaps moving it more than 180 feet more seaward than where it is likely to be located today.

8.2 DIRECT AND INDIRECT IMPACTS

The renovation and redevelopment of the Princess Ka'iulani will include the renovation of the existing 666-rooms in the 'Āinahau Tower, and the replacement of 474 existing hotel rooms (in the existing Princess and Ka'iulani Towers) with 210 condo-hotel suites and 61 residences. The redevelopment of the Diamond Head Tower will include the replacement of 141 existing hotel rooms with 185 new hotels rooms and the addition of 40 residences. The Projects will result in a net decrease of 430 hotel units, an increase of 210 condo-hotel units, and an increase of 101 residences. Based on the reduction in unit count of the combined Projects, it is anticipated that there will not be a significant impact to the surrounding environment.

8.2.1 Princess Ka'iulani

Kyo-ya plans to renovate the existing 666-room 'Āinahau Tower and replace the rest of the existing structures on the site with a new podium level development, that will include retail, food and beverage establishments, lobbies for the hotels and residences, an auto court, lounges and bars, swimming pools and recreation decks, fitness centers, ballrooms, meeting rooms, a boardroom, restrooms, kitchens, back of house services, parking (four levels, including a basement level), a loading area, mechanical rooms, receiving and storage and other uses.

Kyo-ya plans to develop a new hotel and residential tower, the Pīkake Tower. The tower will consist of 271 units, approximately 210 condo-hotel suites and approximately 61 residences (the precise mix of units could be modified based on the demand at time of construction and some of the planned residences could be used as condo-hotel suites). Two of the existing hotel towers (Princess and Ka'iulani Towers), retail structures, an existing parking garage and other structures on the site will be demolished. The net result will be a 264 unit reduction in the number of hotel units and 61 new residences. The existing 36,386 square feet (approximately 27,212 square feet of retail space and 9,174 square feet of food and beverage) of commercial area will be replaced with about 83,000 square feet of retail space and eating and drinking establishments.

The current floor area on the Princess Ka'iulani site is about 680,865 square feet. The proposal would increase the total amount of floor area to about 840,000 square feet. The proposed increase in floor area will accommodate larger individual condo-hotel suites and new residences, as well as a significant increase in commercial and retail space. This increase will upgrade the units from those previously on the property and will enhance the availability of quality lodging facilities for tourists and residents.

The public benefits of the Princess Ka'iulani redevelopment are discussed in Section 8.3 of this Draft EIS. The public benefits serve to mitigate the proposed increases in height and floor area at the site The public benefits include enhanced and greater public open space; improved view corridors; improved traffic and circulation; and a greater attention to a Hawaiian sense of place.

The Princess Ka'iulani site provides adequate space for staging of construction materials and activities. The closure of a lane on Kalākaua Avenue is not expected to be required due to the extensive setbacks along Kalākaua Avenue that will provide adequate staging during the majority of the construction period. Some of the infrastructure work (sewers) along Kalākaua Avenue may require closure of at least one lane of Kalākaua Avenue for two to three months. The extent of any closures of Kalākaua or Ka'iulani Avenues will be determined based on consultation with the construction team and the DPP.

8.2.2 Diamond Head Tower

The new Diamond Head Tower will replace 141 hotel units with 185 hotel units and 40 residences resulting in a net increase of about 84 units. The Diamond Head Tower will also feature approximately 3,000 square feet of retail, and other hotel amenities including food and beverage establishments, lobby bar, and pool areas. In order to minimize impacts of wave run-up and sediment deposition in the area immediately mauka of the existing seawall, Kyo-ya proposes to raise the elevation of the pool area and construct a retaining wall mauka of the existing seawall located next to the beach.

The current floor area of the existing Diamond Head Tower is about 83,253 square feet. The proposed new Diamond Head Tower would increase the total amount of floor area to about 299,072. The proposed increase in floor area will accommodate larger individual hotel units, an increase in the number of hotel units and new residences. The development will result in upgraded hotel and residential units from those previously on the property and will provide significantly improved visitor product in Waikīkī.

The public benefits of the Diamond Head Tower redevelopment are discussed in Section 8.3 of this Draft EIS. The public benefits serve to mitigate the proposed increases in height and floor area at the site. The public benefits include enhanced and greater public open space; improved view corridors, improved traffic and circulation, beach access and public surfboard racks, and greater attention to a Hawaiian sense of place. In addition, Kyo-ya has been and continues to be in discussion with the DLNR to participate in the DLNR's beach nourishment program (sand replenishment) for the littoral cell extending between Kūhiō Beach and the Royal Hawaiian Hotel (including the area fronting the Diamond Head Tower). Upon completion of such program, it is anticipated that the beach fronting the Diamond Head Tower would be extended seaward by approximately 40-feet.

Construction is expected to take between two to three years. The area planned for the motor court, the large low-rise arrival pavilion, and the beach setback area will provide space for staging of construction materials and activities for the tower. Temporary closure of a lane along Kalākaua Avenue may be required during a portion of the construction of the Diamond Head Tower. Some of the infrastructure work (sewers) along Kalākaua Avenue and Ka'iulani Avenue may require closure of at least one lane of Kalākaua Avenue for two to three months (the Kalākaua Avenue closure has also been mentioned in the Princess Ka'iulani construction impacts). The extent of any closures of Kalākaua or Ka'iulani avenues will be determined based on consultation with the construction team and the DPP. The limits of work along Kalākaua Avenue during the demolition and construction phases will impact the service of the Express and Ferry buses currently running in the right lane of Kalākaua Avenue. The closure of any lanes on Kalākaua Avenue will require a street usage permit from DPP.

8.3 GENERAL PUBLIC BENEFITS

The Projects offer a multitude of public benefits as discussed below:

8.3.1 Economic Infusion

The Projects will provide a needed boost to the economy of Hawai'i in what is projected to be one of the most severe recessions in recent history. Unemployment rates have increased to historically high levels on O'ahu, visitor arrivals have decreased significantly both domestically and internationally, and construction activity has declined. Based on the Projects, Kyo-ya stands ready to infuse approximately $700 million to stimulate construction and improve two major visitor facilities in Waikīkī. The investment will stimulate short and long-term employment and generate increased visitor spending and State and City tax revenues.

8.3.1.1 Princess Ka'iulani

John M. Knox & Associates completed its socioeconomic analysis for the Princess Ka'iulani project on June 3, 2009. A summary of the analysis is provided below, and the socioeconomic analysis is provided in its entirety in Appendix 10.

- The Princess Ka'iulani construction period will create nearly 2,400 person-years of employment on O'ahu. It will generate $193 million in personal earning and inject $92 million into the O'ahu economy. The one negative effect – lost net revenues to local government, due to temporarily reduced taxes during construction – will be quickly made up by increased revenues when the renovated properties re-open.
- Economic benefits will be driven by increased visitor spending from an increase in retail and food and beverage facilities and a more upscale market, as well as higher property tax revenues from both the more valuable visitor aspects and also from premium residential units. On-site jobs will increase by 295. Total O'ahu jobs (including off-site jobs from total visitor expenditures) will increase by about 569; annual earnings by $15 million; and economic activity by nearly $26 million.
- Additionally, annual net revenues for both City and State governments will increase (by about $3.1 million a year for the City and $3.9 million for the State) when operations begin, rapidly making up for lost revenue during the construction phase. Thus, over the ten years following construction, the City government will receive about $31 million more, and the State $39 million more, on a cumulative basis than without the project.

8.3.1.2 Diamond Head Tower

John M. Knox & Associates completed its socioeconomic analysis for the Proposed Diamond Head Tower project on June 3, 2009. A summary of the analysis is provided below, and the socioeconomic analysis is provided in its entirety in Appendix 11.

- The Diamond Head Tower construction period will create nearly 1,000 person-years of employment on O'ahu. It will generate $91 million in personal earnings and inject nearly $47 million into the O'ahu economy. The one negative effect – lost net revenues to local government, due to temporarily reduced taxes during constructions – will be quickly made up by increased revenues when the renovated properties re-open.

- Economic benefits will be driven by increased visitor spending from an increase in retail and food and beverage facilities and a more upscale market, as well as higher property tax revenues from both the more valuable visitor aspects and also from premium residential units. On-site jobs will increase by 114. Total O'ahu jobs will increase by about 935; annual earnings by $24 million; and economic activity by $36 million.

- Additionally, annual net revenues for both City and State governments will increase (by more than $3 million a year for the City and $900,000 for the State) when operations begin, rapidly making up for lost revenue during the construction phase. Thus, over the ten years following construction, the City governments will receive about $30 million more, and the State $9 million more, on a cumulative basis than without the project.

8.3.1.3 Cumulative Impact

John M. Knox & Associates completed its socioeconomic analysis for the combined Princess Ka'iulani and Diamond Head Tower projects on June 3, 2009. A summary of this analysis is provided below, and the socioeconomic analysis is provided in its entirety in Appendix 12.

- The Princess Ka'iulani and Diamond Head Tower construction periods will create nearly 3,400 person-years of employment on O'ahu. They will generate $284 million in personal earning and inject nearly $140 million into the O'ahu economy. The one negative effect – lost governmental net revenues, due to temporarily reduced taxes – will be quickly made up by increased revenues when the renovated properties re-open.

- Economic benefits will be driven by increased visitor spending from a more upscale market, as well as higher property tax revenues from both the more valuable visitor aspects and also from premium residential units (taxed at hotel rather than residential rates). Total O'ahu jobs will increase by about 1,500; annual earnings by $39 million; and economic activity by more than $62 million.

- Tax revenues will be generated in the short-term by the construction of the Projects, and in the long-term by the projected long-term employment opportunities associated with the operation and maintenance of the new hotel units, commercial and retail businesses, as well as with the condo-hotel and residences.

- Both the State and the City will enjoy a higher level of annual net revenues from the properties than at present – nearly $6.2 million more per year for the City and

$4.7 million for the State. Because of this, for the two projects combined, net government revenue lost in construction will have been made up for the City by 2016 and for the State by 2019. After these dates, both levels of government will have higher levels of revenues after costs than at the present time. Over the ten years following construction, the City will receive about $62 million more, and the State $47 million more, on a cumulative basis than without the projects.

8.3.2 Sustainable Strategies

The redevelopment proposes to incorporate the application of LEED standards and strategies, to the extent economically feasible, to achieve sustainable site, utilities and building development. The green principles and strategies currently being considered for the project include the following:

- Develop an erosion and sedimentation control plan;
- Promote alternative transportation by providing secure bicycle storage and locker room facilities;
- Explore alternatives for energy savings related to building cooling and hot water generation;
- Reduce water usage through use of high efficiency plumbing fixtures;
- Energy Star rated appliances;
- High performance glazing;
- Lighting control systems that reduce light usage;
- Design spaces with views to the exterior and options for natural ventilation;
- Create and implement a Green education program for employees and guests;
- Develop a solid waste management plan during construction and operations; and
- Explore reuse and recycling of demolished materials.
- In conjunction with the Projects, Kyo-ya plans to explore the feasibility of developing a deep well cooling system for the Projects and the remaining buildings at the Moana Surfrider Hotel. The proposed cooling systems will significantly reduce energy demand, water consumption and emissions of carbon in the environment. Additional details about this program are provided in Section 4.2.3.5 of this Draft EIS.

8.3.3 Waikīkī Special District - Princess Ka'iulani

The Princess Ka'iulani development achieves several of the key objectives of the WSD LUO and result in demonstrable contributions benefitting the community and the stability, function and overall ambiance of Waikīkī. The following are the anticipated public benefits:

8.3.3.1 Enhanced Public Open Space

The proposed development of the Princess Ka'iulani will result in additional public open space that is usable and visible to the public and that creates visual relief from neighboring buildings. The public open space will increase from approximately 5,310 square feet to 29,163 square feet (a 449% increase in public open space). Although the overall open space (public and private open space) will slightly decrease from 47,925 square feet to 44,452 square feet (a 7% decrease), the majority of this open space has been moved to the landscaped public promenades along Kalākaua Avenue and Ka'iulani Avenue. This resulting area, combined with the open area from property line to edge of curb creates an environment that allows expansive walkways with extensive landscaping. These publicly accessible open space provisions are an important component of this proposed redevelopment, a marked improvement over the existing open space that is located internally on the property. (See Figure 50). A portion of this open space may be dedicated to public use as part of the WSD Permit and/or as part of Kyo-ya's park dedication requirements.

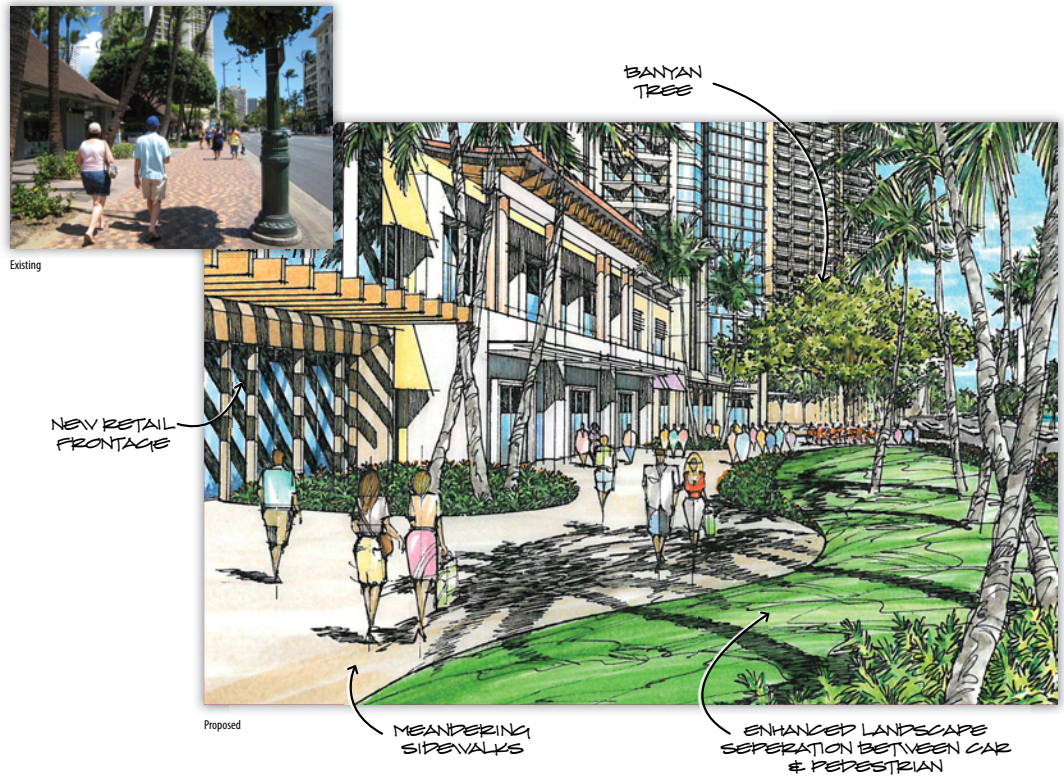


FIGURE 50: PRINCESS KA'IULANI PROPOSED RETAIL PROMENADE (BEFORE/AFTER)

The setback along Kalākaua Avenue will increase from an average of approximately 14 feet to approximately 51 feet. The Kalākaua Avenue setbacks will far exceed the requirement of 20 feet. The setback along Ka'iulani Avenue will increase from distances as narrow as 5 feet, to approximately 24 feet. The Ka'iulani Avenue setbacks will far exceed the requirement of 15 feet. These extended setback areas will be part of the increased public open space provided on the property. This significant increase in public open space and landscaping along this major thoroughfare will greatly enhance the pedestrian experience through Waikīkī by providing relief from the urban forms that congest the street level experience in Waikīkī.

Elevated areas that are not subject to open space calculations are expected to improve views of the project from the elevated areas of neighboring properties. These open air decks or 'visual open spaces', will be used for pedestrian and vehicular access, recreation, pool, outdoor dining, and will use a combination of hardscape, landscape and water features that reduce the visual impact of the development. Functions such as service and loading areas that are currently visible, will occur at covered or shielded areas.

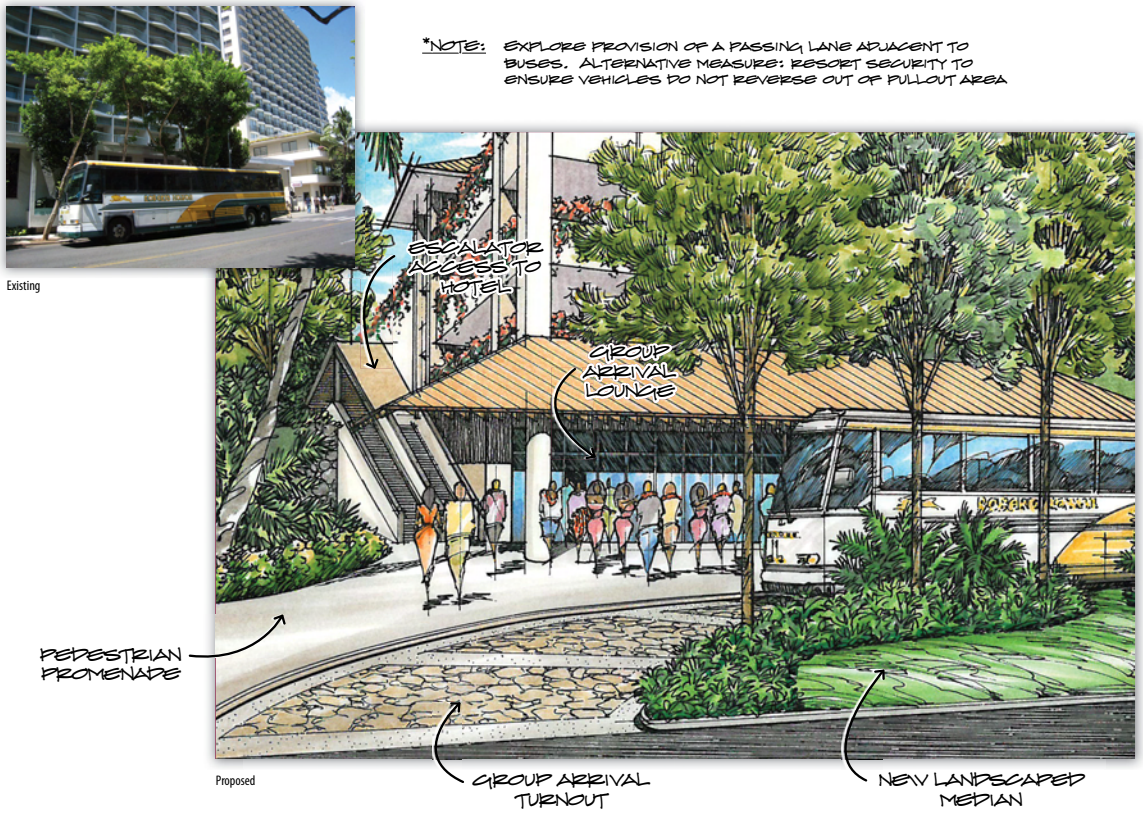


FIGURE 51: PRINCESS KA'IULANI PROPOSED GROUP ARRIVAL (BEFORE/AFTER)

8.3.3.2 Improved View Corridors

The proposed orientation of the new Pīkake Tower will be in the "mauka-makai" direction (the long axis of the building aligned "mauka-makai") as recommended in the WSD Guidelines. The existing Princess Tower is oriented in an "'Ewa-Diamond Head" direction. The replacement of the Princess Tower with the Pīkake Tower will improve view planes for neighboring properties at the tower level (See Figures 52 & 53).

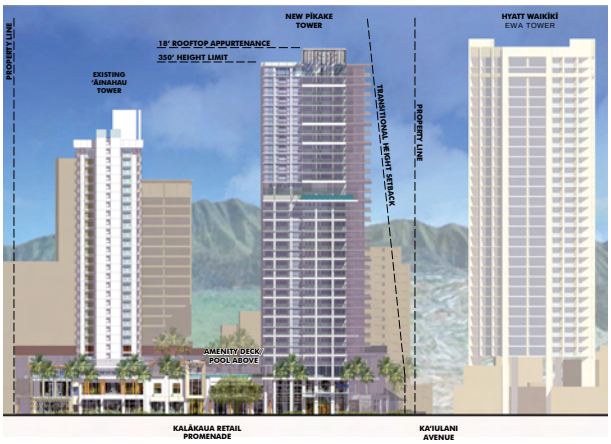


FIGURE 52: PRINCESS KA'IULANI KALAKAUA ELEVATION

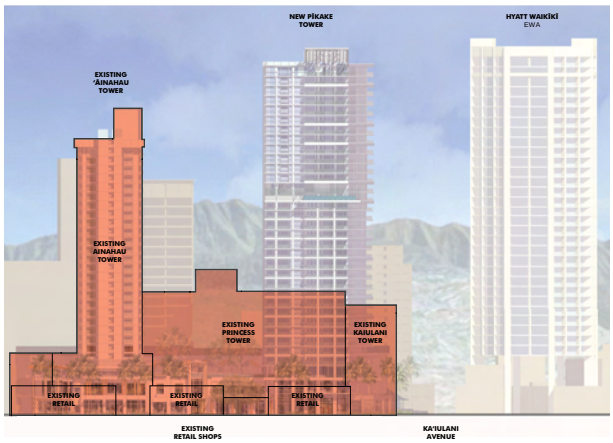


FIGURE 53: PRINCESS KA'IULANI KALAKAUA ELEVATION (EXIST. OVERLAY)

8.3.3.3 Improved Traffic and Circulation

The proposed raised auto court and dedicated bus loading for the property will reduce congestion along Ka'iulani Avenue by providing on-site stacking of automobiles and buses, as opposed to the on-street stacking that occurs today. A new access point to the parking structure will be provided off the new auto court. This access will allow guests and valet parking to enter the garage without having to exit the property onto Ka'iulani Avenue, thereby reducing traffic on Ka'iulani Avenue.

8.3.3.4 Hawaiian Sense of Place

The renovated and redeveloped Princess Ka'iulani will significantly enhance the "Hawaiian Sense of Place" of the area. Cognizant and respectful of the area's history, special features, and past inhabitants, the project will look to celebrate and reinterpret many important and iconic elements throughout its design.

For assistance and guidance, the project has convened a Cultural Focus Group, led by Peter Apo, consisting of respected cultural historians and practitioners with roots in Waikīkī. Through extensive interaction, many important features and references have been identified for inclusion in the project.

Water elements will be seen throughout the property and reflect on Waikīkī (spouting water), the expansive lo'i and 'Āpuakēhau Stream that were all past components of the

area's landscape. New and enhanced landscaping will look to incorporate both native plant species and introduced - many of whom were brought to the island by the Princess's father Archibald Cleghorn including two of note, the Pīkake (Chinese jasmine) and the Banyan tree. An existing banyan on the Kalākaua Avenue retail promenade will be retained, pending evaluation, as a reminder of the tree that once served as a place of gathering for the community and of respite for the Princess on the property. Additionally as further reference to 'Āinahau, a palm lined entry drive and motor court will provide a stately entrance to the property.

The architectural character of the new structures and building elements will also look to incorporate many cultural and historical references through abstract contemporary expressions. The concept of "duality" has been explored for architectural interpretation, while physical elements such as the Princess's hats and gowns, lei and jewelry, as well as her favorite flower (Chinese jasmine) and bird (peacock), both known as "pīkake" in Hawaiian, have served as sources of inspiration and guidance.

Also of note and as recommended by the Cultural Focus Group, the project will include programmed space at the arrival level for a "Legacy Library" to serve as a place that exhibits the legacy arts and artifacts of the Princess and house a curator driven immersion program for the property.

8.3.3.5 Improved and Expanded Landscaping

The proposed development incorporates extensive landscape improvements along Kalākaua and Ka'iulani Avenues. The existing landscaping is limited to several coconut trees, planter boxes and a small Banyan Tree on Kalākaua Avenue. A landscaped buffer will separate the pedestrian promenade from both Kalākaua and Ka'iulani Avenues. The landscaped area will have a more natural appearance with the addition of both native and tropical plant species, as well as coconut trees, in a partially graded area. Kyo-ya plans to either maintain the existing banyan tree located on the makai side of Kalākaua Avenue or introduce a new banyan tree along Kalākaua Avenue.

8.3.4 Waikīkī Special District - Diamond Head Tower

The Diamond Head Tower redevelopment also provides anticipated public benefits, including some which meet key objectives of the WSD Guidelines:

8.3.4.1 Beach Nourishment

Kyo-ya proposes to provide up to $500,000 for the DLNR's beach nourishment program, as discussed in Section 2.4.

8.3.4.2 Enhanced Public Open Space

The site plan for the Diamond Head Tower replacement will provide additional public open space that is usable and allows better accessibility for the public. The public open space will significantly increase from approximately 3,223 square feet to 8,069 square feet (a 150% increase in public open space). The open space will be increase from 58,575 square feet to 61,547 square feet (a 5% increase). This open space will be primarily maintained along Kalākaua Avenue allowing it to be visually combined with the open area from property line to edge of curb. This creates an environment that allows expanded walkways with landscaping, providing relief from the view, sound and noise as well as provide public safety from Waikīkī's main thoroughfare. The visual open space at the pedestrian level of Kalākaua Avenue is improved with a mauka-makai oriented building footprint which creates relief in the massing, and brings open area into the auto court with a visual link through to the beach. (See Figure 54)

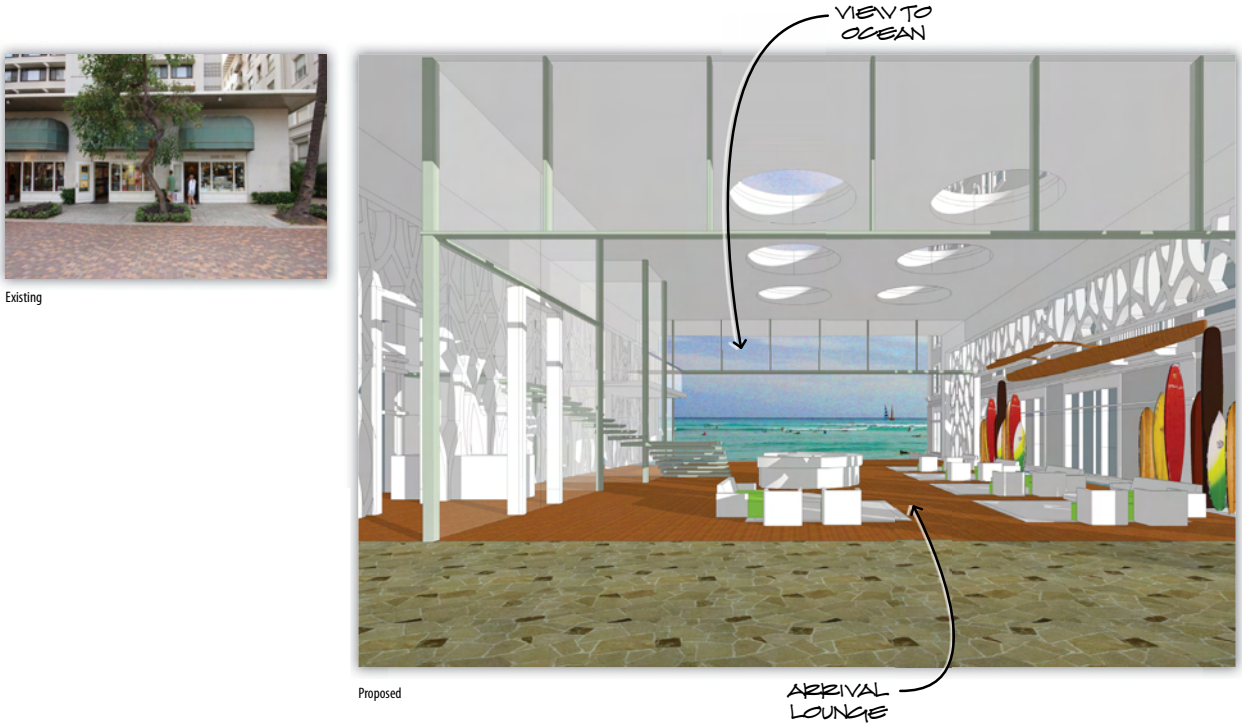


FIGURE 54: DIAMOND HEAD TOWER PROPOSED AUTO COURT (BEFORE/AFTER)

This significant increase in public open space will be achieved by increasing the setbacks along Kalākaua Avenue and the Diamond Head side of the lot, as well as by incorporating a public access corridor, and public surfboard racks on the site. The setback along Kalākaua Avenue will increase from an average of approximately 14 feet to approximately 28 feet. The Kalākaua setbacks will far exceed the requirement of 20 feet. The setback on the Diamond Head side of the lot will increase from 0 feet to a range of 11 to 25 feet.

8.3.4.3 Improved View Corridors

The proposed orientation of the new Diamond Head Tower will be in the "mauka-makai" direction as recommended in the WSD Guidelines, as opposed to the "'Ewa-Diamond Head" orientation of the existing Diamond Head Tower. Ground level view corridors will be greatly enhanced by the mauka-makai orientation of the tower and the open spaces incorporated at the ground level. This tower will provide ocean views for the public not available with the existing Diamond Head Tower or anywhere along Kalākaua Avenue from Kūhiō Beach to Fort DeRussy.

View planes from properties mauka will be improved at the tower level, although the additional height of the new tower will impact views above the height of the existing Diamond Head Tower. Views from the selected rooms on the lower two thirds of the 'Ewa Tower of the Hyatt Regency Waikīkī will be impacted by the Diamond Head Tower; however, because of the narrow profile of the Diamond Head Tower and the octagonal design of the Hyatt, all rooms on the makai side of the Hyatt will retain at least partial ocean views.

8.3.4.4 Improved Traffic and Circulation

The proposed auto court for the property will reduce congestion along Kalākaua Avenue by relocating the drop off for the existing Diamond Head Tower from the Moana Surfrider Hotel auto court to this new auto court. This will help spread the drop off area over two locations and provide off-street drop off and queuing space at the new auto court.

8.3.4.5 New Public Open Space and Surfboard Racks

Kyo-ya intends to provide additional public surfboard racks on the Diamond Head Tower site. Kyo-ya plans to manage the leasing of the surfboard racks and make them available to the general public. This concept has been discussed with staff at the Department of Enterprise Services.

8.3.4.6 Hawaiian Sense of Place

The renovated and redeveloped Diamond Head Tower will significantly enhance the "Hawaiian Sense of Place" of the area. Cognizant and respectful of the area's history, special features, and past inhabitants, the project will look to celebrate and reinterpret many important and iconic elements throughout its design.

For assistance and guidance, the project has convened a Cultural Focus Group, led by Peter Apo, consisting of respected cultural historians and practitioners with roots in Waikīkī. Through extensive interaction, many important features and references have been identified for inclusion in the project.

Located on legendary Waikīkī Beach, the redeveloped property aspires to capture the spirit of the ocean and its sporting history. Surfing and fishing, paddling and navigation, will be celebrated through the creation of new physical and visual access, while the "beach boy" culture will be captured and celebrated in the look, feel and operation of the hotel.

The architectural character of the new structures and building elements will also look to incorporate many cultural and historical references through abstract contemporary expressions. Obvious references to historic shape of a classic longboard is evident in the building's tower component, while other physical elements such as canoes and fishing implements, waves and coral, etc. have served as sources of inspiration and guidance.

Also of note and as recommended by the Cultural Focus Group, the project will look to include an environmental graphic on the Mauka face of the building as public art. Reinforcing the Mauka to Makai visual corridor opened through the proposed redevelopment, the proposed relief pattern on the building will look to express the rich diverse elements of the Waikīkī ahupua'a through abstract representations.

8.4 DEMOGRAPHIC IMPACTS

8.4.1 Residential Population

The Projects include the development of 101 total residences. The other components of the Projects include a combination of condo-hotel suites or traditional hotel units; the occupancy of these units is expected to consist primarily of transient vacationers. As a result, any increases to the residential population would be the result of the 101 residences (61 in the Princess Ka'iulani and 40 in the Diamond Head Tower). Based on DPP standards for dwellings in Waikīkī, the average household size is estimated at 1.72 which translates to an increase of about 174 residents on the properties (105 at the Princess Ka'iulani and 69 at the Diamond Head Tower). The population increase may be less than a typical 101 unit multi-family development, since a certain percentage of buyers may be transient owners and second home or vacation home buyers.

8.4.2 Visitor Population

The Projects will result in a net decrease in the number of hotel units, and could result in a slight decrease in the visitor population. The full build out of both the Princess Ka'iulani and Diamond Head Tower projects is planned to result in a decrease of approximately 430 hotel

units, an increase of 210 condo-hotel suites and an increase of 101 residences. The new 185-room hotel at the Diamond Head Tower, the renovated 666-room ʻĀinahau Tower and the 210 condo-hotel suites in the Pīkake Tower will be operated as hotel inventory and will consist of a total of 1,055 accommodations for transient use. These units will represent significant improvements over the existing facilities. While there will be a net reduction in the total number of hotel units, the larger higher end units should minimize the reduction in both room revenues and per diem spending by visitors at the two properties. The larger, condo-hotel suites will also accommodate more visitors than the traditional hotel units and will attract families and extended-stay guests.

8.4.3 Character or Culture of the Neighborhood

The Projects will conform to the character of the existing neighborhood and the surrounding resort and mixed-use developments. These developments will replace and upgrade the existing resort and commercial uses that currently occupy the respective project sites.

8.5 HOUSING IMPACTS

The Princess Kaʻiulani Project will result in 61 new residential units and the Diamond Head Tower will result in 40 new residential units. These new units may result in an increase to the residential population in the Waikīkī area. Based on DPP standards for dwellings in Waikīkī, the average household size is estimated at 1.72 which translates to an increase of about 174 residents on the properties (105 at the Princess Kaʻiulani and 69 at the Diamond Head Tower). Based on the DPP's "Annual Report on the Status of Land Use on Oʻahu, Fiscal Year 2007", the Year 2000 population for the PUC is approximately 419,300 which is approximately 47.9% of the Year 2000 island-wide population. Although the 419,300 population Figure is slightly over the 46% General Plan Benchmark for 2025, the DPP projects that the PUC percentage of the island wide population will be 44.7% in 2020 with a projected population of 463,332 and 44.1% in 2025 with a projected population of 475,696. The proposed 101 residences will provide for some of this projected population increase to the Year 2020. The population increase may be less than a typical 101 unit multi-family development, since a certain percentage of buyers may be transient owners and second home or vacation home buyers. No affordable units are planned for these two Projects.

8.6 PUBLIC SERVICES

8.6.1 Access and Transportation

The "Traffic Impact Report Princess Kaʻiulani Renovation & Diamond Head Tower Redevelopment" prepared by Wilson Okamoto Corporation in April 22, 2009 is summarized in this section and is included in its entirety in Appendix 3.

The existing Princess Ka'iulani Hotel is located on the northwest corner of the intersection of Kalākaua Avenue and Ka'iulani Avenue in Waikīkī. Primary vehicular access to the existing hotel is currently provided via three driveways off Ka'iulani Avenue, two for the auto court and one for the parking garage and loading area.

The Princess Ka'iulani will be accessible from two driveways and a bus pullout off Ka'iulani Avenue. The first driveway connection off Ka'iulani Avenue will be located at the intersection with Koa Avenue. This driveway will be the primary access to the development's auto court and will provide an internal connection to the parking structure. The connection to the parking structure will reduce congestion along Ka'iulani Avenue as hotel guests and valet parking services will no longer need to exit the property to enter the parking structure. The second driveway connection will be located near the existing driveway to the hotel's parking garage at the intersection with Prince Edward Street and Kānekapōlei Street. This driveway will serve as the access point for guests and residents who wish to self-park their vehicles and for access to the loading dock.

In addition to these two driveways, a bus pullout will be provided along Ka'iulani Avenue to accommodate buses picking up/dropping off guests at the hotel. Kyo-ya will explore provision of a passing lane adjacent to buses that are staged at the pullout. In the event that passing widths and radii are insufficient, resort security will ensure that vehicles do not reverse out of the pullout area.

The existing Moana Surfrider Hotel (which includes the Surfrider Tower, Banyan Wing and the Diamond Head Tower) is located on the south side of Kalākaua Avenue at the intersection of Ka'iulani and Kalākaua Avenues in Waikīkī on the island of O'ahu. Primary vehicular access to the existing hotel is currently provided via three driveways off Kalākaua Avenue, two for the auto court fronting the Moana Surfrider Hotel and one for the loading dock located at the Surfrider Tower.

The new Diamond Head Tower plans include a proposed auto court dedicated to the Diamond Head Tower. The auto court will be located on the southeast side of the intersection of Kalākaua Avenue and Ka'iulani Avenue. This new connection will require modifications to the existing traffic signal operation at the intersection of Kalākaua Avenue and Ka'iulani Avenue (the proposed modifications have been discussed with the Department of Transportation Services). The new auto court will relieve congestion at the existing auto court at the Moana Surfrider and reduce the queuing of automobiles that periodically occurs along Kalākaua Avenue.

In summary, Wilson Okamoto Corporation has confirmed to Kyo-ya that based upon distribution figures, the volume of right-turning vehicles from Kuhio Avenue on to Kanekapolei Street is expected to remain similar to existing conditions, while the volume of left-turning

vehicles from Kalakaua Avenue to Kaiulani Avenue is expected to decrease with the proposed renovation of the Princess Kaiulani Hotel and development of the Diamond Head Tower. The planned reduction of hotel rooms at the Moana Surfrider Hotel complex is expected to result in a decrease in vehicles utilizing the valet functions fronting the Banyan Wing. Consequently, the volume of vehicles turning left from Kalakaua Avenue to Kaiulani Avenue is expected to decrease as valet-related trips to the parking garage at the Princess Kaiulani Hotel decrease. Site-generated vehicles associated with the proposed Diamond Head Tower will be able to directly cross Kalakaua Avenue to access Kaiulani Avenue and the Princess Kaiulani Hotel's parking garage.

8.6.1.1 Area Roadway System

At the southeast corner of the Princess Ka'iulani site, Kalākaua Avenue intersects Ka'iulani Avenue. At this signalized T-intersection, the Kalākaua Avenue approach has three through lanes and one left turn lane. Ka'iulani Avenue originates at Kalākaua Avenue as a two-lane, one-way (northbound) roadway that transitions to a four-lane, two-way roadway at Koa Avenue until Prince Edward Street. At the intersection with Prince Edward Street, Ka'iulani Avenue transitions back to a one-way (northbound) roadway with two lanes between Prince Edward Street and Kūhiō Avenue, and one lane between Kūhiō Avenue and its terminus at Ala Wai Boulevard.

North of the intersection with Kalākaua Avenue, Ka'iulani Avenue intersects Koa Avenue. At this unsignalized intersection, both approaches of Ka'iulani Avenue have two lanes that serve all traffic movements. The east leg of the intersection is comprised of Koa Avenue which is a one-lane, one-way (eastbound) roadway that serves as a connector roadway between Ka'iulani Avenue and Liliuokalani Avenue. The west leg of the intersection is comprised of the entrance to the existing auto court for the Princess Ka'iulani Hotel.

Further north, Ka'iulani Avenue intersects Prince Edward Street and Kānekapōlei Street. At this unsignalized intersection, the Ka'iulani Avenue approach has two northbound lanes that serve all traffic movements. Prince Edward Street is a one-lane, one-way (westbound) roadway that serves as a connector roadway between Ka'iulani Avenue and Liliuokalani Avenue. At the intersection with Ka'iulani Avenue and Kānekapōlei Street, the Prince Edward Street approach has one westbound lane that serves all traffic movements. Kānekapōlei Street originates at this intersection as a four-lane, two-way roadway, transitions to a three-lane roadway north of Kūhiō Avenue, and terminates at Ala Wai Boulevard. At the intersection with Ka'iulani Avenue and Prince Edward Street, the Kānekapōlei Street approach has two southbound lanes that serve all traffic movements. The eastbound approach of the intersection is comprised of the existing driveways for the Princess Ka'iulani Hotel and the adjacent Miramar Hotel. The driveway for the Princess Ka'iulani Hotel is a two-lane, two-way

driveway that leads to the parking structure while the driveway for the Miramar Hotel is a one-lane, one-way (exiting) driveway.

Northeast of the intersection with Prince Edward Street and Kānekapōlei Street, Ka'iulani Avenue intersects Kūhiō Avenue. At this signalized intersection, the Ka'iulani Avenue approach has an exclusive right-turn lane and one through lane. In the vicinity of the project site, Kūhiō Avenue is a predominantly four-lane, two-way roadway. At the intersection with Ka'iulani Avenue, the eastbound approach of Kūhiō Avenue has one through lane and a shared left-turn and through lane while the westbound approach has one through lane and a shared through and right-turn lane.

West of the intersection with Ka'iulani Avenue, Kūhiō Avenue intersects Kānekapōlei Street. At this signalized intersection, the eastbound approach of Kūhiō Avenue has an exclusive left-turn lane, one through lane, and a shared through and right-turn lane while the westbound approach has two lanes that serve all traffic movements. The northbound approach of Kānekapōlei Street has one through lane and a shared left-turn and through lane while the southbound approach has two lanes that serve all traffic movements. Right-turn traffic movements are not permitted on the northbound approach of Kānekapōlei Street.

North of the intersection with Kūhiō Avenue, Kānekapōlei Street intersects Ala Wai Boulevard. At this signalized T-intersection, the Kānekapōlei Street approach has two exclusive left-turn lanes. In the vicinity of the project site, Ala Wai Boulevard is a three-lane, one-way (westbound) roadway with a 24-hour parking lane located on the north side of the roadway. At the intersection with Kānekapōlei Street, the Ala Wai Boulevard has two through lanes and a shared left-turn and through lane.

8.6.1.2 Traffic Impacts

Traffic conditions for the Year 2012 with the Projects and conditions for the Year 2012 without the Projects are summarized in the table below.

Traffic operations with the Projects are expected to remain similar to Year 2012 conditions without the proposed Princess Ka'iulani renovation and Diamond Head Tower development during both peak periods (Weekday PM and Saturday PM). The traffic movements at the study intersection are expected to continue operating at levels of services similar to Year 2012 conditions without the proposed Princess Ka'iulani renovation and Diamond Head Tower development.

Although Year 2012 conditions with the Projects are expected to remain similar to conditions without the Diamond Head Tower, the new tower will be located in a densely developed area with a high volume of pedestrian and vehicular traffic. As such, a TMP

EXISTING AND PROJECTED (WITH AND WITHOUT PROJECTS) LOS TRAFFIC OPERATING CONDITIONS

Intersection	Traffic Movement		Weekday PM			Saturday PM		
			Exist	Year 2012		Exist	Year 2012	
				w/out Proj	w/ Proj		w/out Proj	w/ Proj
Kaiulani Ave/ Koa Ave	EB	LT-TH	-	-	B	-	-	B
	NB	LT-TH-RT	A	A	A	A	A	A
	SB	LT-TH-RT	A	A	A	A	A	A
Kaiulani Ave/ Prince Edward St/ Kanekapolei St	EB	LT-TH-RT	B	B	B	C	C	B
	WB	LT-TH-RT	A	A	A	A	A	A
	NB	LT-TH-RT	A	A	A	A	A	A
	SB	LT-TH-RT	A	A	A	A	A	A
Kaiulani Ave/ Kuhio Ave	EB	LT-TH	B	B	B	B	B	B
	WB	TH-RT	A	B	B	B	B	B
	NB	TH	C	C	C	C	C	C
		RT	C	C	C	C	C	C
Kanekapolei St/ Kuhio Ave	EB	LT	B	B	B	B	B	B
		TH-RT	B	B	B	B	B	B
	WB	LT-TH-RT	B	B	B	B	B	B
	NB	LT-TH	C	C	C	C	C	C
	SB	LT-TH-RT	C	C	C	C	C	C
Kanekapolei St/ Ala Wai Blvd	WB	LT-TH	A	A	A	A	A	A
	NB	LT	C	C	C	C	C	C

FIGURE 55: EXISTING AND PROJECTED LOS TRAFFIC OPERATING CONIDITIONS

that is coordinated or combined with the management plans associated with other hotels in the vicinity (Moana Surfrider) is recommended for the proposed project to minimize conflicts with traffic associated with the new tower.

8.6.1.3 Traffic Mitigation Measures

Based on the analysis of the traffic data, the following are the recommendations associated with the implementation of the proposed redevelopment of the Princess Ka'iulani Hotel:

- Maintain sufficient sight distance for motorists to safely enter and exit all driveways for the Princess Ka'iulani Hotel.
- Provide adequate on-site loading and off-loading service areas at the Princess Ka'iulani Hotel and prohibit off-site loading operations.
- Provide adequate turn-around area for service, delivery, and refuse collection vehicles at the Princess Ka'iulani Hotel to maneuver on the project site to avoid vehicle-reversing maneuvers onto City and County of Honolulu roadways.

- Provide sufficient turning radii at all driveways for the Princess Ka'iulani Hotel to avoid or minimize vehicle encroachments to oncoming traffic lanes.
- Align the southern project driveway for the Princess Ka'iulani Hotel along Ka'iulani Avenue with Koa Avenue to minimize conflicts between turning vehicles.
- Align the northern project driveway for the Princess Ka'iulani Hotel along Ka'iulani Avenue with Prince Edward Street to minimize conflicts between turning vehicles.
- If access to the parking structure for the Princess Ka'iulani Hotel via the northern driveway connection is controlled (i.e., automatic gate, etc.), provide sufficient storage for entering vehicles.
- Prepare a Traffic Management Plan (TMP) for the Princess Ka'iulani Hotel that is coordinated or combined with the management plans associated with other hotels in the vicnity (i.e. Moana Surfrider Hotel). The TMP should include traffic circulation, parking, loading and traffic demand management strategies.
- Prepare a Construction Management Plan (CMP) for the Princess Ka'iulani Hotel which includes discussions regarding the anticipated construction schedule and phasing, as well as, traffic circulation, traffic control, and parking during the construction period.

Based on the analysis of the traffic data, the following are the recommendations of this study associated with the implementation of the proposed development at the Diamond Head Tower:

- Provide sufficient sight distance for motorists to safely enter and exit the driveway for the Diamond Head Tower.
- Maintain adequate on-site loading and off-loading service areas at the Moana Surfrider Hotel for the Diamond Head Tower and prohibit off-site loading operations.
- Maintain adequate turn-around area for service, delivery, and refuse collection vehicles to maneuver at the Moana Surfrider Hotel for the Diamond Head Tower to avoid vehicle-reversing maneuvers onto City and County of Honolulu roadways.
- Provide sufficient turning radii at the driveway for the Diamond Head Tower to avoid or minimize vehicle encroachments to oncoming traffic lanes.
- Align the driveway for the Diamond Head Tower along Kalākaua Avenue with Ka'iulani Avenue to allow direct access to the Princess Ka'iulani Hotel's garage for valet functions.
- Prepare a Traffic Management Plan (TMP) for the Diamond Head Tower that is coordinated or combined with the management plans associated with other hotels in the vicnity (i.e. Moana Surfrider Hotel and Princess Ka'iulani Hotel). The TMP should include traffic circulation, parking, loading and traffic demand management strategies.

- Prepare a Construction Management Plan (CMP) for the Princess Ka'iulani Hotel which includes discussions regarding the anticipated construction schedule and phasing, as well as, traffic circulation, traffic control, and parking during the construction period.

With the applicant's planned implementation of the aforementioned recommendations, the Projects are not expected to have a significant impact on traffic operations in the project vicinity.

Based on traffic related concerns presented by the DPP in their review of the EIS Preparation Notice, and meetings with DPP staff, the applicant provides the following commitments:

- The applicant plans to provide pedestrian connections through the site to adjacent properties where appropriate. Kyo-ya plans to place stairways and an elevator between the 'Ewa/makai corner of the Princess Ka'iulani site and the Diamond Head/makai corner of the International Market Place, for access to the hotels public amenities. The applicant plans to explore the possibility of connecting the redeveloped second floor lobby of the 'Āinahau Tower to the second floor of the International Market Place, and will pursue a dialog with the owner of the International Market Place in that regard. Connection to the Miramar Hotel and Ohana East Hotels are not feasible or practical, given the location of the access drive easement separating these developments and the nature of the existing developments.
- The new Diamond Head Tower will provide a public, pedestrian access through the property to the beach and plans to provide public surfboard racks to provide easier access to surfing in Waikīkī. The Diamond Head Tower will also provide for pedestrian access to the Banyan Wing of the Moana Hotel.
- Kyo-ya will eliminate the driveway curb cuts for the auto court at the Princess Ka'iulani and will incorporate them into the driveways for the entry drive and parking entry to minimize the number of pedestrian/vehicle conflicts. Kyo-ya will create two curb cuts for the proposed bus loading zone on Ka'iulani Avenue; however, by rerouting the City sidewalk onto the Princess Ka'iulani property and creating a landscaped island on the City right-of-way, there should be no pedestrian/bus conflicts at the curb cuts. The centerline of the entry drive will be aligned directly across Koa Avenue.
- Kyo-ya will design and maintain the landscaping on the approach to traffic signals and driveways such that it does not obstruct vehicular site lines.
- The applicant will provide a CMP, which outlines both a construction schedule and interim parking plan to support the parking loads of the Moana Surfrider Hotel complex during construction of the Princess Ka'iulani Redevelopment, in addition to during and after the construction of the new Diamond Head Tower facility. Kyo-

ya's traffic consultant, Wilson Okamoto Corporation, conducted field investigations of the Princess Ka'iulani parking garage and the Sheraton Waikīkī Hotel parking garage in February 2009. The purpose of this investigation was to understand (i) the parking demands on the Princess Ka'iulani Hotel parking garage associated with the Princess Ka'iulani Hotel and the Moana Surfrider Hotel complex, including demands created by hotel guests and by Kyo-ya employees, (ii) the parking demands on the Sheraton Waikīkī Hotel parking garage, which serves both the Sheraton Waikiki Hotel and the Royal Hawaiian Hotel (both owned by Kyo-ya), and (iii) the feasibility of utilizing the Sheraton Waikīkī Hotel parking garage for the guest-related vehicles from the Moana Surfrider Hotel complex between the time the existing the Princess Ka'iulani Hotel parking garage is demolished and the time the new Princess Ka'iulani Hotel parking garage is completed and operational. A copy of their report is attached as Appendix 4. In short, Wilson Okamoto Corporation concluded that the Sheraton Waikīkī Hotel parking garage has a sufficient number of parking stalls to accommodate all of the anticipated guest-related vehicles from the Moana Surfrider Hotel complex and some of the Kyo-ya employee-related vehicles during this period, provided (a) valets utilize self-parking stalls when valet stalls are filled, and (b) employee parking at the Sheraton Waikīkī Hotel parking garage is reduced by approximately 25%. Kyo-ya intends to pursue the Wilson Okamoto Corporation recommendation of achieving this 25% reduction by arranging for one or more off-site parking locations for Kyo-ya employees in or near Waikīkī, with a shuttle service to be provided by Kyo-ya. The details of the parking arrangements will be set forth in the CMP, which will be submitted to the DPP prior to the issuance of any demolition permit for the Princess Ka'iulani Hotel parking garage.

- The Waikīkī Extension of the Honolulu High Capacity Transit Corridor Project transit line is proposed to be one-half block mauka of the Princess Ka'iulani Hotel along Kuhio Avenue. The nearest stations will be five blocks 'Ewa and three blocks Diamond Head of Ka'iulani Avenue and will provide efficient and time saving commutes for hotel employees of the Projects and the Moana Surfrider Hotel.

- Kyo-ya will design the auto court driveway with a modified curb return to provide the appearance of a street rather than driveway on Kalākaua Avenue to encourage pedestrians to observe and comply with traffic signals. Kyo-ya will look into detectable warnings that can be used to ensure that blind pedestrians will know that there is a "roadway" at the auto court entry.

- The sidewalk will be designed to meander around the bus pullout area to provide a continuous pedestrian path uninterrupted by bus staging functions. Landscaping will be provided within the island that occurs on the Ka'iulani Avenue side of the bus pullout to discourage pedestrian use of this area as a sidewalk. Space for staging of two buses is planned and will not affect the new sidewalk area. The traffic consultant surveyed bus use along Ka'iulani Avenue and determined that the two bus spaces with enforcement and management would accommodate the demand for buses related to the Princess Ka'iulani Hotel complex.

8.6.2 Water

The Princess Ka'iulani, Moana Surfrider Hotel, and Royal Hawaiian hotels share a single potable water system owned and maintained by Kyo-ya. The Kyo-ya water system is supplied from a private well and from the BWS municipal system. The Kyo-ya water system consists of a well (identified as Public Water System No. 330) located in the Kaimukī area, with a maximum allowed capacity of 336,000 gallons per day. Potable water is conveyed to Waikīki through a private pipeline located in easements across numerous properties. The well is operated by Kyo-ya with oversight by the BWS and DLNR.

The municipal system in the vicinity of the hotel consists of 8-inch, 12-inch, and 16-inch domestic water lines. The 8-inch water line runs along Kalākaua Avenue, fronting the Moana Surfrider Hotel, transitions to a 16-inch water line just east of Ka'iulani Avenue. A 12-inch water line running along Ka'iulani Avenue connects to the 16-inch water line along Kalākaua Avenue at the street intersection.

The Kyo-ya water system maintains two 6-inch diameter potable water service connections as well as one 6-inch diameter fire service connection to the BWS system along Ka'iulani Avenue. The individual commercial retail spaces located along Ka'iulani and Kalākaua avenues connect to the BWS system, typically with a 3/4-inch diameter service lateral.

The estimated water consumption for the renovated Princess Ka'iulani property, based on BWS consumption guidelines, is 340,000 gallons per day, a decrease of 65,000 gallons per day from an estimated existing consumption of 405,000 gallons per day. No impacts to the existing water system are expected as a net decrease in consumption is anticipated with the redevelopment. The Diamond Head Tower development is expected to increase water consumption by 34,000 gallons per day. The BWS indicated in a letter dated December 11, 2008 that the existing water system is "…presently adequate to accommodate the proposed development." A final commitment will be determined at the time the building permit application is submitted to the City DPP. No impacts to the existing water system are expected as a result of the Diamond Head Tower development. The net result of the Projects is a reduction in water consumption of 31,000 gallons per day. Off-site improvements are expected to be minor, limited to the removal of existing water meters serving the individual retail spaces and cutting and plugging of service laterals at the mains within Kalākaua Avenue and Ka'iulani Street. This work is a routine construction activity, overseen by the City through the trenching permit program.

The BWS in reviewing the EISPN commented that the existing water system is presently adequate to accommodate the proposed development; that Kyo-ya will be required to pay the Water System Facilities Charges for resource development, transmission and daily storage, when water is made available; on-site fire protection requirements should be coordinated with

the Fire Prevention Bureau of the HFD; and that the proposed project is subject to BWS cross-connection control and backflow prevention requirements prior to issuance of the building permit application. Kyo-ya agrees to comply with these requirements and recommendations. The BWS comments are provided in their entirety in Appendix 19.

8.6.3 Wastewater

The project area sewers consist of an interconnected network of gravity sewers located in Kalākaua Avenue, Kūhiō Avenue, Kānekapōlei Place, Ala Wai Boulevard, and Lewers Street. Pipe sizes range between 8-inch and 48-inch in diameter. The gravity sewers ultimately discharge to the Beachwalk Sewage Pump Station located in the Kai'olu Street municipal parking lot. The Beachwalk Sewage Pump Station pumps raw sewage via a 42-inch diameter force main to the Ala Moana Sewage Pump Station at Ala Moana Beach Park. The City recently completed rehabilitation of the 42-inch force main and announced plans to install a new 72-inch diameter force main connecting the two sewage pump stations, scheduled for completion in 2012.

The City is in the process of upgrading other area sewers. Improvements to the sewer main along Ala Wai Boulevard and the mauka end of Lewers Street have been planned for some time; however, this work is indefinitely deferred. The City is proceeding with a plan to improve the Lewers Street lines makai of Kūhiō Avenue in the near term which may include increasing capacity to the benefit of the Projects. Construction of the Lewers Street and Kūhiō Avenue improvements is scheduled for the 2011 to 2013 time frame.

The Princess Ka'iulani property has 15 sewer lateral connections to the 8-inch diameter Kalākaua Avenue and 10-inch diameter Ka'iulani Avenue sewers. These laterals serve the various commercial retail and hotel spaces. Two sewer lateral connections to the 8-inch diameter Kalākaua Avenue sewer provide service to the Diamond Head Tower.

The City sewers along Kalākaua Avenue, Kānekapōlei Street, Ala Wai Boulevard and Lewers Street are inadequate to support any increase in flow. If developed together, the resulting sewage generation is proposed to be proportioned, limiting discharge to the Ka'iulani sewer to less than existing discharge rates. The balance of the sewage is proposed to be discharged to Kūhiō Avenue.

The DPP has approved two sewer connection permit applications, for the Project. These sewer connection application approvals (See Appendix 5) requires Kyo-ya to upgrade the existing 8-inch diameter sewer main serving the Diamond Head Tower, located at the intersection of Ka'iulani and Kalākaua Avenues to accommodate the increase in sewage flow from the Project and to connect certain portions of the Princess Ka'iulani redevelopment directly to the existing 18-inch sewer line on Kūhiō Avenue. Possible routes for direct connection to Kūhiō Avenue

include a new public sewer line along Ka'iulani Avenue or a private line in easements across private property. Kyo-ya is reviewing these two options for a private line to redirect certain flows directly to the sewer line in Kūhiō Avenue. Kyo-ya will ensure that all new and renovated food service establishments will comply with the City's Grease Interceptor Rules.

8.6.4 Drainage and Storm Water Quality

The Waīkīki area generally drains to the Ala Wai Canal via the City underground drain system or directly to the ocean along the beachfront properties. The City storm drain system consists of roadside gutters, catch basins, drain manholes, and drain pipes ranging in size from 12-inch to 66-inch in diameter, located in Kalākaua Avenue, Ka'iulani Avenue, Kānekapōlei Place, and Seaside Avenue.

The Princess Ka'iulani site is situated at a local high point. Runoff generated from the east side, TMK Parcel 2-6-022:001 discharges to Ka'iulani Avenue, either sheet flowing to the roadside gutter or discharging directly to the drain system via a storm drain connection. The west side, TMK Parcel 2-6-022:041, sheet flows to Kalākaua Avenue, and then continues west to the Seaside Avenue drain system. Drainage improvements for the proposed development will maintain the existing drainage patterns and will not increase the volume of runoff discharged to the City drainage facilities. Since the proposed project site is less than 5 acres in size, the applicant will develop a site specific BMP plan to address storm water quality in accordance with Section II – Storm Water Quality of the City's Rules Relating to Storm Drainage Standards.

The majority of surface runoff from the Diamond Head Tower sheet flows to sandy beachfront areas or to internal landscaped and lawn areas. Runoff generated along the Kalākaua Avenue frontage sheet flows to the roadside gutter. Drainage improvements for the proposed development will similarly maintain the existing drainage patterns and will not increase the volume of runoff discharged to the City drainage facilities. Provisions will be made to treat storm water runoff discharging to the City right-of-way in compliance with the City's Storm Water Quality criteria. Since the proposed project site is less than 5 acres in size, the applicant will develop a site specific BMP plan to address storm water quality in accordance with Section II – Storm Water Quality of the City's Rules Relating to Storm Drainage Standards.

The Project is expected to obtain a NPDES Permit for construction activities. Erosion control measures and best management practices required under the NPDES Permit program as well as the ROH will be implemented and will include stabilized gravel access pads, vehicle tire wash down, provisions for concrete truck washout, catch basin inlet filter bags, and sediment/siltation fencing.

Storm water quality measures for the post construction condition will likely include the use of hydrodynamic separators and infiltration in landscaped areas. Runoff from the Diamond Head

Tower will generally be contained on-site and disposed of by percolation in landscaped areas, particularly in the planned beachfront lawn area. Design of the storm drainage system will be integrated with the landscape design to provide areas for storm water infiltration. Provisions for drainage overflow to the beachfront will be made to accommodate extreme storm events. Given the larger landscaped open space and pool area, the property's ability to retain runoff through percolation and free board in the pool should be increased, reducing drainage impacts from the project site.

8.6.5 Solid Waste Disposal

The DES, Refuse Collection and Disposal Division manages solid waste disposal facilities for the Island of O'ahu. There are two City solid waste disposal facilities: the H-POWER refuse to energy plant at Campbell Industrial Park and Waimānalo Gulch Landfill. PVT Land Company operates a privately owned and operated, licensed, solid waste facility for recovery of recyclable materials and disposal of construction and demolition materials. The PVT Landfill accepts wastes on a pre-arranged basis from haulers and contractors registered with them. Waste loads are screened with recyclable materials removed for sale/reuse and the remaining wastes land filled. The capacity of the PVT Landfill as currently licensed is about 20 years, with expansion areas available.

The Princess Ka'iulani hotel contracts its waste management with a private disposal service. The hotel also operates a recycling program targeting bottles, cans, cardboard, paper, cooking oils, and kitchen wet wastes. The Moana Surfrider Hotel has a similar waste management arrangement utilizing a private disposal service and operating a recycling program. Following completion of the Projects, both properties will maintain a waste management system.

The City is currently updating its Integrated Solid Waste Management Plan and identifies options for the future of solid waste management. Alternatives being considered include promoting the reduction of waste generation through public outreach, expanding municipal collection of municipal recyclable and green wastes, subsidizing recycling programs for condominiums, expanding the Waimānalo Gulch Landfill, developing a new landfill, expanding the H-POWER plant capacity, and trans-shipping wastes to the mainland.

8.6.6 Public Schools

The Projects are planned to include 101 residential units. While some of the units may be occupied by permanent residents, the majority of the units are anticipated to be owned by second home owners and part-time residents. The Projects are both located in the Kaimukī/Kalani Complex Areas. If there are students residing on either project site, they should be entitled to attend Jefferson Elementary School, Washington Middle School and Kaimukī High School. Based on the State DOE estimates for calculating the demand for student services for

the proposed developments, the proposed 101 residences will add to the student population as follows:

- Elementary (Kindergarten to 5th) - 5 students
- Middle (6th to 8th) - 2 students
- High (9th to 12th) - 2 students

The students generated by this development who elect to attend public schools would attend Jefferson Elementary School, Washington Middle School and Kaimukī High School. The following table provides the capacity, the actual 2008-2009 student enrollment, the projected enrollment for 2012-2013, and the projected student population generated by the proposed Princess Ka'iulani and Moana/Diamond Head Tower developments:

Student Population

School	Capacity	Actual 2008-2009	2012-2013	Project
Jefferson Elementary	674	358	282	6
Washington Middle	1,162	897	878	2
Kaimuki High	1,464	1,204	1,153	2

The student population generated by the proposed development can easily be accommodated by all three schools, based on the DOE projected enrollments in 2012-2013. The DOE has commented (See Appendix 19) on the EISPN that they have no specific concern as it appears that our plans would have little or no impact on the schools serving the area.

8.6.7 Parks

As indicated in the plans provided in Appendix 1, recreational amenities at the Princess Ka'iulani site will include 3 recreation decks with swimming pools, sunning decks, pool cabanas and fitness centers. At the Diamond Head Tower, recreational amenities will include 2 swimming pools, fitness areas, jacuzzi, additional public open space and public surfboard racks. Direct access to the public beach will also be provided on the site. The Projects result in a net reduction in the number of hotel units and a net increase in the number of residential units. Accordingly, the Projects are not anticipated to have a significant impact on the existing parks or recreational facilities in the surrounding neighborhood. Furthermore, it is likely that the Projects visitors and residents will use the recreational amenities that are provided on site.

There are a variety of recreational opportunities located near the project site. These include Waikīkī Beach, the Ala Wai Golf Course, Kapi'olani Park and the Honolulu Zoo. These facilities will provide additional recreational opportunities for the visitors and/or residents of the Project.

The DPR commented on the EISPN that they would like to meet to discuss the specifics on how Kyo-ya proposes to meet park dedication requirements. The DDC in comments on the EISPN recommended that Kyo-ya confer with the DPP, the DPR and the DDC regarding the preferred means to meet park dedication requirements. Kyo-ya has met with these three departments to discuss the preferred means to meet the park dedication requirements of the City and presented their plan for park dedication at both the Princess Ka'iulani and the Diamond Head Tower. These plans were well received by the DPR and DDC and meet park dedication requirements. The comment letters from the DPR and the DDC are included in Appendix 19.

8.6.8 Police

The nearest police station is located at the Waikīkī Beach Center (Police Sub-Station), adjacent to the Diamond Head Tower. Because the Projects represent redevelopment of existing uses in generally the same location, it is not anticipated that the proposals will significantly impact police facilities or operations. The Honolulu Police Department commented on the EISPN that the project should have no significant impact on the facilities or operations of the Honolulu Police Department. Their comments are included in Appendix 19.

8.6.9 Fire

The Waikīkī Fire Station (Station 7) is located approximately 1 mile away from the project site on Kapahulu Avenue. The HFD commented on the EISPN that the Projects will need to provide; a fire apparatus access road, according to code; a water supply approved by the county to meet required fire flow for fire protection; on-site fire hydrants and mains capable of supplying the required fire flow; and for submission of civil and construction drawings to HFD for review and approval. Their comments are included in Appendix 19.

8.6.10 Utilities

8.6.10.1 Electricity

HECO has existing power lines serving this area including the two project sites and Kyo-ya will coordinate these projects with HECO to ensure that the power lines will be adequate to support both the Projects and that HECO facilities are not adversely impacted. Because the proposed uses of each site are similar to the existing uses of each site, the demand for electrical service is not anticipated to change significantly. HECO in commenting on the EISPN (See Appendix 19) noted that they have no objections at this time; that should they may have existing facilities/easements on the redevelopment site or on public right-of-ways that may be affected by the redevelopment or construction and have asked that two sets of pre-final plans be submitted for their review with any affected HECO facilities noted; and that any relocation of their facili-

ties should be coordinated with them and that costs associated with relocation will be borne by Kyo-ya. Kyo-ya understands HECO's requirements and will comply.

Kyo-ya is exploring a variety of energy saving measures and plans to incorporate some of them into the proposed Projects. Kyo-ya is also exploring the possibility of incorporating LEED standards and strategies, to the extent economically feasible. LEED is a certification program and nationally accepted benchmarks for design, construction and operation of high performance green buildings. Kyo-ya is also exploring the feasibility of developing a deep well cooling system for the Projects to provide cool water in a heat exchange process for the cooling/air-conditioning systems. Such a cooling system would significantly reduce energy demand and the dependence on imported of fossil fuels. Additionally, Kyo-ya plans to elevate all emergency generators above flood and tsunami elevation levels.

8.6.10.2 Telephone

Hawaiian Telcom currently serves the project sites and has existing utility service lines in the area. It is expected that these existing lines will continue to be used to service the project sites. Kyo-ya will coordinate with Hawaiian Telcom to determine if new lines will be required. No off-site work is expected.

8.6.10.3 Cable/Satellite Television and High-speed Internet Access

Cable/Satellite television and high-speed internet access service is currently provided to the hotel rooms located at both of the project sites. It is anticipated that these services will continue to be provided.

8.7 ENVIRONMENTAL IMPACTS

8.7.1 Historical and Archaeological Resources

8.7.1.1 Archaeological Inventory Survey - Princess Ka'iulani

CSH prepared the "Archaeological Inventory Survey Report for the Proposed Princess Ka'iulani Redevelopment Project" dated July 2009. A summary of the report is provided below. The entire report is provided in Appendix 13.

Reference	Archaeological Inventory Survey Report for the Princess Ka'iulani Redevelopment Project, Waikīkī Ahupua'a, Kona District, O'ahu, TMK: [1] 2-6-022:001 and 041 (Runyon et al. 2009).
Date	July 2009.
Project Number (s)	Cultural Surveys Hawai'i (CSH) job code WAIKĪKĪ 34.

Investigation Permit Number	The fieldwork component of the archaeological inventory survey was carried out under archaeological permit number 09-20 issued to CSH by the Hawai'i State Historic Preservation Division/Department of Land and Natural Resources (SHPD/DLNR), per Hawai'i Administrative Rules (HAR) Chapter 13-282.
Project Location	The project area is bounded by the Miramar Waikīkī and Outrigger East on the north (mauka side), Kalākaua Avenue on the south (makai side), Ka'iulani Avenue to the east and the International Market Place to the west. It is depicted on the 1998 USGS 7.5 Minute Series topographic map, Honolulu Quadrangle.
Land Jurisdiction	Private; Kyo-ya.
Agencies	SHPD/DLNR.
Project Description	The proposed project involves redevelopment of the subject property which includes demolition of portions of the existing Princess Ka'iulani hotel and retail buildings, amenity features and parking garage; construction of a new condominium tower; renovation of the existing 'Āinahau Tower; construction of amenity and arrival areas; construction of new retail space and a new parking garage.
Historic Preservation Regulatory Context	The report was written to fulfill the requirements of Hawai'i Administrative Rules Chapter 13-13-276. The archaeological inventory survey report was prepared to support the proposed property's historic preservation review and is intended for review and approval by SHPD/DLNR.
Project Acreage	The redevelopment project area (TMK: [1] 2-6-022:001 and 041), is approximately 4.16 acres. Redevelopment is anticipated to impact approximately 1 acre of relatively intact substrate.
Area of Potential Effect (APE)	For the purposes of the archaeological inventory survey report, the APE is understood to be the entire 4.16-acre redevelopment project area.
Fieldwork Effort	The fieldwork component of the archaeological inventory survey was accomplished between March 23 and April 20, 2009

by eight CSH archaeologists, Rosanna Runyon, B.A., Douglas Thurman, B.A., Trevor Yucha, B.S., Constance O'Hare, B.A., Michelle Pammer, B.A., Darienne Dey, B.A., Jon Tulchin, B.A., and Todd Tulchin, B.S. under the general supervision of Hallett H. Hammatt, PhD (principal investigator). The fieldwork required approximately 32 person-days to complete.

An archaeological inventory survey plan (Yucha and Hammatt 2009) was prepared and was a basis of consultation with the SHPD and O'ahu Island Burial Council. Project-related fieldwork was carried out per the sampling provisions of the project's inventory survey plan.

The fieldwork included two phases of supplementary testing. Upon the discovery of an in situ burial (in Trench F1) a supplementary phase of testing was carried out in the immediate vicinity (test trenches F2, F3 and F4) to better understand the likely density of burials in the vicinity (no other burials were found). In consultation with the SHPD on the results of the archaeological inventory survey a second phase of supplementary testing (trenches N, O and P) was agreed to and carried out within the former Kawaiaha'o Waikīkī branch church and cemetery parcel.

Number of Historic Properties Identified

Three historic properties were identified during this archaeological inventory survey investigation: the former Kawaiaha'o Waikīkī Branch Church and Cemetery parcel (SIHP #50-80-14-7065); an intact cultural layer (SIHP #50-80-14-7066) containing an intact feature with a calibrated radiocarbon date of AD 1725-AD 1815 (46.4% probability), and one in situ human burial (SIHP #50-80-14-7067).

Historic Properties Significance Evaluations

Three historic properties:

SIHP #50-80-14-7065, the former Kawaiaha'o Waikīkī Branch Church and Cemetery parcel is recommended significant under criteria D (likely yields information important in prehistory or history);

SIHP #50-80-14-7066, an intact cultural layer containing charcoal deposits, fire-cracked rock, and cultural deposits is recom-

mended significant under criteria D (likely yields information important in prehistory or history); and

SIHP #50-80-14-7067, a fully extended in situ burial is recommended significant under criteria D (likely yields information important in prehistory or history), however if the burial is determined by SHPD to be a traditional Hawaiian burial then it is recommended as significant under criteria E (for traditional cultural significance to an ethnic group).

Effect Recommendation

The proposed project will affect historic properties. CSH's project specific effect recommendation is "effect, with agreed upon mitigation measures."

Mitigation Recommendation

The inventory survey investigation determined the project area has a high potential of containing significant subsurface deposits including intact cultural deposits and/or burials. In addition, there is a possibility of encountering additional isolated and disarticulated skeletal elements within the former Kawaiaha'o Waikīkī Branch Church and Cemetery parcel (SIHP #50-80-14-7065) located in the southeast corner of the project area.

A Data Recovery program is recommended to be conducted concurrent with the demolition phase of the proposed construction project in order to further document the extent and nature of the specific intact cultural layer (SIHP #50-80-14-7066) located in the southern portion of the project area near Kalākaua Avenue as geographically defined within this report. The specifics of the data recovery work will be specified within a Data Recovery Plan for the review and approval of the SHPD prior to demolition.

It is recommended that an archaeological monitoring program be carried out during subsurface demolition and construction-related ground disturbance and that a qualified archaeologist be present during all subsurface work associated with the project area. It is further recommended that the pace and nature of the excavation work within the former Kawaiaha'o Waikīkī Branch Church and Cemetery parcel (SIHP #50-80-14-7065) be under archaeologist control so that, with slower digging and

excavation in layers (within sediments likely to contain human skeletal remains), to facilitate thorough recovery of any human skeletal remains. The specifics of the monitoring work will be specified within an Archaeological Monitoring Plan for the review and approval of the SHPD prior to demolition.

It is recommended that following consultation with the State Historic Preservation Division regarding jurisdiction of the human skeletal remains encountered that the project proponents move forward with resolution of treatment as appropriate.

Kyo-ya will agree to implement a Data Recovery program and Archaeological Monitoring Plan for the Princess Kaiulani project.

8.7.1.2 Archaeological Inventory Survey - Diamond Head Tower

CSH prepared the "Archaeological Inventory Survey Report for the Proposed Diamond Head Tower Moana Surfrider Hotel Redevelopment Project" dated June 2009. The Management Summary of the report is provided below. The entire report is provided in Appendix 14.

Reference	Archaeological Inventory Survey Report for the Proposed Diamond Head Tower Redevelopment Project, Waikīkī Ahupua'a, Kona District, O'ahu (Thurman et al. 2009).
Date	June 2009.
Project Number (s)	Cultural Surveys Hawai'i Inc. (CSH) Project Code: WAIKĪKĪ 36.
Investigation Permit Number	The fieldwork for the archaeological inventory survey investigation was carried out under archaeological permit number 09-20 issued by the State of Hawai'i Department of Land and Natural Resources/State Historic Preservation Division (DLNR/SHPD).
Project Location	The proposed project area is bounded by Kalākaua Avenue on the north (mauka side) and the ocean to the south, the Waikīkī police sub-station on the east and the Banyan Wing of the Moana Surfrider on the west.
Land Jurisdiction	Private; Kyo-ya.

Agencies	The inventory survey report was prepared to guide decision-making in advance of the proposed redevelopment work and to be a basis for consultation with the State of Hawai'i Department of Land and Natural Resources/State Historic Preservation Division (SHPD/DLNR) and/or other entities.
Project Description	Demolition and new construction is proposed for the Diamond Head Tower of the Moana Surfrider Hotel.
Project Acreage	The portion of the Diamond Head Tower that is proposed for demolition is understood to be approximately 44,700 square feet or 1.03 acres.
Area of Potential Effect (APE) and Survey Acreage	The Area of Potential Effect is understood as the portion of one parcel (TMK: [1] 2-6-001:012, por.) in which the redevelopment of the Diamond Head Wing may impact cultural deposits.
Historic Preservation Regulatory Context	The report was written to fulfill the requirements of Hawai'i Administrative Rules Chapter 13-13-276. The archaeological inventory survey report was prepared to support the proposed property's historic preservation review and is intended for review and approval by SHPD/DLNR.
Fieldwork Effort	The fieldwork component of the archaeological inventory survey was accomplished between April 13 and April 22, 2009 by four CSH archaeologists, Trevor Yucha, B.S., Douglas Thurman, B.A., Jeff Fong, B.A., Michelle Pammer, B.A., under the general supervision of Hallett H. Hammatt, PhD (principal investigator). The fieldwork required approximately 15 person-days to complete. A total of 8 test trenches encompassing 52 m^2 of the project area's surface were excavated in order to document potential subsurface cultural deposits and stratigraphy.
Number of Historic Properties Identified	Two historic properties were identified; SIHP 50-80-14-7068 an intact cultural layer, with a calibrated radiocarbon date to AD 1801 – AD 1939 (66.1% probability), and SIHP 50-80-14-7069 a historic trash pit dated to the late nineteenth through early twentieth century.

The Banyan Wing of the Moana Surfrider Hotel building is listed on the National and State Registers of Historic Places (SIHP 50-80-14-9901). The Diamond Wing, originally the Surfrider Hotel, is more than 50 years old and therefore must be evaluated prior to demolition for its historic and architectural significance.

Mitigation Recommendation

This inventory survey investigation determined the project area has the potential of containing significant subsurface features including intact cultural deposits, human burials, as well as a possibility of encountering additional isolated and disarticulated human skeletal elements. In order to mitigate potential adverse impact to these as yet unidentified archeological features within the project area, it is recommended that project construction proceed under an archaeological monitoring program (beginning with an archaeological monitoring plan for the review and approval of the SHPD).

Kyo-ya will agree to implement an Archaeological Monitoring Plan for the Diamond Head Tower project.

8.7.1.3 Historic Architectural Resources

Minatoshi Architects Inc. prepared an "Assessment of the Historic Architectural Resources within the Proposed Diamond Head Tower of the Moana Surfrider Hotel and Princess Ka'iulani Hotel Master Plan" in April 2009. A summary and mitigation recommendations of this study are provided below and the study in its entirety is provided in Appendix 2.

- The assessment was written to conform to the mitigation requirements of the Hawai'i State Historic Preservation Officer (LOG NO: 2008.0595 DOC NO: 0804KK27). The State Historic Preservation Officer has determined that Princess Tower of the Princess Ka'iulani Hotel appears to be eligible for listing on the National Register of Historic Places. Thus, the State Historic Preservation Officer has required that those structures of historic significance that will be affected shall be recorded and inventoried using Historic American Building Survey (HABS) level documentation as set forth by the National Park Service. The survey must be directed by a qualified historian, architect, or architectural historian who meets the qualifications set forth in chapter 13-281.
- The Diamond Head Tower of the Moana Surfrider Hotel opened in January 1952, and the Princess Ka'iulani Hotel opened on June 11, 1955, and as such both are

over fifty years old and meet the definition of a historic property as enumerated in Section 6E-2, HRS. As both towers and their associated elements only recently reached the fifty year plateau, they are not included within the Hawai'i State Historic Preservation Office's inventory of historic places, and are also not identified in the City's "WSD Guidelines" among "structures, sites and landmarks" identified by the DLNR as "having scenic, cultural, historic or architectural significance" and "may possess qualities which make them eligible for listing on the register of historic places."

- The 1952 Diamond Head Tower of the Moana Surfrider Hotel has lost some of its integrity, as its guest rooms have been remodeled and the first floor, which once functioned as a lobby, now serves as a corridor and seating area, with the ocean side of the space open to the beach. Originally the building was an autonomous hotel but in 1969, it became a wing of the Moana Surfrider Hotel. Its "Surfrider" name was appropriated and applied to the hotel Kenji Osano constructed on the 'Ewa side of the Moana in 1969. The more recent Surfrider Tower also has been incorporated into the Moana Surfrider Hotel as the Tower Wing, and the entire complex is now named the Moana Surfrider Hotel- a Westin Resort.

- The 1955 Princess Tower of the Princess Ka'iulani Hotel has also gone through a number of changes over the last fifty three years. Major changes include the construction of the Ka'iulani Tower in 1960, designed by Wimberley & Cook, the construction of the 'Āinahau Tower in 1971, designed by Roehrig, Onodera & Kinder, and a major remodeling of the lobby and grounds in 1987. The additions to the hotel retained the design spirit of the original building, and the footprint of the 1955 lobby and grounds is still discernable.

- Both the Princess Tower (original main tower of the Princess Ka'iulani) and the Diamond Head Tower of the Moana Surfrider Hotel were designed by San Francisco architect Gardner Dailey, FAIA (1895-1967). Prior to designing these hotels Dailey had previously worked with Matson on the refurbishment of the Royal Hawaiian, at the conclusion of World War II, and was also involved with the 1954 changes made to the Moana Surfrider Hotel. Dailey and William Wurster are credited with introducing modern architecture to northern California, and are recognized as the prime progenitors of the "Second Bay Tradition," which melded the International Style with local vernacular traditions during the mid-to-late 1930s.

- The character-defining features of the Diamond Head Tower of the Moana Surfrider Hotel that remain intact include:

    - 8-story reinforced concrete structure with its integrated ornament;
    - makai facing guest room lānai and their railings;
    - First story façade facing Kalākaua Avenue;
    - Guest room configuration.

- The character-defining features of the Princess Tower (original main tower of the Princess Ka'iulani) that remain intact include:
    - 11-story reinforced concrete structure;
    - upper story fenestration;
    - "Sky Level" lānai and roof and structural walls of the Robert Louis Stevenson Suite;
    - makai facing guest room lānai and their railings;
    - swimming pool;
    - Terrazzo floor in the entryway and lobby, which is now covered with clay tile and carpet. This includes the compass in the floor of the entry terrace, now covered by carpet, which uses mauka, makai, 'Ewa, and Diamond Head as directionals;
    - Mural depicting the Polynesian voyages executed by Esther Bruton Gilman which graces the rear stairway leading from the 'Āinahau Wing's first and second floors. This was relocated from the no longer extant Kahili Bar.
    - Two buildings along Kalākaua Avenue housing shops;
    - Portrait of Princess Ka'iulani by Lloyd Sexton in the lobby;
    - Stone bench on which Princess Ka'iulani sat, and sacred stone, both in the garden area adjoining the swimming pool;
    - Paintings by Island artists which originally hung in guest rooms, but now are in storage or gracing executive office wing's hallway.
- Several modern additions have been built on to the Princess Ka'iulani's 1955 hotel structure, which are not fifty years old and do not contribute to the historical significance of the hotel. Any alteration to the character of these additions would be considered to have no effect upon the historic character of the building. These are:
    - The Diamond Head Tower, now named the Ka'iulani Tower, which was completed in 1960;
    - Parking Structure, which was completed in 1961;
    - "Āinahau Wing, which was completed in 1971;
    - Auto court, which was remodeled in the 1980s;
    - The guest room interiors which have been remodeled several times over the years; and
    - Lobby's fabric, the result of a 1987 remodeling.

To mitigate effects of the proposed demolition, Minatoshi Architects Inc. recommends that the following mitigation measures shall be explored:

- Photographic documentation according to Historic American Building Survey standards is to be undertaken of the hotel buildings, its shops, and swimming pool area.
- Placing a copy of the floor plans for the Diamond Head Tower of the Moana Surfrider Hotel and the Princess Tower of the Princess Ka'iulani Hotel at an appropriate repository, perhaps the University of California at Berkeley's Environmental Design Archives, which houses the Gardner Dailey collection. Plans selected for archiving should be those that are the oldest and best condition available, preferably the work of the original architect.
- Digitizing select pages of the aforementioned plans for the Diamond Head Tower of the Moana Surfrider Hotel and the Princess Tower of the Princess Ka'iulani Hotel. These digital files should be made accessible to the public and researchers by the Owner.
- Retention and/or reuse of the following elements in the new development: Lloyd Sexton's portrait of Princess Ka'iulani; terrazzo compass in the floor of the entry terrace; Polynesian migration mural by Esther Bruton Gilman, and paintings that initially hung in guest rooms.
- A sacred stone and a stone bench in the garden came from `'Āinahau. Princess Ka'iulani sat upon the bench. Both these features still remain and should be preserved and sensitively incorporated into the new project.
- Development of interpretive displays and/or programs communicating the history of the property, Princess Ka'iulani, and tourism in Waikīkī during the 1950s, and cultural programs perpetuating traditional Hawaiian activities and values."

Kyo-ya will agree to implement the recommend mitigation measures.

8.7.2 Natural Resources

8.7.2.1 Water Resources

There are no potable or surface fresh water resources on either the Princess Ka'iulani or the Moana Surfrider Hotel sites. The Projects are located in Waikīkī, with the Diamond Head Tower being located near the beach. The waters off the south shore of O'ahu, including Waikīkī, are designated Class A by the State DOH. Rules of the State DOH indicate that the purpose of the Class A designation is to protect these waters for recreational use and aesthetic enjoyment.

The water table may be encountered at shallow depths during the excavation phase of construction work. Temporary dewatering may be required at that time. If discharges

are anticipated as a result of the dewatering, a National Pollution Discharge Elimination System Notice of Intent for Discharges with Construction Activity Dewatering will be obtained from the DOH. Because there are no fresh water features on the sites, the Projects are not anticipated to adversely impact these resources. Kyo-ya plans to explore the feasibility of developing a deep well cooling system (a renewable energy technology) to provide cool water for the cooling/air-conditioning system to the Projects and the two remaining buildings at the Moana Surfrider Hotel. Development of this system would require approval of a Water Use Permit from the State Water Commission.

8.7.2.2 Flood Plain Management

According to the FIRM of the City, Panel 370 of 395, Map Number 15003C0370F, dated September 30, 2004, the Princess Ka'iulani site is in Zone A, a special flood hazard area where base flood elevations have not been determined, Zone AE, a special flood hazard area where base flood elevations have been determined, and Zone X, which represent areas determined to be outside of the 500 year flood plain. The same FIRM Panel indicates that the Diamond Head Tower site is in Zone X, Zone A, and Zone AE, with a base flood elevation of 8 feet. Kyo-ya has requested and received on May 24, 2007 a Flood Hazard Analysis determination for the Princess Ka'iulani from the Army Corps of Engineers. The Zone A base flood elevation is 7.8-feet. Kyo-ya also requested and received on April 23, 2009 a Flood Hazard Analysis determination for the Moana Diamond Head Tower from the Army Corps of Engineers. The Zone A base flood elevation is 7.8-feet. These two determinations are included in their entirety in Appendix 8. The Projects will comply with flood hazard requirements. Prior to construction, Kyo-ya will provide a Flood Fringe District Certification to establish the Regulatory Flood Elevation as required by the City. Additionally, Kyo-ya plans to elevate all emergency generators above flood and tsunami elevation levels.

8.7.2.3 Topography and Soils

The Princess Ka'iulani site is located a short distance from Waikīkī Beach, while the Diamond Head Tower site is located on Waikīkī Beach. Both sites are relatively flat with no unique topographic features such as sand dunes or sloped areas. According to the U.S. Department of Agriculture Soil Conservation Service, the natural soil deposits on the site consist of Jaucus sand, calcareous soils developed in wind and water deposited sand from coral and seashells. Slopes for these soils generally range from 0 to 15 percent, but in most places, the slope does not exceed 7 percent.

There are currently basement levels under several of the existing structures on the Princess Ka'iulani site. Kyo-ya proposes excavation of some additional basement areas resulting in the removal of some of the native soils. Top soil and soil amendment will

be imported primarily for the purposes of landscaping. Kyo-ya plans on performing excavation for structural improvements within the existing basement and potential for additional surrounding footings and piles may require additional excavation beyond the existing basement. Kyo-ya may expand the existing basement which may require additional excavation.

During the construction phase, typical construction noises will be audible in the area. The dominant noise sources will probably be construction and earth moving equipment, such as bulldozers and diesel powered trucks. Noise from construction activities are expected to be short term and must comply with State Community Noise Control Rules and a construction noise permit issued by the DOH. In order to mitigate construction noise, the contractor can undertake reasonable and standard practices, such as using mufflers on diesel and gasoline engines, using properly tuned and balanced machines, etc. Following construction and during operations, the Projects are expected to have similar noise levels and characteristics as the existing facilities and uses, however, with a reduction in total units and reductions in trips related to the reduction in units.

8.7.2.4 Air Quality

Air quality in the vicinity of the Projects is mostly affected by air pollutants from motor vehicles. After construction of the Projects, the operational carbon monoxide levels, which are of primary concern among the various air pollutants, are expected to remain relatively unchanged as traffic levels are not anticipated to increase with the proposed net reduction in total units. The proposal will have short-term construction-related impacts on air quality primarily related to fugitive dust and emissions from construction vehicles. Measures to mitigate short-term air quality impacts related to emissions of fugitive dust during construction will include the following (as needed):

- watering active work areas;
- use of dust screens;
- mulching or stabilizing the disturbed areas;
- covering dirt-hauling trucks;
- road cleaning and tire washing; and
- establishing landscaping.

8.7.2.5 Visual Impacts

The proposed structures will be situated in a highly urbanized area surrounded by the following structures which include several high rises as indicated in Figure 56:

FIGURE 56: SURROUNDING BUILDING HEIGHTS

The approximate heights of the following surrounding structures were obtained by Google Earth and/or Sanborn Maps:

- International Marketplace- 25 -35 feet
- Āinahau Tower - 28 stories, 309 feet
- Hyatt Regency Waikīkī - 39 stories, 364 feet
- King's Village – 70 feet
- Waikiki Hana – 72 feet
- Waikiki Paradise – 18 feet
- Outrigger East Hotel - 20 stories 215 feet
- Miramar Hotel - 21 stories, 220 feet
- Royal Hawaiian Shopping Center – 40 feet
- Outrigger Waikiki - 140 feet
- Surfrider Tower - 21 stories, approximately 233 feet

The proposed Pīkake Tower at the Princess Ka'iulani will have a height of 350 feet. The height of the Pīkake Tower will be part of Kyo-ya's request for flexibility with relation to the existing 260-foot height limit for the site, subject to the LUO provisions governing the PD-R approvals within the Resort Mixed Use Precinct. The height of the proposed Pīkake Tower is consistent with the maximum height allowed through PD-R, is within the height characteristics of the area, and is in line with recent PD-R height allowances. The proposed Pīkake Tower is approximately fourteen feet less than the two adjacent Hyatt towers (350' vs. 364') and approximately eighteen feet less than the recently constructed Grand Waikīkīan (350' vs. 368') at the Hilton Hawaiian Village.

The proposed Princess Ka'iulani development will not affect any prominent view corridors and historic properties as identified in Section 21-9.80-3 of the LUO. Public views toward the ocean, mountains and Diamond Head will be substantially unaffected by the proposed development and the project is consistent with the Primary Urban Center development plan policy of preserving public panoramic views of natural landmarks and the urban skyline.

Whereas the long axis of the existing Princess Tower is oriented in a Diamond Head/'Ewa direction, the proposed structure will be oriented along a Mauka/Makai axis as recommended by the WSD guidelines. This will serve to significantly improve public view planes and massing in the Mauka/Makai direction and greatly improve view planes for neighboring properties at or below the existing tower level. While the

additional height of the proposed Pīkake Tower will impact Mauka neighboring properties private views above the height of the existing Princess Tower, greater building separation will allow for new view corridors and enhance visual opportunities.

The proposed Diamond Head Tower will have a height of 282 feet. The height of the tower will be part of Kyo-ya's request for flexibility with relation to the existing 260-foot height limit for the site, subject to the LUO provisions governing the PD-R approvals within the Resort Mixed Use Precinct. Public view corridors will be greatly enhanced by the Mauka/Makai orientation of the tower and the open spaces incorporated at the ground level, as recommended by the WSD guidelines. The proposed Diamond Head Tower will provide ocean views for the public block and not available with the existing building or anywhere along Kalākaua Avenue from Kūhiō Beach to Fort DeRussy.

Private view planes from properties Mauka will be substantially improved at or below the existing tower level. While the additional height of the proposed Diamond Head Tower will impact Mauka neighboring properties private views above the height of the existing building, a more slender building footprint will allow for new view corridors and enhance visual opportunities.

Important view planes in the area of Waikīkī are identified in Section 21-9.80-3. Significant public views as identified in the WSD Design Guidelines, or the Coastal View Study that was published in 1987 by the City & County of Honolulu, will not be impacted by the proposed development.

The following illustrations represent existing conditions and any potential visual impacts from the public or pedestrian level. Additional illustrations are available in Appendix 1. These illustrations represent that views are improved, consistent with, or no worse than existing conditions.

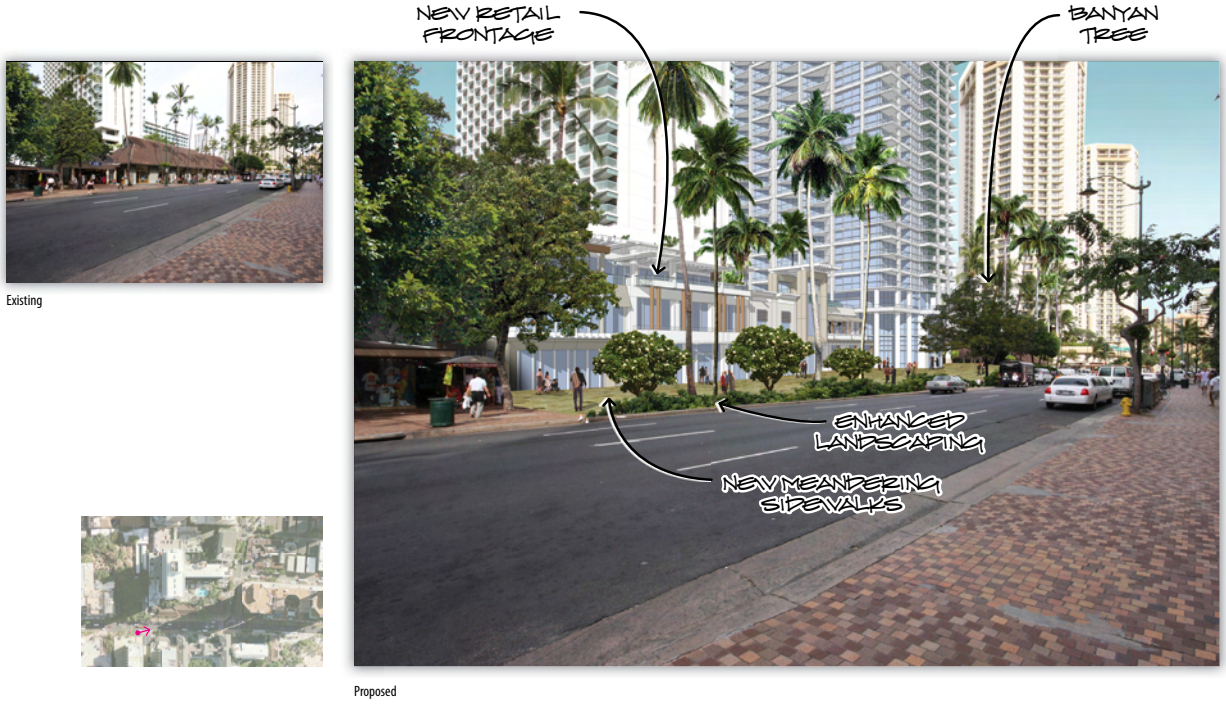
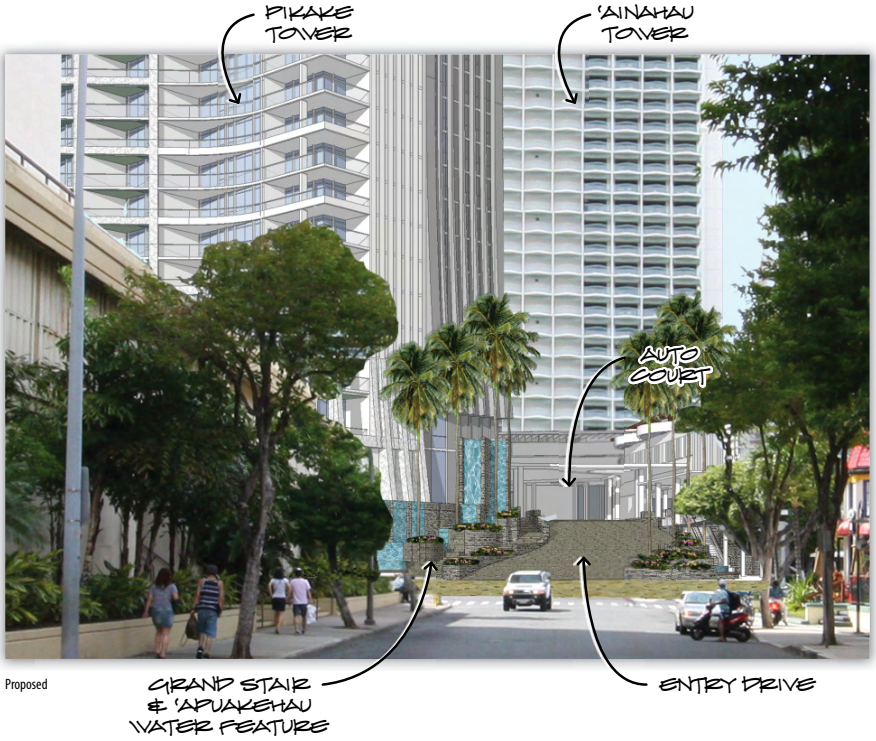


FIGURE 57: PRINCESS KA'IULANI VIEW STUDY

FIGURE 58: PRINCESS KA'IULANI VIEW STUDY

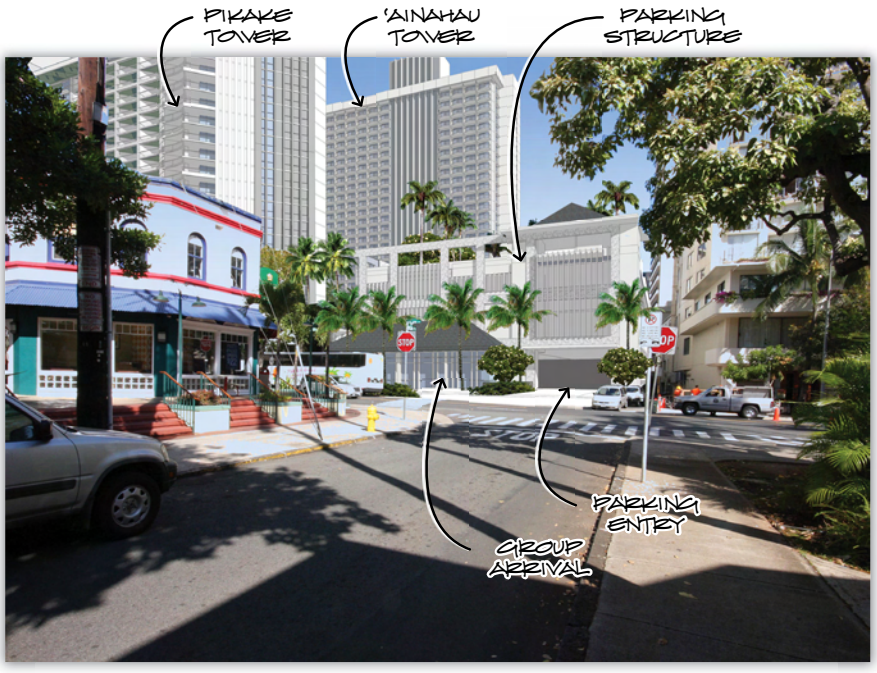
Existing



Proposed

FIGURE 59: PRINCESS KA'IULANI VIEW STUDY

Existing



Proposed

FIGURE 60: PRINCESS KA'IULANI VIEW STUDY

FIGURE 61: DIAMOND HEAD TOWER VIEW STUDY

FIGURE 62: DIAMOND HEAD TOWER VIEW STUDY

FIGURE 63: DIAMOND HEAD TOWER VIEW STUDY

FIGURE 64: DIAMOND HEAD TOWER VIEW STUDY

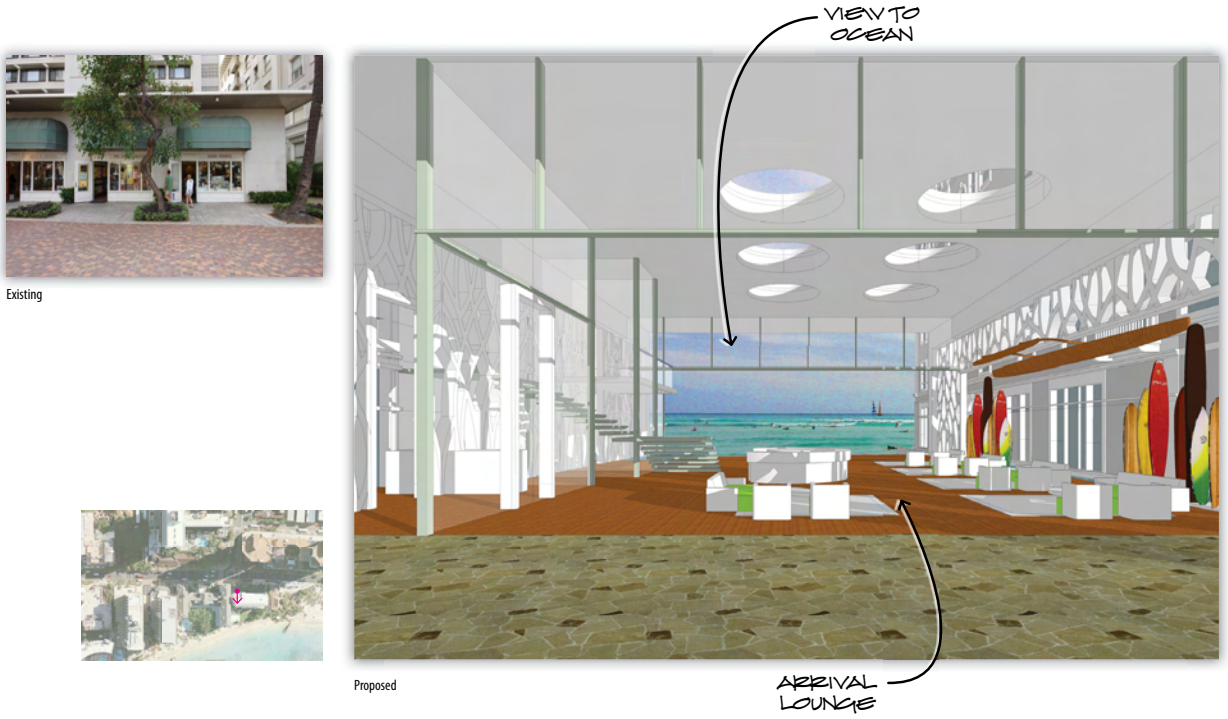


FIGURE 65: DIAMOND HEAD TOWER VIEW STUDY

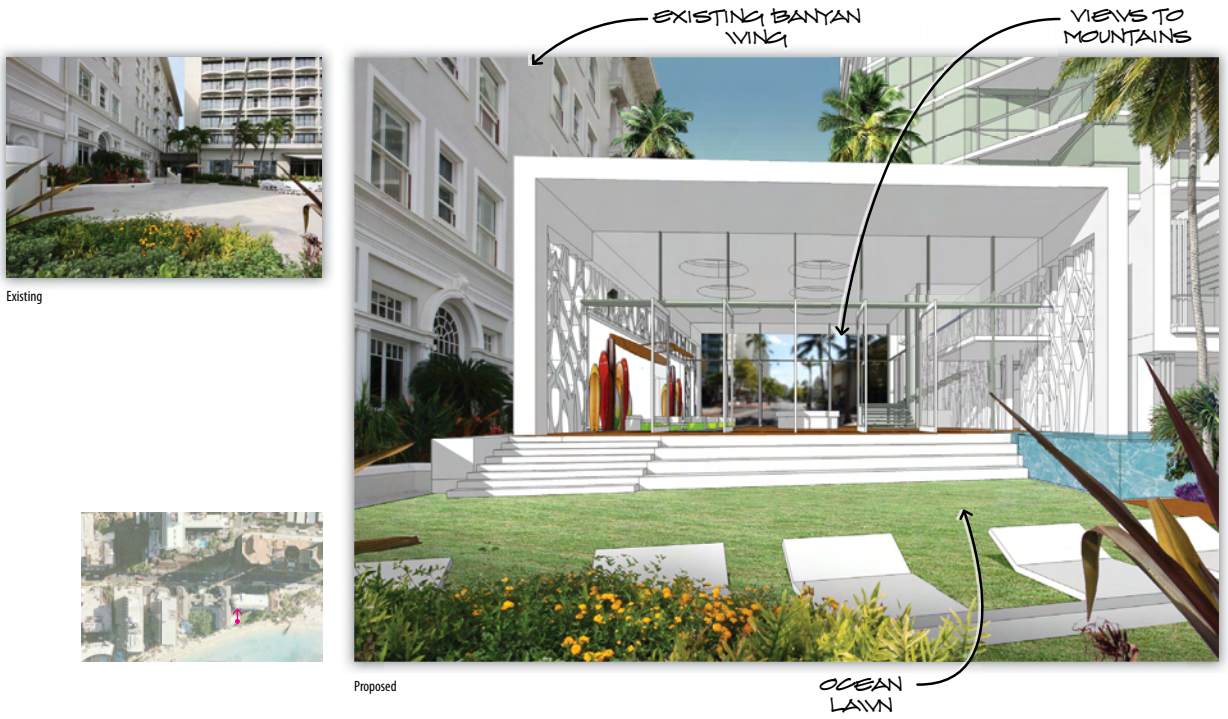


FIGURE 66: DIAMOND HEAD TOWER VIEW STUDY

8.7.2.6 Wind Impacts – Princess Ka'iulani

RWDI conducted a pedestrian wind assessment for the redevelopment of the Princess Ka'iulani property. A summary section of this report is provided below, and the report in its entirety is included in Appendix 9.

- "With the Proposed Configuration, wind conditions at street levels and the balconies on the Hyatt Waikīkī are expected to be similar to the Existing Configuration. The exception was slightly increased wind speeds along Ka'iulani Avenue between the Hyatt Waikīkī and the Pīkake Tower. Uncomfortable wind conditions are possible during high wind events in this street area for both the Existing and Proposed Configurations. Wind conditions on the Hyatt Waikīkī balconies are expected to be similar to existing conditions. No wind safety issues at street levels are expected with the new development in place."

Kyo-ya will implement the wind control measures recommended to reduce wind activity in areas with potentially high wind speeds.

8.7.2.7 Wind Impacts - Diamond Head Tower

RWDI conducted a pedestrian wind assessment for the redevelopment of the property. A summary of this report is provided below, and the report in its entirety is included in Appendix 9.

- "In general, with the proposed buildings in place, wind conditions around the development site are expected to be similar to the existing site conditions with wind speeds comfortable for standing or walking in most areas throughout the year. On the Kalākaua Avenue sidewalk to the north of the proposed tower, uncomfortable conditions are expected in both the Existing and Proposed Configurations. High wind speeds resulting in uncomfortable wind conditions are also predicted for the arrival pavilion during strong northeasterly wind events. Wind control measures have been discussed for incorporation to reduce wind activity at these areas."

Kyo-ya will implement the wind control measures recommended to reduce wind activity in areas with potentially high wind speeds.

8.7.3 Deep Well Cooling System

In conjunction with the Projects, Kyo-ya is exploring the feasibility of developing a deep well cooling system (a renewable energy technology) to provide cool water in a heat exchange process for the cooling/air-conditioning system for the Projects and the two remaining buildings at the Moana Surfrider Hotel. Such a cooling systems would significantly reduce energy demand, water consumption and emissions of carbon in the environment. Additional details about this program are provided in Section 4.2.3.5 of this Draft EIS.

8.8 COASTAL ZONE MANAGEMENT

Although the Princess Ka'iulani site is within the State's Coastal Zone Management Area, it is not within the SMA and is therefore not subject to permit requirements under Chapter 25, Revised Ordinances of Honolulu.

The Diamond Head Tower site is within both the State's Coastal Zone Management Area and within the SMA and this project will consequently require a SMA Use Permit.

8.8.1 Moana Surfrider Shoreline Assessment

Sea Engineering has prepared the "Moana Surfrider Shoreline Assessment" to evaluate the shoreline conditions for the Diamond Head Tower project. The assessment is included in Appendix 6. A summary of the report is provided below.

- "Kyo-ya is proposing renovations to the Diamond Head Tower of the Moana Surfrider hotel. Because of the close proximity of the hotel to the ocean, a shoreline assessment has been performed to evaluate the existing shoreline condition and characteristics, and evaluate potential coastal hazards that should be considered when designing the new hotel structures and facilities."
- "The assessment included site investigations and a shoreline profile survey, and a review of existing available information pertinent to the project area. The assessment includes discussion of the prevailing and extreme wave conditions at the project site. The effects of sea level rise and historical shoreline trends in Waikīkī are also addressed."
- "Based on the findings of this assessment, the following issues are recommended for consideration during project planning and design:

  "Beach width is variable seasonally and without maintenance/nourishment may disappear over the long term. While a wide beach acts as a buffer against high waves and can successfully protect backshore property from coastal inundation, it is also very dynamic and cannot be considered as permanent protection against waves and flooding without also considering the possibility of long term maintenance. A beach nourishment and periodic maintenance program would provide a first level of defense against storm wave coastal inundation at the project site."

  "Existing beach and seawall elevations cannot be relied on solely to provide a barrier to flooding by storm waves and tsunamis. This problem will be exacerbated should sea level rise as currently predicted. A solution may include raising the existing seawall or constructing an additional higher wall mauka of the existing seawall."

> "Hurricane and tsunami studies suggest flooding to +9 to +10 feet above mean lower low water (MLLW) can currently be expected. Additionally, estimates point to a sea level rise of 1.3 feet in 50 years and 3.3 feet in 100 years. Even with possible beach widening and a higher seawall, the potential for inland flooding should be addressed by designing the new hotel structure in such a way that important infrastructure is located above the possible flood elevation."

Based on the recommendations by Sea Engineering and on consultation with representatives of DLNR, Kyo-ya proposes the following to mitigate the potential shoreline issues:

- Elevate the project site from the existing 6 feet to 9 feet at the makai lawn and from 9 feet to 12 feet at the lobby. This will require approximately 3 feet of fill to the site. The additional elevation will protect the proposed tower from flooding due to storm waves or tidal surges as well as reduce any potential impacts on below grade cultural artifacts.
- Based on recommendations from DLNR, Kyo-ya plans to construct a retaining wall mauka of the existing seawall. The retaining wall will act as a buffer against potential flooding.
- In order to minimize impacts on the beach and coastal resources, runoff from the Diamond Head Tower will generally be contained on-site and disposed of by percolation in landscaped areas, particularly in the planned beachfront lawn area. Design of the storm drainage system will be integrated with the landscape design to provide areas for storm water infiltration. Provisions for drainage overflow to the beachfront will be made to accommodate extreme storm events. Given the larger landscaped open space and pool area, the property's ability to retain runoff through percolation and free board in the pool should be increased, reducing drainage impacts from the project site.
- Kyo-ya proposes to provide up to $500,000 for the DLNR's beach nourishment program, as discussed in Section 2.4.

8.8.2 Coastal Zone Management Program; Objectives

- **Recreational Resources - "Provide coastal recreational opportunities accessible to the public."**

Kyo-ya proposes to allow additional beach access across the project property and to provide public surfboard racks on the project property. This will add to the public and visitor enjoyment of Waikīkī beach. Kyo-ya proposes to provide up to $500,000 for the DLNR's beach nourishment program, as discussed in Section 2.4.

- **Historic Resources - "Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture."**

Kyo-ya completed Archaeological Assessments, Cultural Impact Statements, and Archaeological Inventory Surveys on both Projects to address potential impacts to these archaeologi-

cal and cultural resources and will follow the recommendations of these studies to mitigate potential impact to natural, manmade historic and prehistoric resources in the coastal zone management area. These studies are included in this Draft EIS.

- **Scenic and open space resources - "Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources."**

Kyo-ya proposes to provide up to $500,000 for the DLNR's beach nourishment program, as discussed in Section 2.4. The expanded beach fronting the Diamond Head Tower would provide a significant expansion of public recreational resources on Kyo-ya owned property. The beach along Waikīkī's shoreline is one of the most valuable coastal open space resources on the island. This beach serves as the main draw for visitors to these islands and supports the primary economic engine of the State.

The proposed Diamond Head Tower and related amenities will maintain the existing lateral views of the coastline. The new structure will be generally aligned on the makai side with the adjacent Waikiki Police Sub-Station. On the Ewa side, the proposed redevelopment is located further mauka than the adjacent existing Banyan Wing.

- **Coastal ecosystems - "Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems."**

In order to minimize impacts to the coastal ecosystems, runoff from the Diamond Head Tower will generally be contained on-site and disposed of by percolation in landscaped areas, particularly in the planned beachfront lawn area. Design of the storm drainage system will be integrated with the landscape design to provide areas for storm water infiltration. Provisions for drainage overflow to the beachfront will be made to accommodate extreme storm events. Given the larger landscaped open space and pool area, the property's ability to retain runoff through percolation and free board in the pool should be increased, reducing drainage impacts from the project site.

- **Economic uses - "Provide public or private facilities and improvements important to the State's economy in suitable locations."**

The Projects will provide a needed boost to the economy of Hawai'i in what is projected to be one of the most severe recessions in recent history. Unemployment rates have increased to historically high levels on O'ahu, visitor arrivals have decreased significantly both domestically and internationally, and construction activity has declined. Based on the Projects, Kyo-ya stands ready to infuse $700 million to stimulate construction and improve two major visitor facilities in Waikīkī. The investment will stimulate short and long-term employment and generate increased visitor spending and State and City Tax revenues, as discussed in Section 8.3.1 of this Draft EIS.

- **Coastal hazards - "Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution."**

As discussed previously, Kyo-ya proposes the following actions to reduce coastal hazards; 1) continue discussions with the DLNR to participate in the DLNR's beach nourishment program (sand replenishment) for the littoral cell extending between Kūhiō Beach and the Royal Hawaiian Hotel (including the area fronting the Diamond Head Tower) 2) raise the elevation of Diamond Head Tower site by 3 feet, and 3) construct a retaining wall mauka of the existing seawall on the Diamond Head Tower site. Each of these efforts will help reduce impacts from tsunami, storm waves and erosion.

- **Managing development - "Improve the development review process, communication, and public participation in the management of coastal resources and hazards."**

Kyo-ya has encouraged public communication and participation throughout the initial phases of the EIS process. Kyo-ya established a cultural focus group to assist in the design and planning process, convened a meeting with cultural and lineal descendants of the area to discuss the potential cultural impacts and made presentations to the OHA, OIBC, State Preservation Division, Waikīkī Neighborhood Board, the Waikīkī Improvement Association and other community organizations in Waikīkī. This public communication and public participation will continue, as recommended by the archaeological assessment and cultural impact assessments.

- **Public participation - "Stimulate public awareness, education, and participation in coastal management."**

As mentioned previously, public awareness and participation in the EIS process and continued participation in future land use permit application will continue to be encouraged by Kyo-ya.

- **Beach protection - "Protect beaches for public use and recreation."**

Kyo-ya intends to provide additional public surfboard racks on the Diamond Head Tower site that will connect to and expand the existing adjacent public surfboard racks. As previously discussed, Kyo-ya proposes to work with DLNR to provide sand replenishment to increase the beach fronting the Moana Surfrider Hotel complex by up to 40 feet. This will be a significant benefit to residents and visitors.

- **Marine resources – "Promote the protection, use, and development of marine and coastal resources to assure their sustainability."**

As mentioned above, the Diamond Head Tower project will be designed to minimize impacts from runoff on the offshore marine and coastal resources.

8.9 CUMULATIVE IMPACTS WITH OTHER RELATED PROJECTS

As discussed earlier, other projects planned and under construction in the area, including Gray's Beach, Sheraton Waikīkī Hotel, Royal Hawaiian Hotel, and the Waikīkī Shopping Plaza will be completed by the time construction begins on the Projects (with the exception of Gray's Beach) and there will be no cumulative construction impacts. These proposed and in some cases completed developments did not involve any appreciable increase in floor area or use and will not result in cumulative long term impacts.

8.10 POPULATION AND GROWTH IMPACTS

The Princess Ka'iulani project will result in 61 new residential units and the Diamond Head Tower project will result in 40 new residential units. These new units may result in an increase to the residential population in the Waikīkī area. Based on DPP standards for dwellings in Waikīkī, the average household size is estimated at 1.72 which translates to an increase of about 174 residents on the properties (105 at the Princess Ka'iulani and 69 at the Diamond Head Tower). Based on the DPP's "Annual Report on the Status of Land Use on O'ahu, Fiscal Year 2007", the Year 2000 population for the PUC is approximately 419,300 which is approximately 47.9% of the Year 2000 island-wide population. Although the 419,300 population Figure is slightly over the 46% General Plan Benchmark for 2025, the DPP projects that the PUC percentage of the island wide population will be 44.7% in 2020 with a projected population of 463,332 and 44.1% in 2025 with a projected population of 475,696. The proposed 101 residences will provide for some of this projected population increase to the Year 2020. The population increase may be less than a typical 101 unit multi-family development, since a certain percentage of buyers may be transient owners and second home or vacation home buyers.

8.11 CULTURAL IMPACT ASSESSMENT

8.11.1 Princess Ka'iulani

Cultural Surveys Hawai'i, Inc. prepared the "Cultural Impact Assessment Report for the Proposed Princess Ka'iulani Redevelopment Project" dated April 2009. The Management Summary of the report is provided below and the report in its entirety is included in Appendix 15.

Reference	Cultural Impact Assessment Report for the Proposed Princess Ka'iulani Redevelopment Project, Waikīkī Ahupua'a, Kona District, O'ahu, TMK: [1] 2-6-022:001 and 041.
Date	April 2009.
Project Number	Cultural Surveys Hawai'i (CSH) job code Waikīkī 11.

Investigation Permit Number	CSH conducts archaeological work under archaeological permit number 09-20 issued by the Hawai'i State Historic Preservation/Department of Land and Natural Resources (SHPD/DLNR).
Project Location	The project area is bounded by the Miramar Waikīkī and Outrigger East on the north (mauka side), Kalākaua Avenue on the south (makai side), Ka'iulani Avenue to the east and the International Market Place to the west. It is depicted on the 1998 USGS 7.5 Minute Series topographic map, Honolulu Quadrangle.
Land Jurisdiction	Private; Kyo-ya.
Agencies	State Historic Preservation/Department of Land and Natural Resources (SHPD/DLNR).
Project Description	The proposed redevelopment includes: demolition of portions of the existing Princess Ka'iulani hotel and retail buildings, amenity features and parking garage; construction of a new condominium tower; renovation of the existing 'Āinahau Tower; construction of amenity and arrival areas; construction of new retail space and a new parking garage.
Document Purpose	The project requires compliance with the State of Hawai'i environmental review process [Hawai'i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project's effect on traditional cultural practices. At the request of MK Management LLC, CSH undertook this cultural impact assessment. It provides information pertinent to the assessment of the proposed project's cultural impacts [per HRS Chapter 343 and the Office of Environmental Quality's (OEQC) Guidelines for Assessing Cultural Impacts]. The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-42 and Hawai'i Administrative Rules Chapter 13-284.
Summary of Findings	The project area is closely associated with the "Wizard Stones of Kapaemahu," one of the most famous mo'olelo (oral histories) in Waikīkī. The project area is also closely linked in

Land Commission documents with famous Hawaiians such as William C. Lunalilo and Mataio Kekūanaoʻa, and with Princess Victoria Kawēkiukalaninui -ahilapalapa Kaʻiulani Cleghorn.

Based on archival data examined in section 4.7 of the report, in the early 20th century, 39 sets of human remains were disinterred from a church cemetery which was located at the present day site of the Princess Kaʻiulani Hotel. It seems probable that excavations around the Princess Kaʻiulani Hotel in the future may uncover additional burials, pre-Contact cultural layers, pre-Contact subsurface pits with artifacts and food midden, and /or historic features with late 19th century to early 20th century artifacts.

None of the community contacts queried for this evaluation identified any on-going traditional cultural practices or cultural sites specific to the project area. However, several community contacts shared their concern for the possibility of burials within the proposed project area.

Recommendations

Given the cultural sensitivity of the Waikīkī area, the number of burial finds already reported from Waikīkī, the presence of a former cemetery within the project area, and the concerns and recommendations raised during the community contact process, CSH recommends that community members, descendants, and organizations should be further consulted during the future proposed development of the project area. CSH also recommends close consultation with the State Historic Preservation Division and the Oʻahu Island Burial Council. Addressing community concerns may minimize the impact of the project on the Hawaiian culture, its practices and traditions.

Kyo-ya will continue its meetings with community members, descendants, and organizations, including the OHA, SHPD and the OIBC. As mentioned earlier, Kyo-ya, through its cultural and archaeological consultants, has been consulting broadly with many of the recognized Waikīkī cultural descendants both on an informal and formal basis for almost a year now.

As mentioned earlier, Kyo-ya's community outreach has also included meetings with the Waikīkī Neighborhood Board, the Waikīkī Improvement Association, a cultural focus group (native Hawaiians), the SHPD, Kawaiahaʻo Church, the OIBC, and OHA. These meetings are discussed in greater detail in Section 16 of this Draft EIS.

8.11.2 Diamond Head Tower

CSH has prepared the "Cultural Impact Assessment Report for the Proposed Diamond Head Tower Project" dated April 2009. Portions of the Management Summary of the report are provided below and the report in its entirety is included in Appendix 16.

Reference	Cultural Impact Assessment for the Proposed Diamond Head Tower Moana Surfrider Hotel Project, Waikīkī Ahupua'a, Kona District, O'ahu TMK: [1] 2-6-001:012, por. (Spearing, Groza, Shideler and Hammatt 2009).
Date	April 2009.
Project Number (s)	Cultural Surveys Hawai'i, Inc. (CSH) Project Code: WAIKĪKĪ 25.
Project Location	The proposed project area is bounded by Kalākaua Avenue on the north (mauka side) and the ocean to the south, the Waikīkī police sub-station on the east and the Banyan Wing of the Moana Surfrider Hotel on the west.
Land Jurisdiction	Private.
Agencies	State of Hawai'i Department of Health /DOH / Office of Environmental Quality Control (DOH / OEQC).
Project Description	The proposed redevelopment looks to replace the existing eight-story Diamond Head Tower (built in 1952) with a new twenty-six story tower consisting of roughly 185 hotel units and 40 residential condominium units.
Project Acreage	The Diamond Head Tower re-development area that is proposed for demolition and re-construction is understood to be approximately 44,700 square feet or 1.03 acres.
Area of Potential Effect (APE)	For the current cultural impact assessment (CIA), the project's Area of Potential Effect (APE) is the same as the project area, i.e., the approximately 1-acre footprint of the proposed project within TMK: [1] 2-6-001:012, por. While this investigation focused on the project APE, the study area included the entire ahupua'a of Waikīkī.

Document Purpose

At the request of Kyo-ya, CSH undertook this CIA. The project requires compliance with the State of Hawai'i environmental review process [Hawai'i Revised Statutes (HRS) Chapter 343], which requires consideration of a proposed project's effect on cultural practices. Through document research and cultural consultation efforts this document provides information pertinent to the assessment of the proposed project's impacts to cultural practices (per the OEQC's Guidelines for Assessing Cultural Impacts). The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-42 and Hawai'i Administrative Rules Chapter 13-284. The document is intended to support the project's environmental review and may also serve to support the project's historic preservation review under HRS Chapter 6E-8 and Hawai'i Administrative Rules Chapter 13-275.

Consultation Effort

Hawaiian organizations, agencies and community members were contacted in order to identify potentially knowledgeable individuals with cultural expertise and/or knowledge of the project area and the vicinity. The organizations consulted included the State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), the O'ahu Island Burial Council (OIBC), Hui Mālama I Nā Kūpuna 'O Hawai'i Nei, the Waikīkī Neighborhood Board, the Waikīkī Community Center, and cultural and lineal descendants of Waikīkī.

Results of Background Research

Background research indicates:

1. The ahupua'a of Waikīkī in the centuries before the arrival of Europeans was a well-used locale with abundant natural and cultivated resources—including an expansive system of irrigated taro fields and numerous fishponds—supporting a large population that included the highest-ranking ali'i (Hawaiian royalty/chiefly class).

2. In the second half of the nineteenth century, after a period of depopulation and desuetude, Waikīkī was reanimated by the Hawaiian ali'i and the foreigners residing there, and by farmers continuing to work the irrigated field system that had been converted from taro to rice.

This farming continued up to the first decades of the twentieth century when the newly-constructed Ala Wai Canal drained the remaining ponds and irrigated fields of Waikīkī.

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

4. Burials reported outside the present project area but in the immediate vicinity include: 4 individuals "from site on beach in front of old Outrigger Canoe Club" Federal Register January 28, 1998 Volume 63, Number 18 page 9; BPBM records indicate this was ID No OA0464), 8 sets of human remains from Moana Hotel renovations (Simons et al. 1991), human remains from near the International Market Place (Bishop Museum records for 1967, Bush et al. 2003), and human remains at the former Waikīkī 3 Theater location (O'Leary et al. 2005).

5. One burial was found under Kalākaua Avenue in front of the hotel in 1987 and 24 sets of burials were found under the basement of the Diamond Head side of the Banyan Wing in 1987. During the 1987 project, a pre-Contact cultural layer with traditional artifacts and food midden was recorded in the Diamond Head and 'Ewa sides of the Banyan Wing. Subsurface pits with traditional Hawaiian artifacts, such as basalt and volcanic glass flakes were noted. Historic artifacts associated with the construction of the 1890s Peacock Cottage and the 1918 additions to the Moana Hotel were also recovered.

6. The Hustace Villa was within the proposed project area from the 1890s until 1952 when it was razed to build the Diamond Head Tower (formerly the Surfrider Hotel).

7. The proposed project area and vicinity of Waikīkī was once a focus for pre-habitation and agriculture, was as-

sociated with the residence of the ali'i, was the location of a sacred kou (Cordia subcordata) grove (referred to as, Ulukou), became a focus for historic habitation in the late nineteenth century, and is the location of one of the earliest hotels built in Waikīkī. It seems possible that excavations around the Diamond Head Tower in the future may uncover additional burials, pre-Contact cultural layers, pre-Contact subsurface pits with artifacts and food midden, and historic pits with late nineteenth century to early twentieth century artifacts.

8. Waikīkī is exceedingly rich in places names, wahi pana (legendary or storied places) and associated mo'olelo (oral histories, stories, legends), reflecting the area's elevated cultural and historical significance to Hawaiians. Important mo'olelo focus on Waikīkī's many mo'o (supernatural water spirits)—including Kamō'ili'ili (the pebble lizard), loko i'a, springs and other water sources, human sacrifice (especially of lower caste people), surfing—including Waikīkī chief Kalamakua and his beloved Keleanuinoho'ana'api'api ("Great Kelea who flutters"), sharks—including the Shark God Ka'ehu, healing places such as the waters of Kawehewehe and the healing Wizard Stones of Kapaemahu, Kākuhihewa's famous coconut grove at Helumoa and how he permitted a man named Kapoi to build a heiau to pueo, the owl god. and more.

Results of Community Consultation

CSH attempted to contact 99 community members (government agency or community organization representatives, or individuals such as residents, cultural and lineal descendants, and cultural practitioners) for the purposes of this CIA. Twenty-five people responded and 11 kūpuna (elders) and/or kama'āina (native-born) were interviewed for more in-depth contributions to the CIA. Two interviews are currently pending approval and were not included in the report. Based on these consultations, there are 6 major concerns (and several ancillary ones) regarding potential adverse impacts on cultural, historic and natural resources, practices and beliefs as result of the proposed redevelopment of the Diamond Head Tower:

1. The site of the Diamond Head Tower redevelopment and vicinity is likely to have surface and subsurface cultural and historic properties, likely including human skeletal remains. Several of the study participants indicated that there could be iwi kūpuna (ancestral remains) in or near the project area. One participant, Mr. Samuel "Bunny" Kahanamoku, disagrees—stating that he does not believe that iwi kūpuna will be found in the project area.

2. Due to the proposed project's proximity to the shoreline, OHA seeks assurances that Best Management Practices (BMP) will be implemented and monitored as required by state and federal agencies to, "ensure that water quality and irreplaceable ocean resources will not be impacted by the proposed redevelopment project."

3. Ongoing consultation indicates that community and cultural consultants oppose the development, construction or alteration of Waikīkī that threatens to negatively impact its view corridors. One participant who expressed concern with the height of the new tower will be included in the final draft. Another participant is concerned that more high rises will further obstruct mauka-makai views.

4. A few participants expressed concern about Waikīkī's overtaxed infrastructure mentioning, for example, traffic congestion and waste management problems as a result of current and future developments in Waikīkī. One participant stated his concern with the sewage system. Another mentioned traffic as a problem.

5. Several participants voiced sadness, frustration or negative feelings about the overall cumulative impacts of ongoing and future developments in Waikīkī as contributing to the loss of what is authentic and traditional about Waikīkī. They recommended suggestions

to reincorporate the feeling of "old Waikīkī" including reinstating cultural programs, using flowers grown by local farmers and reducing the development plans by two-thirds or one-half.

6. One participant also expressed the desire for the developer/owner to take responsibility for the development of Waikīkī and to give back to the community in some way.

Recommendations

For several of the participants in this CIA there is concern that proposed developments for Waikīkī and the Diamond Head Tower redevelopment may negatively impact Hawaiian resources and practices and beliefs. Generally, there is concern about further loss of a Hawaiian sense of place. A good faith effort to address the following recommendations may help mitigate potentially adverse effects on cultural, historic and natural resources and associated practices as result of the redevelopment of the Diamond Head Tower annex:

1. Based on the archival evidence and community consultation conducted for this assessment, it is possible that there are burial sites (iwi kūpuna) as well as significant cultural and historic properties in the project area; it is therefore recommended that:

    a) Cultural monitoring and continuous ongoing consultation with cultural descendants of the area be conducted during all phases of development including ground-disturbance and construction;
    b) Personnel involved in development activities should be informed of the possibility of inadvertent cultural finds, including human remains. Should cultural or burial sites be identified during ground disturbance, all work should immediately cease, and the appropriate agencies notified pursuant to applicable law;
    c) If human burials are found, cultural and lineal descendants of the area should be consulted in regard to burial treatment plans.

2. Some participants expressed concern that the mauka-makai view plane could be further obstructed. A number of culturally significant features of the landscape associated with mo'olelo and wahi pana of Waikīkī Beach may be blocked. We recommend that proponents continue to work with the community on the mauka-makai view plane issue.

3. Generally, it is recommended that project proponents pursue proactive consultation with community members and cultural and lineal descendants with connections to Waikīkī in order to address community concerns about view corridors, human remains and other possible cultural finds, infrastructure (e.g., traffic, waste management), etc., integrate preservation and restoration ideas into the design and construction of the annex before development begins, and to consider meaningful ways of benefiting/contributing to the local Waikīkī community.

Kyo-ya will continue its meetings with community members and descendants, to integrate preservation and restoration ideas into the design of the new tower and to consider benefits to the local Waikīkī community. Kyo-ya has designed the Projects to improve public views through and around the proposed development, creating new views not available with the existing Diamond Head Tower.

As mentioned earlier, Kyo-ya's community outreach has also included meetings with the Waikīkī Neighborhood Board, the Waikīkī Improvement Association, a cultural focus group (native Hawaiians), the SHPD, Kawaiaha'o Church, the OIBC, and the OHA. These meetings are discussed in greater detail in Section 16 of this Draft EIS.

9. CONFORMANCE WITH SMA GUIDELINES

The City's SMA Guidelines are contained in Chapter 25, ROH, as amended, and are the counterparts to the State's Coastal Zone Management Guidelines set forth in Chapter 205A, HRS. As noted above, only the Diamond Head Tower Project is situated in the SMA. The following discussion describes how the Diamond Head Tower project satisfies the City's SMA Guidelines.

9.1 TERMS AND CONDITIONS OF DEVELOPMENT

- **Adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas and natural reserves is provided to the extent consistent with sound conservation principles.** The proposed Diamond Head Tower will not adversely impact access to any public recreation area or shoreline. No significant development is planned within 40 feet of the shoreline. The only improvements planned within 40 feet of the shoreline are about three feet of fill, landscaping, a swimming pool and deck, and a retaining wall mauka of an existing seawall located next to the beach. The modest expansion will improve access to the shoreline through the provision of improved pedestrian access along the Diamond Head side of the property and through the provision of new, public surfboard racks.

- **Adequate and properly located public recreation areas and wildlife preserves are reserved.** Because the improvements will not extend seaward beyond the existing concrete seawall, no part of Waikīkī Beach fronting the Diamond Head Tower site will be impacted; hence, this significant public recreation area will be preserved. There are no wildlife preserves associated with the Diamond Head Tower Project.

- **Provisions are made for solid and liquid waste treatment, disposition and management which will minimize adverse effects upon special management area resources.** The DPP on March 6, 2009 approved two sewer connection applications for the Diamond Head Tower that will accommodate all development planned, subject to Kyo-ya connecting a portion of the Princess Ka'iulani Project directly to the existing 18-inch sewer line in Kūhiō Avenue and Kyo-ya's upgrading of an existing 8-inch sewer line fronting the existing Diamond Head Tower. Utilization of the municipal wastewater system will minimize adverse effects on special management area resources. Solid waste for the Diamond Head Tower will continue to be disposed of by a private contractor. As an owner of several prominent Waikīkī hotels, Kyo-ya will continue to make the proper handling of solid waste and the maintenance of a pristine hotel environment a top priority. Doing so will not only benefit hotel guests and other visitors to the hotel complexes, but will also serve to minimize adverse effects upon resources in the special management area.

- **Alterations to existing land forms and vegetation, except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, landslides, erosion, situation or failure in the event of earthquake.** The Diamond Head Tower will require modest grading to raise it above the flood elevation level (approximately 3 feet across the property). Runoff to the beach area will be mitigated through a drainage system that will

generally be contained on-site and will be disposed of by percolation in landscaped areas, particularly in the planned beachfront lawn area. Design of the storm drainage system will be integrated with the landscape design to provide areas for storm water infiltration. Provisions for drainage overflow to the beachfront will be made to accommodate extreme storm events.

9.2 REQUIRED COUNCIL FINDINGS

- **The development will not have any substantial adverse environmental or ecological effect except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health and safety, or compelling public interest.** As discussed throughout this Draft EIS, the Diamond Head Tower is not expected to have substantial environmental or ecological effects due to (i) its location among existing resort developments in the central part of urbanized Waikīkī; (ii) the relatively limited amount of structural footprint planned; and (iii) the increase in landscaped open space, as well as public open space. Drainage impacts during construction of the Diamond Head Tower will be mitigated to ensure that no adverse impact to the coastal waters will occur.

- **The development is consistent with the objectives and policies set forth in Section 25-3.1 and area guidelines contained in HRS Section 205A-26.** ROH Sec. 25-3.1 provides that the objectives and policies of ROH Chapter 25 shall be those contained in HRS Section 205A-2. The Diamond Head Tower is consistent with the following objectives and policies.

- **Provide coastal recreational opportunities accessible to the public.** HRS 205A-2(b)(1)(A). The project will provide improved public access to Waikīkī Beach as a result of the public access provided between the proposed Diamond Head Tower and the Waikīkī Beach Center (Police Sub-Station).

- **Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.** HRS 205A-2(b)(3)(A). The mauka – makai orientation of the Diamond Head Tower, including the newly created views of the ocean and Waikīkī Beach from Kalākaua and Ka'iulani Avenues, will greatly improve the quality of coastal scenic resources.

- **Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.** HRS 205A-2(b)(4)(A). The project will not involve any improvements which extend beyond the existing concrete seawall.

- **Provide public or private facilities and improvements important to the State's economy in suitable locations.** HRS 205A-2(b)(5)(A). The redevelopment of the Diamond Head Tower will be important to the State's economy in many different respects. As noted elsewhere in this document, new construction jobs will be created, real property tax values (and hence tax revenues) will increase, and additional GET and TAT revenues will also increase. In addition, many service related jobs will be created, including those directly and indirectly associated with the operation of the new hotel, restaurant, and retail operations.

- **Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.** HRS 205A-2(b)(6)(A). As discussed previously, Kyo-ya proposes the following actions to reduce coastal hazards; 1) continue discussions with the DLNR to participate in the DLNR's beach nourishment program (sand replenishment) for the littoral cell extending between Kūhiō Beach and the Royal Hawaiian Hotel (including the area fronting the Diamond Head Tower), 2) raise the elevation of Diamond Head Tower site by 3 feet, and 3) construct a retaining wall mauka of the existing seawall on the Diamond Head Tower site. Each of these efforts will help reduce impacts from tsunami, storm waves and erosion.

  The proposed project is consistent with the County General Plan, Development Plan and Zoning.

9.2.1 General Plan

The Diamond Head Tower project compliance with the objectives and policies of the O'ahu General Plan are provided in Section 7.2 of this Draft EIS.

9.2.1.1 PUCDP

The Diamond Head Tower project compliance with the objectives and policies of the PUCDP are provided in Section 7.3 of this Draft EIS.

9.2.1.2 Zoning

The Diamond Head Tower is within the Resort Mixed Use Precinct with a 260-foot height limit. The proposed uses are consistent with this zoning precinct, which allows hotels and commercial establishments. Kyo-ya will be seeking flexibility on some of the development standards of the Resort Mixed Use Precinct under the provisions of the PD-R process established in Section 21-9.80-4(d) of the LUO.
Conceptual Plans of the Projects are provided in Appendix 1.

10. SHORELINE SETBACK VARIANCE

Under the City's shoreline setback laws, ROH Chapter 23, structures and activities are prohibited within the shoreline area, with few exceptions. One of these exceptions covers nonconforming structures or structures that have received a shoreline setback variance.

The "shoreline area" is defined as ". . . the land area between the shoreline and the shoreline setback line." ROH Sect. 23.1-3. The "shoreline" is defined as "the upper reaches of the wash of the waves, other than storm and seismic waves, at high tide during the season of the year in which the highest wash of the waves occurs, usually evidenced by the edge of vegetation growth, or the upper limit of debris left by the wash of the waves." ROH Sect. 23-1.3. The "shoreline setback line" is defined as "that line established by [ROH Chapter 23] which runs inland from and parallel to the certified shoreline at the horizontal plane." Under ROH Sect. 23-1.4(a), "except as otherwise provided [therein], the shoreline setback line is established at 40 feet inland from the certified shoreline."

In light of the above, a shoreline setback variance will be required in connection with the construction of the swimming pool and deck to be located on the first level of the Diamond Head Tower.

The existing concrete seawall has been determined to be a nonconforming structure by the DPP (see letter dated June 18, 2009 from the DPP to Patrick Seguirant attached as Appendix 7). Kyo-ya plans to make certain repairs to this structure, as recommended by DLNR.

The DPP's rules governing shoreline setbacks allow nonconforming structures within the shoreline setback to be repaired, upon compliance with applicable state and county requirements. Kyo-ya believes that the work described below falls within this exemption to the shoreline setback variance requirement:

- Grading to raise the grade from +/-6.0' to +/-9.0' so that the first level of the Diamond Head Tower is above flood elevation levels, and to install landscaping;
- Construction of a new retaining wall, roughly 3' to 4' mauka of the existing concrete seawall and fence, to retain the fill required to raise the grade (as described above); and
- Placement of pavers and the planting of grass on the surface of the fill referred to above.

Kyo-ya plans to work with the DPP to confirm the applicability of the above exemption to the work described above. If it is determined that the exemption does not apply, Kyo-ya will include this work in an appliction for and obtain a Shoreline Setback Variance.

Under ROH Section 23-1.8(b), the Director of the DPP may grant a shoreline setback variance if the proposed structure or activity meets one of the following three standards:

(i) The "Shoreline-dependent Facility Standard";

(ii) The "Public Interest Standard"; or

(iii) The "Hardship Standard".

If Kyo-ya is required to apply for a shoreline setback variance, it will do so under the Hardship Standard by satisfying the following three-pronged test:

(i) Kyo-ya would be deprived reasonable use of the land if required to comply fully with the shoreline setback ordinance and the shoreline setback rules.

Although no current certified shoreline survey of the Diamond Head Tower site presently exists, based upon the best information presently available, Kyo-ya believes the shoreline to be located in the proximity of the existing seawall as represented in the figure below. Kyo-ya intends to apply for certification of this shoreline in the near future. Assuming, for purposes of a shoreline setback variance application, that this would be the location of the certified shoreline, the effect of the 40-foot setback line would be to restrict Kyo-ya's ability to properly raise the grade of the property so that the first level of the Diamond Head Tower is above flood elevation levels. It would also restrict Kyo-ya's ability to install a swimming pool, deck and certain landscaping which it plans to do in connection with meeting park dedication requirements. For these reasons, Kyo-ya would be deprived of the reasonable use of its land.

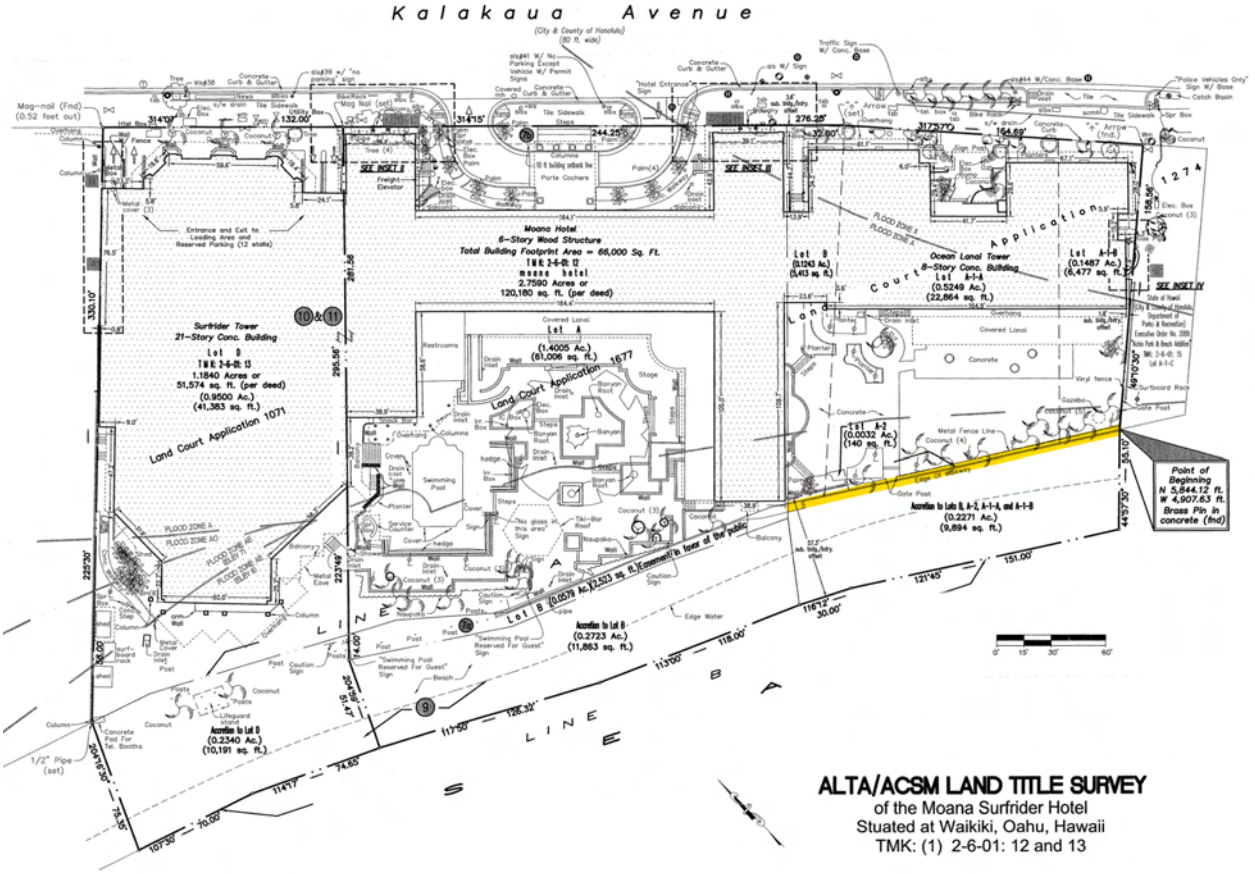


FIGURE 67: SHORELINE SURVEY

(ii) Kyo-ya's proposal is due to unique circumstances and does not draw into question the reasonableness of this [ROH Chapter 23] and the shoreline setback rules.

As mentioned elsewhere herein, the Diamond Head Tower is adjacent to the Historic Banyan Wing of the Moana. Rather than removing this historic structure to allow for a higher density tower, Kyo-ya has elected to redevelop the Diamond Head Tower, a tower that does not have a historic designation or such significance in the history of Waikīkī. No site in Waikīkī other than the Diamond Head Tower shares a TMK with a historic structure with allowable density. The Diamond Head Tower site is also among the narrowest parcels of land along Waikīkī Beach; hence, the impact of the shoreline setback regulations on this particular parcel is greater than on most other parcels along Waikīkī Beach. The narrowness of this parcel is exacerbated, in part, by the absence of the substantial beach which was to have been built by the State per the 1965 Beach Agreement (see discussion in Section 8.1 of this Draft EIS).

(iii) The proposal is the practicable alternative which best conforms to the purpose of this chapter and the shoreline setback rules.

The stated purposes of ROH Chapter 23 are as follows: " . . . to protect and preserve the natural shoreline, especially sandy beaches; to protect and preserve public pedestrian access laterally along the shoreline and to the sea; and to protect and preserve open space along the shoreline. It is also a secondary policy of the city to reduce hazards to property from coastal floods." ROH Sect. 23-1.2(a).

Under Kyo-ya's proposed redevelopment of the Diamond Head Tower, all sandy beaches and open spaces fronting the Diamond Head Tower would be preserved, as no portion of the project would extend in the makai direction beyond the existing concrete seawall. Kyo-ya's proposal would not only preserve public pedestrian access laterally along the shoreline, but would improve public pedestrian access from Kalākaua Avenue to Waikiki Beach along the Diamond Head side of the site. Kyo-ya's proposal would also reduce the likelihood of a hazard from a coastal flood by raising the grade of the property from +/-6.0′ to +/-9.0′ so that the first level of the Diamond Head Tower is above flood elevation levels.

11. RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF HUMANITY'S ENVIRONMENT AND THE MAINTENANCE OF LONG-TERM PRODUCTIVITY

The Projects will replace existing urban resort developments that have long been established on the properties and have contributed to the long-term productivity of the properties. The proposed redevelopment of the project sites is important to the maintenance and enhancement of the long-term productivity of the properties. The resort facilities on the properties have deteriorated over time and need to be replaced to continue and enhance the long-term productivity of the properties.

12. DESCRIPTION OF IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The Princess Ka'iulani and the Diamond Head Tower represent existing irreversible and irretrievable commitments of the land to urban resort development and have served their usefulness as formerly new and efficient visitor facilities helping to support the visitor industry in Waikīkī. They are in need of repair and renovation and it makes better economic sense to demolish and rebuild most of the structures on the site. This action will allow reorienting the buildings in a mauka-makai direction as recommended in the LUO Waikīkī Special District. It will also provide an opportunity to provide greater public open space and to provide traffic improvements to correct existing deficiencies at the Project sites.

13. PROBABLE ADVERSE ENVIRONMENTAL EFFECTS WHICH CANNOT BE AVOIDED

- Encroachment into the 40-foot shoreline setback with a portion of the swimming pool at Diamond Head Tower;
- Encroachment into the 100-foot coastal building setback at Diamond Head Tower;
- Encroachment into the 100-foot coastal building height setback of 1:1 at Diamond Head Tower;
- Increase in wastewater flow from the Diamond Head Tower Project. (There will be a decrease in watstewater flow for Princess Kaiulani Project);
- Demolition of the Diamond Head Tower and the Princess Tower at the Princess Ka'iulani Hotel, which may meet criteria for listing on the Register of Historic Places (national);
- Short term construction impacts related to noise and air quality; and
- Repair and maintenance including 3 feet of fill and a 3-foot retaining wall at Diamond Head Tower.

14. MITIGATION MEASURES

- Kyo-ya has been and continues to be in discussion with the DLNR to participate in the DLNR's beach nourishment program (sand replenishment) for the littoral cell extending between Kūhiō Beach and the Royal Hawaiian Hotel (including the area fronting the Diamond Head Tower). Such participation would involve providing up to $500,000 in funding to help pay for the construction costs associated with this program, which funds would be disbursed upon the DLNR's completion of certain milestone events. Upon completion of such program, it is anticipated that the beach fronting the Diamond Head Tower would be extended seaward by approximately 40-feet. This would provide a tremendous public benefit by extending the existing beach area by approximately 40 feet. The beach area fronting the Diamond Head Tower would be on property owned by Kyo-ya but made available for unrestricted public use. The additional 40 feet of beach area would help to reduce any encroachment into the 40-foot shoreline setback, the 100-foot coastal building setback, and the 1:1 Coastal Height Setback.

- Kyo-ya plans to provide ocean views from Kalākaua Avenue and Ka'iulani Avenue by demolishing the existing Diamond Head Tower and replacing it with a new Diamond Head Tower with a mauka/makai orientation. The new tower will result in ground level view corridors on both the 'Ewa and Diamond Head sides of the site. These new view corridors will be the only public view corridors to the ocean along Kalākaua Avenue, other than across City or State property located Diamond Head of this site. This will further off-set the impacts of the encroachment into the coastal building height setback.

- Kyo-ya will upgrade the existing 8-inch diameter sewer main serving the Diamond Head Tower, located at the intersection of Ka'iulani and Kalākaua Avenues to accommodate the increase in sewage flow from the Diamond Head Tower Project and will connect certain portions of the Princess Ka'iulani redevelopment directly to the existing 18-inch sewer line on Kūhiō Avenue to accommodate the increase in sewage flow from the Project.

- Although traffic operations with the Projects in 2012 are expected to remain similar to conditions without the Projects in 2012, traffic mitigation measures are planned to improve traffic circulation around Kalākaua Avenue and Ka'iulani Avenue.

- Archaeological Inventory Surveys were done for both project sites in order to minimize potential impact to potential archaeological finds. Kyo-ya will agree to implement a Data Recovery program and Archaeological Monitoring Plan for the Princess Kaiulani project and an Archaeological Monitoring Plan for the Diamond Head Tower project.

- In order to mitigate the loss of the Diamond Head Tower and Princess Tower, Kyo-ya will: provide photographic documentation of the two hotel towers; place a copy of the floor plans for the two towers at appropriate repositories; digitize select pages of the plans and make them accessible to public and researchers; retain and/or use certain elements of the towers in the new Project; retain and preserve a sacred stone and bench at the new Princess Ka'iulani site; and develop interpretive displays and/or programs communicating

the history of the properties, Princess Ka'iulani and tourism in the Waikīkī of the 1950's and cultural programs perpetuating traditional Hawaiian activities and values.

- Construction noise and air quality impacts will be short term and will be mitigated by contractors keeping equipment properly tuned and using mufflers on diesel and gasoline engines and minimizing fugitive dust through watering, dust screens, covering dirt-hauling trucks, road cleaning and tire washing.

15. SUMMARY OF UNRESOLVED ISSUES

- Zoning variance from the 100-foot coastal building setback and the 100-foot coastal building height setback of 1:1.
- Shoreline setback variance for encroachment into the 40-foot shoreline setback with a portion of the swimming pool, deck and 3 feet of fill and a 3-foot retaining wall (if required by DPP).
- Shoreline certification.

16. COMMUNITY INPUT

Kyo-ya has been proactive in keeping the community and cultural groups apprised of the Projects, progress, issues and have solicited comments and concerns to be identified and incorporated in plans as applicable. The actions taken to date are summarized below. In addition, letters of support from the community have been received and are attached as Appendix 17.

16.1 WAIKĪKĪ NEIGHBORHOOD BOARD

A presentation of the Redevelopment Project was made to the Waikīkī Neighborhood Board No. 9 on September 9, 2008. The Board approved a motion to support the concept of the proposed development. The minutes for that meeting are provided in Appendix 18.

A meeting with Jeff Merz was conducted on March 31, 2009 to review and address comments from the Waikīkī Neighborhood Board on letter dated March 10, 2009, in response to the Draft EIS Prep Notice. An additional meeting with the Waikīkī Neighborhood Board is planned for the Fall of 2009.

16.2 WAIKĪKĪ IMPROVEMENT ASSOCIATION

A presentation to the Waikīkī Improvement Association was made on August 21, 2008. There was an additional meeting with the Executive Committee of the WIA on July 23, 2009. Based on that presentation the WIA showed support of the projects as evidenced by letters in Appendix 17.

16.3 WAIKĪKĪ RESIDENTS ASSOCIATION

A presentation of the Project's to the Waikīkī Improvement Association is planned for the Fall of 2009.

16.4 CULTURAL FOCUS GROUP

A select focus group of native Hawaiians with cultural standing in the community who had broad knowledge of native Hawaiian culture, were familiar with the cultural history of the Waikīkī destination, or who represented Hawaiian cultural institutions were engaged as the cultural advisory team. The advisory group plays a vital role as cultural informants who bring a heightened sensitivity toward how best to establish a monarchial Hawaiian sense of place and celebrate the legacy of Princess Ka'iulani that we cannot access through the normal research of archival based historical data. Understanding of the cultural protocols that emerge from such an advisory process are largely undocumented and only retrieved through personal engagement with the informants.

Four facilitated dialogue sessions were conducted between July and September of 2008. The purpose of these advisory sessions was to develop cultural themes that would shape the approaches to archi-

tectural design, landscaping, culture-based environmental place making, programs and services, and community collaboration opportunities. The historical information gathered here, along with research of historical information relating to the Princess, her family and their Waikīkī legacy with a special focus on the Crown Princess in her role as heir to the throne, will be recorded and documented.

16.5 CULTURAL OUTREACH

Kyo-ya began outreach efforts with the Native Hawaiian community early in the project seeking information about traditional historical and cultural knowledge and beliefs and practices associated with the proposed project area and its surroundings. To supplement the information provided in the archaeological documentation, approximately 90 letters were sent out requesting information and/or oral history interviews for the cultural impact assessments that were recently completed for both the Princess Ka'iulani and the Diamond Head Tower Projects. The following outlines some of the Cultural Focus efforts to date:

16.5.1 SHPD

Preliminary consultation with the staff archaeologists began last July 2008 in order to facilitate project planning. Meetings were conducted with the SHPD administrator and staff archaeologists on site on August 18, 2008 and a number of times thereafter to discuss potential testing areas and methodologies for the archaeological inventory survey. A full presentation of both projects was made to the SHPD administrator and staff on February 9, 2009. Kyo-ya met with SHPD's architectural division on May 26, 2009 to discuss the architectural aspects of the Projects and the efforts to minimize any impacts on the historical Banyan Wing. The project team will continue to consult and coordinate very closely with SHPD to meet the historic preservation review requirements in HRS Chapter 6E and the HRA.

16.5.2 Kawaiaha'o Church

Consultation with Kawaiaha'o Church officials was initiated after it was learned that there was a former Kawaiaha'o Church 'āpana located on the project area around 1880 – 1907 circa.

16.5.3 OIBC

A presentation of both projects was made to the OIBC on February 11, 2009. An update on the archaeological inventory survey testing was presented at the April 8, 2009 meeting and May 6, 2009 meeting, including information about a burial find. A burial treatment plan will be prepared with a proposed treatment recommendation for SHPD and OIBC review. An official good faith notice will be published requesting potential lineal and cultural descendants to contact SHPD in 30 days. SHPD will review the claimant information and send a recommendation to the OIBC for recognition determination. The OIBC has assisted in providing guidance on the archaeological inventory survey sampling strategy as well as mitigation strategies. Kyo-ya will continue to consult and coordinate closely with the OIBC throughout this project

to keep them informed and seek guidance particularly those related to any potential burial issues, in coordination with SHPD.

16.5.4 Cultural Descendants

Kyo-ya has begun consultation with the cultural descendants of the Waikīkī ahupua'a in respectful recognition of their ancestral connections to the proposed project area. Kyo-ya invited the recognized cultural descendants and representatives from native Hawaiian organizations to a meeting held on April 2, 2009, to present the project and listen to the views and perspectives of the cultural descendants. Kyo-ya acknowledges the special expertise of the cultural descendants and will facilitate ongoing consultation to properly include and consider any concerns throughout the process. An additional meeting is planned in the Fall of 2009 to continue discussions between the project team and the cultural descendants. In addition, Kyo-ya has made proactive efforts to identify potential lineal and cultural descendant claimants, through public notice containing preliminary project information and published in the April 2009 issue of the OHA newsletter, Ka Wai Ola. The notice included TMK information on all of the LCA's and contact information for the project.

16.5.5 OHA

Kyo-ya conducted a presentation to OHA's Committee on Beneficiary Advocacy & Empowerment on May 6, 2009. Subsequent to that presentation, Kyo-ya met with staff members of OHA on May 21, 2009 to review the details of the Projects and to respond to OHA's questions on the EISPN.

Ongoing coordination and consultation with the SHPD, OIBC, lineal and cultural descendants and appropriate native Hawaiian organizations will continue as a high priority for Kyo-ya on this project. The following organizations have also been indentified in contacted for the purpose of this project:

- Hui Mālama I Nā Kūpuna o Hawai'i Nei
- The Royal Order of Kamehameha
- 'Ahahui Ka'ahumanu
- Hale O Nā Ali'i
- Daughters of Hawai'i
- Māmakakaua
- The Association of Hawaiian Civic Clubs

17. CONSULTED PARTIES

The following agencies, organizations and public utilities were consulted in the preparation of this Draft EIS. The EIS Preparation Notice was published by the OEQC on February 23, 2009. The public comment period on the EISPN ran from February 24, 2009 to March 23, 2009. A copy of the comments that were received and their respective responses from Kyo-ya are collectively attached as Appendix 19.

Office of the Governor
State Department of Accounting and Division State Office of Planning
Office of the Mayor of the City
Members of the Honolulu City Council
City DDC (City infrastructure and facilities)
State Department of Land and Natural Resources
State Department of Business and Economic Development and Tourism
State Historic Preservation Division
State Department of Health
State Department of Education
Office of Hawaiian Affairs
City Board of Water Supply
City Department of Planning and Permitting
City Department of Parks and Recreation
City Department of Public Works
City Department of Emergency Services, Ocean Safety and Lifeguard Services Division
City Department of Design and Construction
City Department of Environmental Services
Honolulu Police Department
Honolulu Fire Department
City Department of Transportation Services
Waikīkī Neighborhood Board
Waikīkī Improvement Association
Hawai'i Hotel & Lodging Association
Hawai'i Historic Foundation
Kawaiaha'o Church
Hawaiian Electric Company
Hawaiian Telecom

18. PERSONS AND FIRMS PREPARING STATEMENT

Kusao & Kurahashi, Inc.
2752 Woodlawn Drive, Suite 5-202
Honolulu, Hawai'i 96822

WCIT ARCHITECTURE
711 Kapi'olani Blvd., Suite 1290
Honolulu, Hawai'i 96813

McCorriston Miller Mukai MacKinnon LLP
Five Waterfront Plaza, 4th Flr.
500 Ala Moana Blvd.
Honolulu, Hawai'i 96813

Belt Collins Hawai'i Ltd.
2153 North King Street, Suite 200
Honolulu, Hawai'i 96819-4554

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, Hawai'i 96826

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

Aukahi
1050 Queen Street, Suite 200
Honolulu, Hawai'i 96814

APPENDIX 1

Preliminary plans for the Projects

DRAFT ENVIRONMENTAL IMPACT STATEMENT

Appendix 1: PRELIMINARY PLANS FOR THE PROJECTS

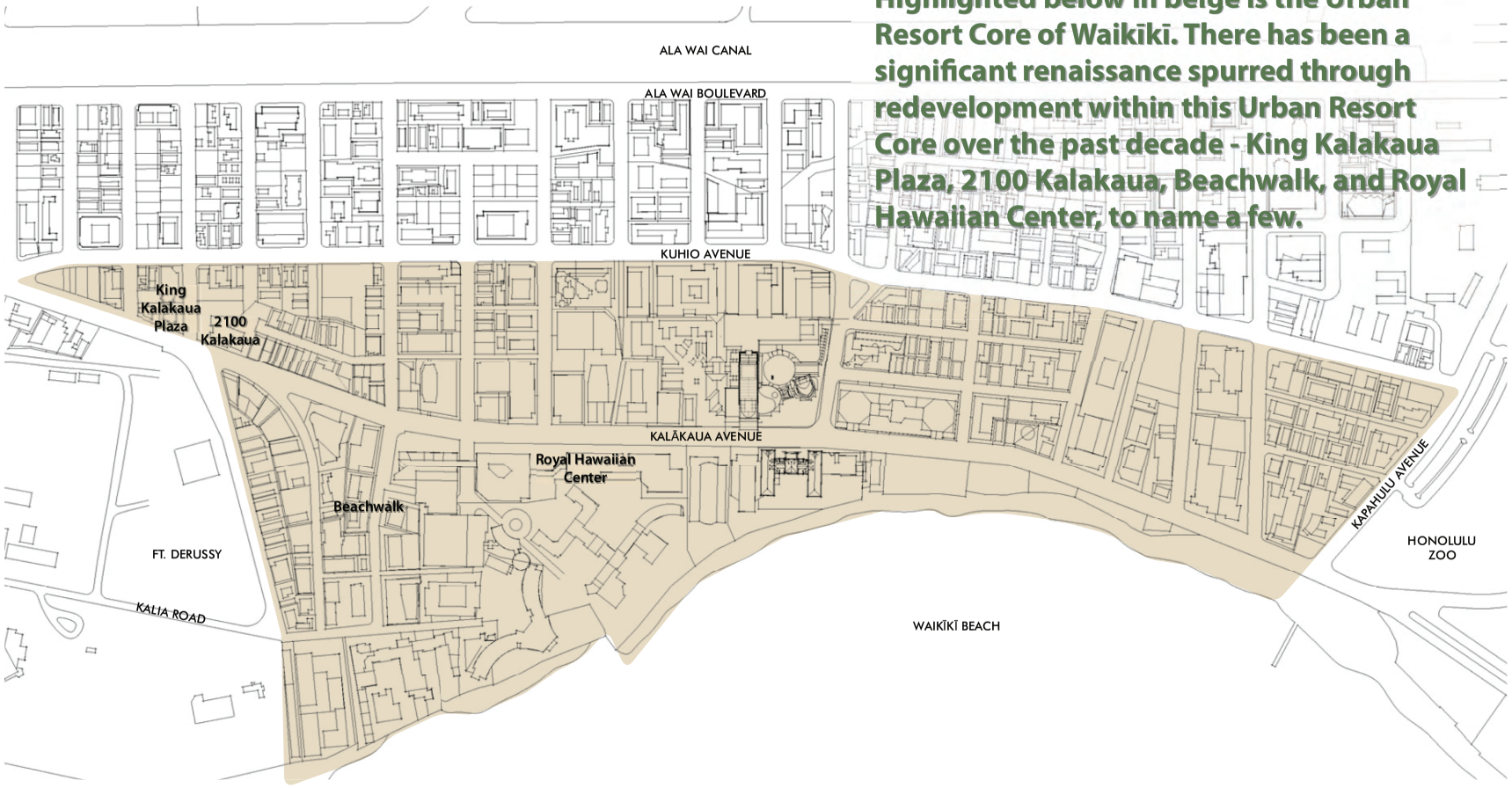
July 2009

PRINCESS KA'IULANI RENOVATION & DEVELOPMENT AND THE REPLACEMENT OF THE MOANA SURFRIDER HOTEL DIAMOND HEAD TOWER WITH A NEW TOWER

WAIKIKI, HONOLULU, OAHU, HAWAII

WCITARCHITECTURE

Ka Piko Waikīkī is a theme on which the project was concepted and developed. Highlighted below in beige is the Urban Resort Core of Waikīkī. There has been a significant renaissance spurred through redevelopment within this Urban Resort Core over the past decade - King Kalakaua Plaza, 2100 Kalakaua, Beachwalk, and Royal Hawaiian Center, to name a few.



KA PIKO WAIKĪKĪ

Kyoya

CONCEPT DESIGN
07.02.09

WAIKIKI URBAN RESORT CORE

APPENDIX 1-1

WCITARCHITECTURE

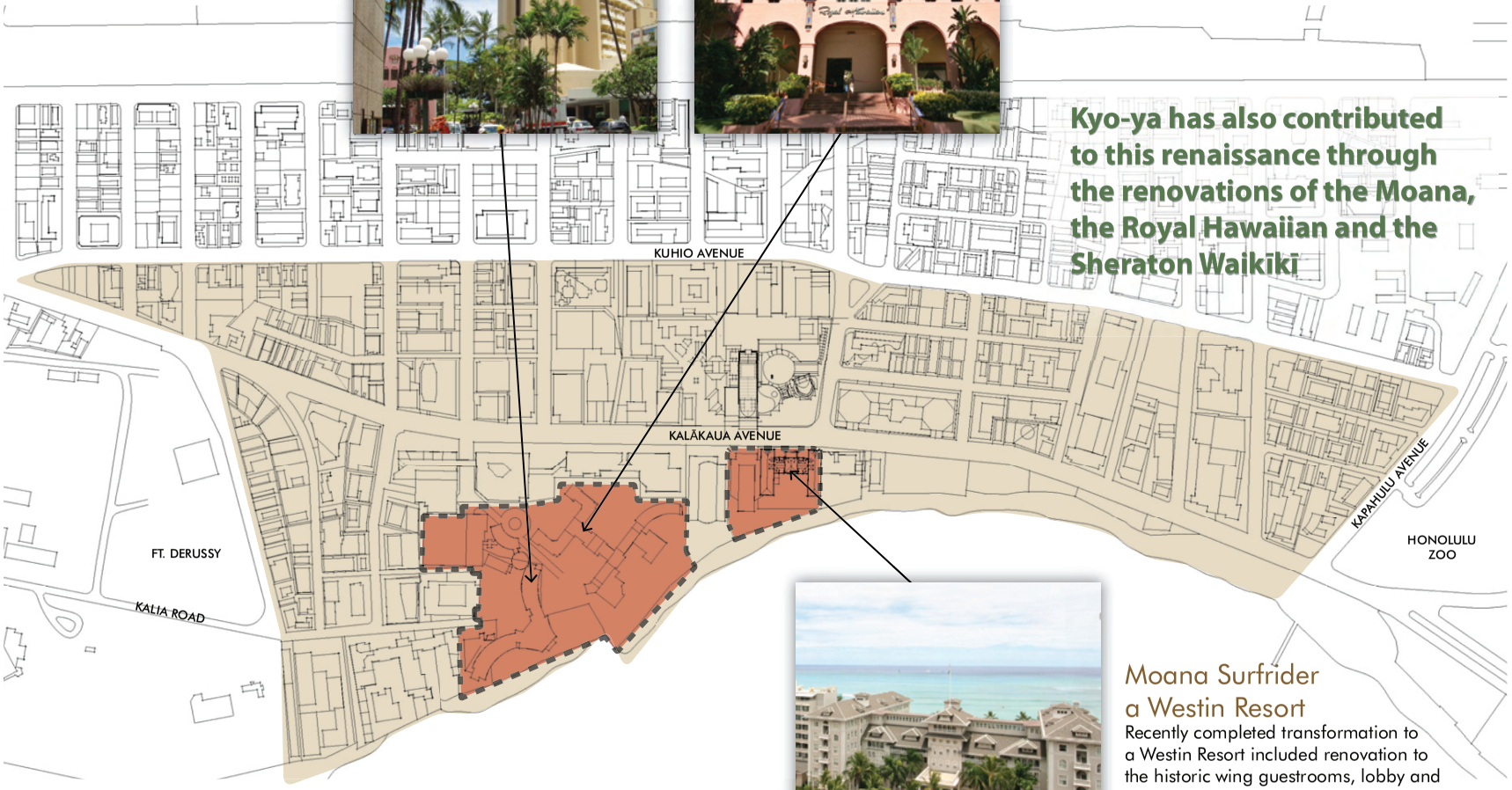
Sheraton Waikiki

Nearing completion of a 5 year renovation program including all guestrooms, public areas, restaurants, pools and arrival sequence.

The Royal Hawaiian

Newly renovated and reopened as a Starwood Luxury Collection property in December 2008. All 350+ original guestrooms have been renovated along with extensive refurbishment of the lobby, restaurants and the Monarch Room.

Kyo-ya has also contributed to this renaissance through the renovations of the Moana, the Royal Hawaiian and the Sheraton Waikīkī



Moana Surfrider a Westin Resort

Recently completed transformation to a Westin Resort included renovation to the historic wing guestrooms, lobby and introduced a new restaurant (Beach House) and a new Spa.

KA PIKO WAIKĪKĪ

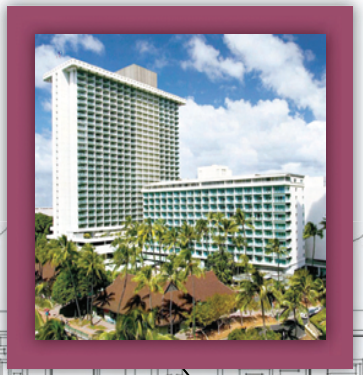
Kyoya

CONCEPT DESIGN
07.02.09

WAIKIKI URBAN RESORT CORE

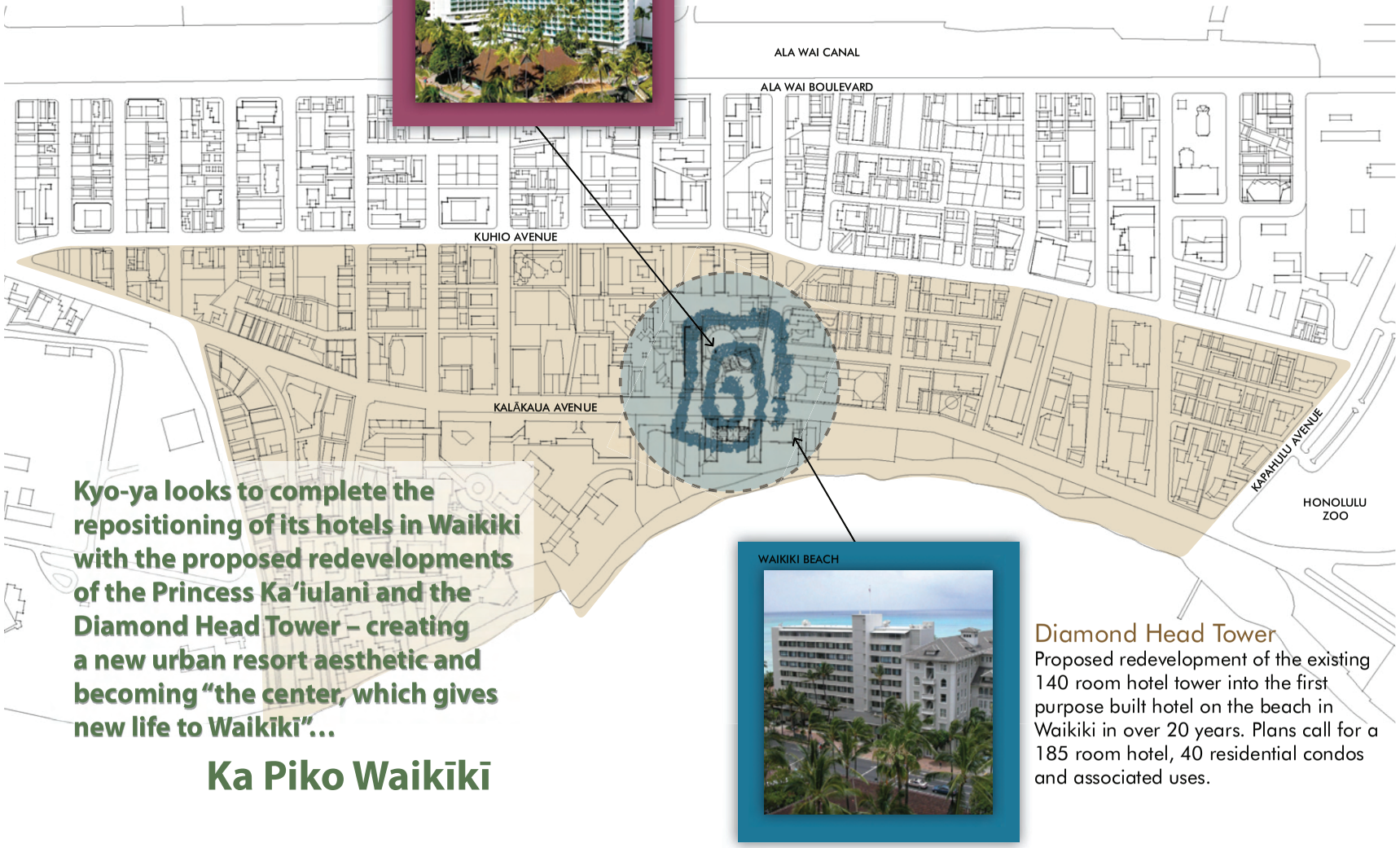
APPENDIX 1-1

WCITARCHITECTURE



Princesss Ka'iulani

Proposed redevelopment of the existing Princess Ka'iulani resort property into a new urban resort mixed-use development including Hotel, Condo-Hotel, Residential, Retail, Parking and associated uses.



Kyo-ya looks to complete the repositioning of its hotels in Waikiki with the proposed redevelopments of the Princess Ka'iulani and the Diamond Head Tower – creating a new urban resort aesthetic and becoming "the center, which gives new life to Waikīkī"...

Ka Piko Waikīkī

Diamond Head Tower

Proposed redevelopment of the existing 140 room hotel tower into the first purpose built hotel on the beach in Waikiki in over 20 years. Plans call for a 185 room hotel, 40 residential condos and associated uses.

Ka Piko Waikīkī

Kyoya

CONCEPT DESIGN
07.02.09

WAIKIKI URBAN RESORT CORE

APPENDIX 1-2

WCITARCHITECTURE

KA PIKO
WAIKĪKĪ

Kyoya

CONCEPT DESIGN
07.02.09

EXISTING DEVELOPMENT

APPENDIX 1-3

WCITARCHITECTURE

Ka Piko Waikīkī

Kyoya

CONCEPT DESIGN
07.02.09

PROPOSED DEVELOPMENT

APPENDIX 1-4

WCITARCHITECTURE

Ka Piko Waikīkī

Kyoya

CONCEPT DESIGN
07.02.09

EXISTING DEVELOPMENT

APPENDIX 1-5

WCITARCHITECTURE

Ka Piko Waikīkī

Kyoya

CONCEPT DESIGN
07.02.09

PROPOSED DEVELOPMENT

APPENDIX 1-6

WCITARCHITECTURE

Princess Ka'iulani

Redevelopment

PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

VICINITY MAP
(EXISTING)

APPENDIX 1-8

WCITARCHITECTURE

PRINCESS KAʻIULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

EXISTING DEVELOPMENT

APPENDIX 1-9

WCITARCHITECTURE

PRINCESS KA'IULANI
REDEVELOPMENT

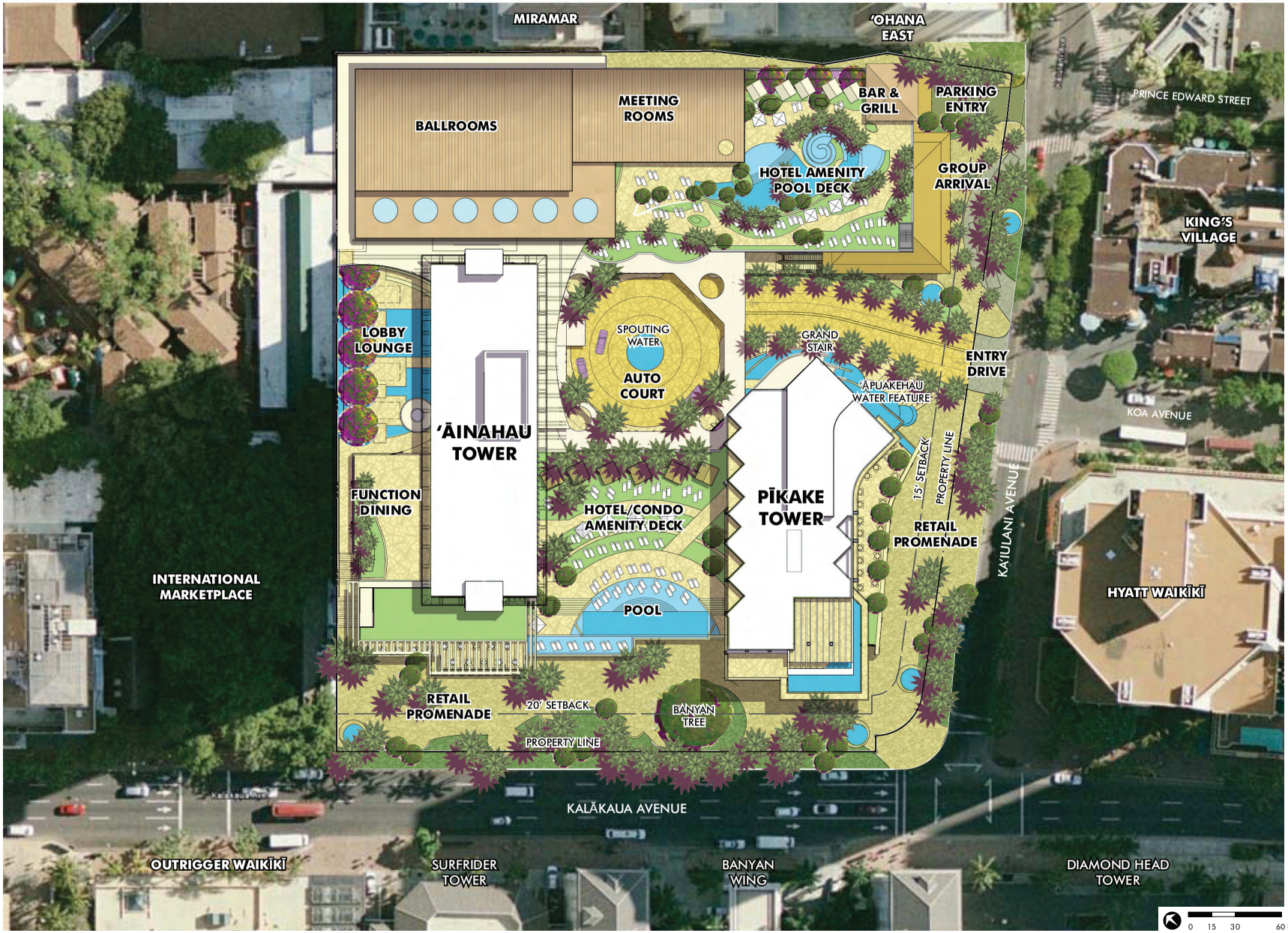
Kyoya

CONCEPT DESIGN
07.02.09

VICINITY MAP
(PROPOSED)

APPENDIX 1-10

WCITARCHITECTURE



PRINCESS KA'IULANI
REDEVELOPMENT

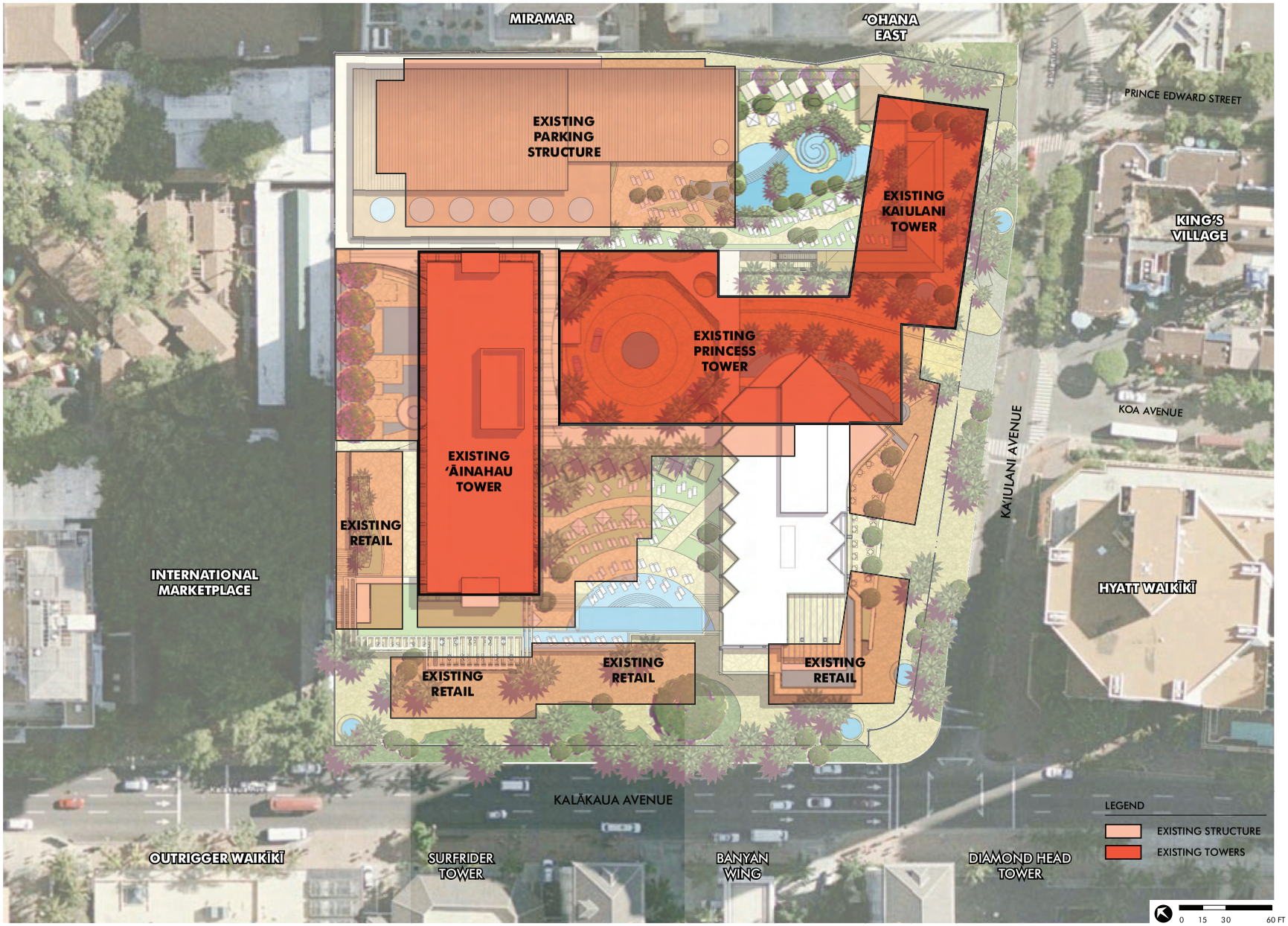
Kyoya

CONCEPT DESIGN
07.02.09

SITE PLAN

APPENDIX 1-11

WCITARCHITECTURE



PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

SITE PLAN
EXISTING OVERLAY

APPENDIX 1-12

WCITARCHITECTURE

PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

LEVEL B1

EL.+2'

APPENDIX 1-13

WCITARCHITECTURE

0 15 30 60 FT

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

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07.02.09

LEVEL 1

EL.+11'

APPENDIX 1-14

WCITARCHITECTURE

PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

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LEVEL 2

EL.+25'

APPENDIX 1-15

WCITARCHITECTURE

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

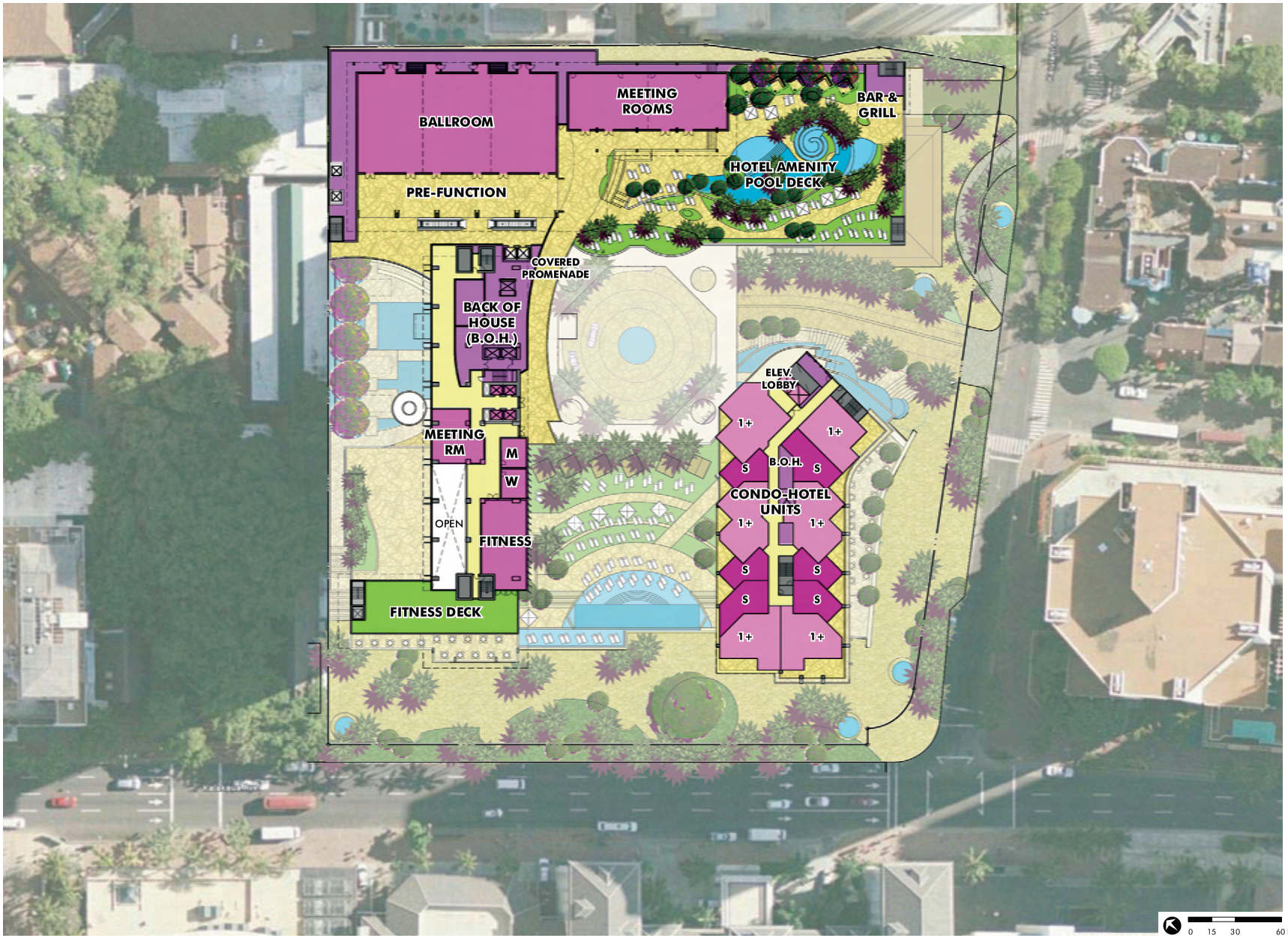
CONCEPT DESIGN
07.02.09

LEVEL 3

EL.+43.82'/43'

APPENDIX 1-16

WCITARCHITECTURE



PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

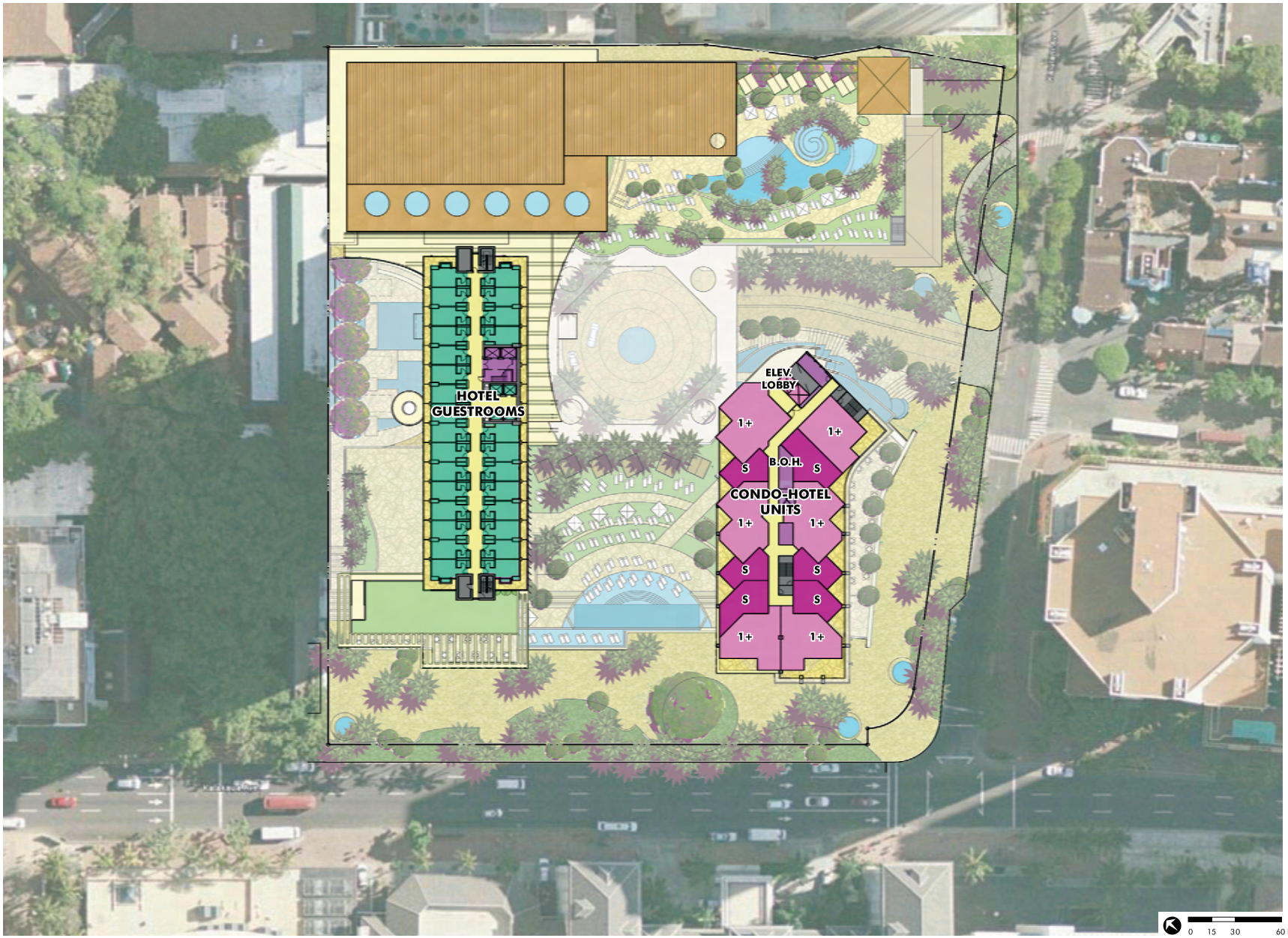
CONCEPT DESIGN
07.02.09

LEVEL 4

EL.+54.36'/+52'/60'

APPENDIX 1-17

WCITARCHITECTURE



PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

LEVELS 5-20

SUITE LEVELS

APPENDIX 1-18

WCITARCHITECTURE

PRINCESS
KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

LEVEL 21

CONDO-HOTEL

APPENDIX 1-19

WCITARCHITECTURE

PRINCESS
KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

LEVEL 21 MEZZANINE

AMENITY DECK

APPENDIX 1-20

WCITARCHITECTURE

PRINCESS
KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

LEVEL 22

RESIDENCE

APPENDIX 1-21

WCITARCHITECTURE

PRINCESS
KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

LEVEL 23-25

RESIDENCE

APPENDIX 1-22

WCITARCHITECTURE

PRINCESS
KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

LEVEL 26-33

RESIDENCE

APPENDIX 1-23

WCITARCHITECTURE

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

LEVEL 34

RESIDENCE

APPENDIX 1-24

WCITARCHITECTURE

PRINCESS KAIULANI RENOVATION AND REDEVELOPMENT

WAIKIKI SPECIAL DISTRICT AND PLANNED DEVELOPMENT RESORT REQUIREMENTS
7/17/2009

LOT

ZONING LOT AREA [1]	180,920	SF
DEVELOPABLE LOT AREA [2]	209,939	SF

ENVELOPE	ALLOWED/REQ STANDARD WSD	EXISTING	ALLOWED/REQ UNDER PDR [2]	PROPOSED UNDER PDR [2]
FAR	2.80	3.76	4.51	4.00
FLOOR AREA (SF)[5]	506,576	680,865	946,825	840,000
			[664,325][4]	[557,500][4]
BUILDING HEIGHT				
HEIGHT LIMIT	260 FT	260 FT	350 FT	350 FT
YARDS				
KALAKAUA AVE	20 FT (AVG)	14 FT	20 FT (AVG)	51 FT
KAIULANI AVE	15 FT	5 FT	15 FT	24 FT
EWA SIDE YARD	0 FT	0 FT	15 FT	0 FT
MAUKA SIDE YARD	0 FT	0 FT	15 FT	0 FT
TRANSITIONAL SETBACKS				
KALAKAUA AVE	REQUIRED	CONFORMING	REQUIRED	CONFORMING
KAIULANI AVE	REQUIRED	NON-CONFORMING	REQUIRED	CONFORMING
OPEN SPACE				
PERCENTAGE	50%	26%	50%	24%
AREA (SF)	90,460	47,925	90,460	44,452
PUBLIC OPEN SPACE				
PERCENTAGE		3%		16%
AREA (SF)		5,310		29,163

1 - PARCELS 1 & 41
2 - PARCELS 1 & 41 PLUS ONE-HALF AREA OF ABUTTING STREETS
3 - FIGURE SUBJECT TO CHANGE DEPENDENT ON FINAL EVALUATION OF SITE PLAN, BUILDING LAYOUT AND DESIGN
4 - TOTAL NEW AREA EXCLUDING LANAI (EXISTING AINAHAU TO REMAIN = 282,500)

PRELIMINARY PIKAKE TOWER UNIT MIX

Unit Type	Avg Size	Count	Bays/Unit	Bays
Condo-Hotel	470	105	1	105
Condo-Hotel Suite	1230	105	2	210
Hotel Total		210		315
Condo Studio	745	4	1	4
Condo 1BR	1115	4	2	8
Condo 2BR + Den	1975	41	3	123
Condo 3BR	2970	11	4	44
Penthouse	10240	1	11	11
Condominium Total		61		190

PRINCESS KA'IULANI REDEVELOPMENT

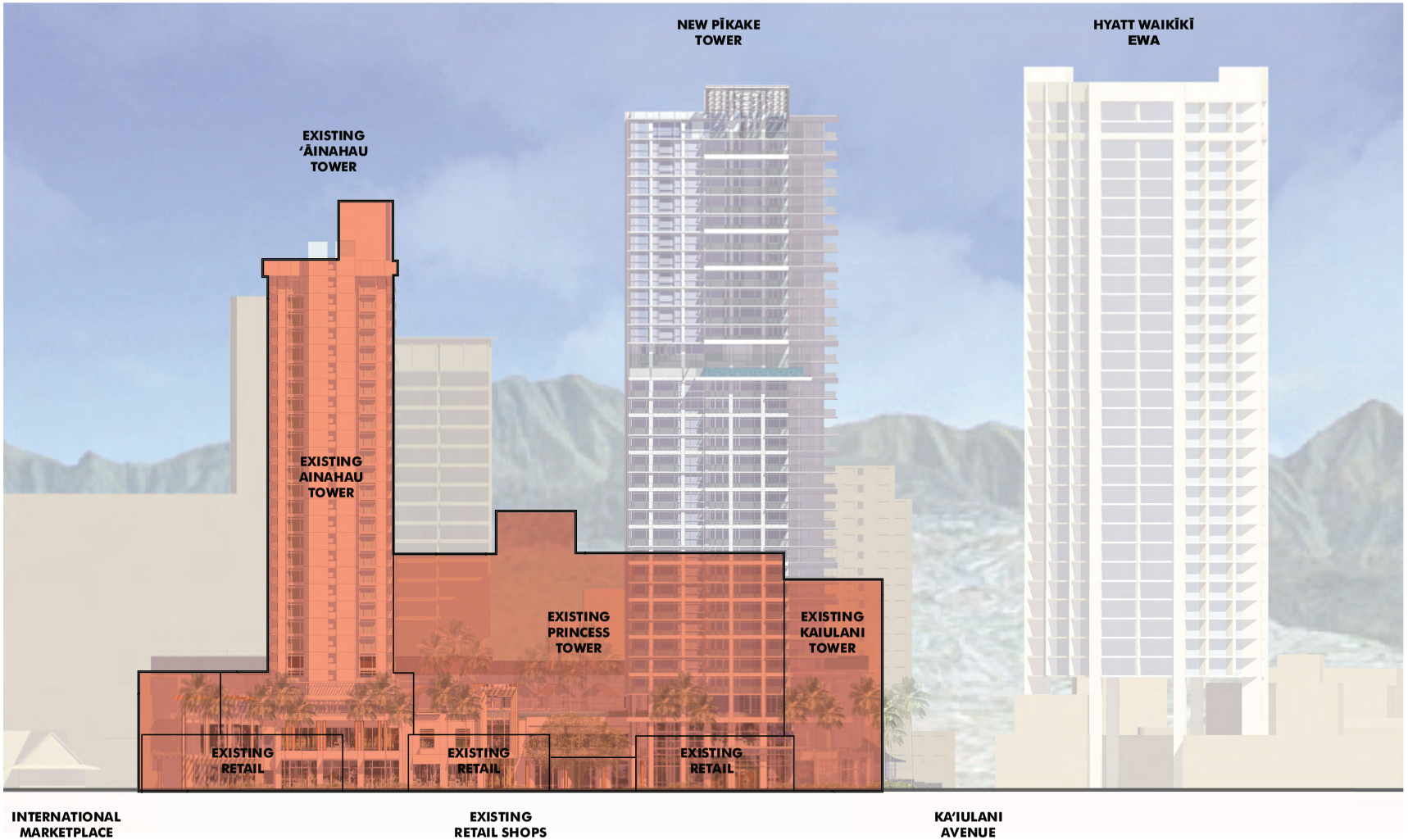
Kyoya

CONCEPT DESIGN
07.02.09

PROJECT SUMMARY

APPENDIX 1-25

WCITARCHITECTURE



PRINCESS KA'IULANI
REDEVELOPMENT

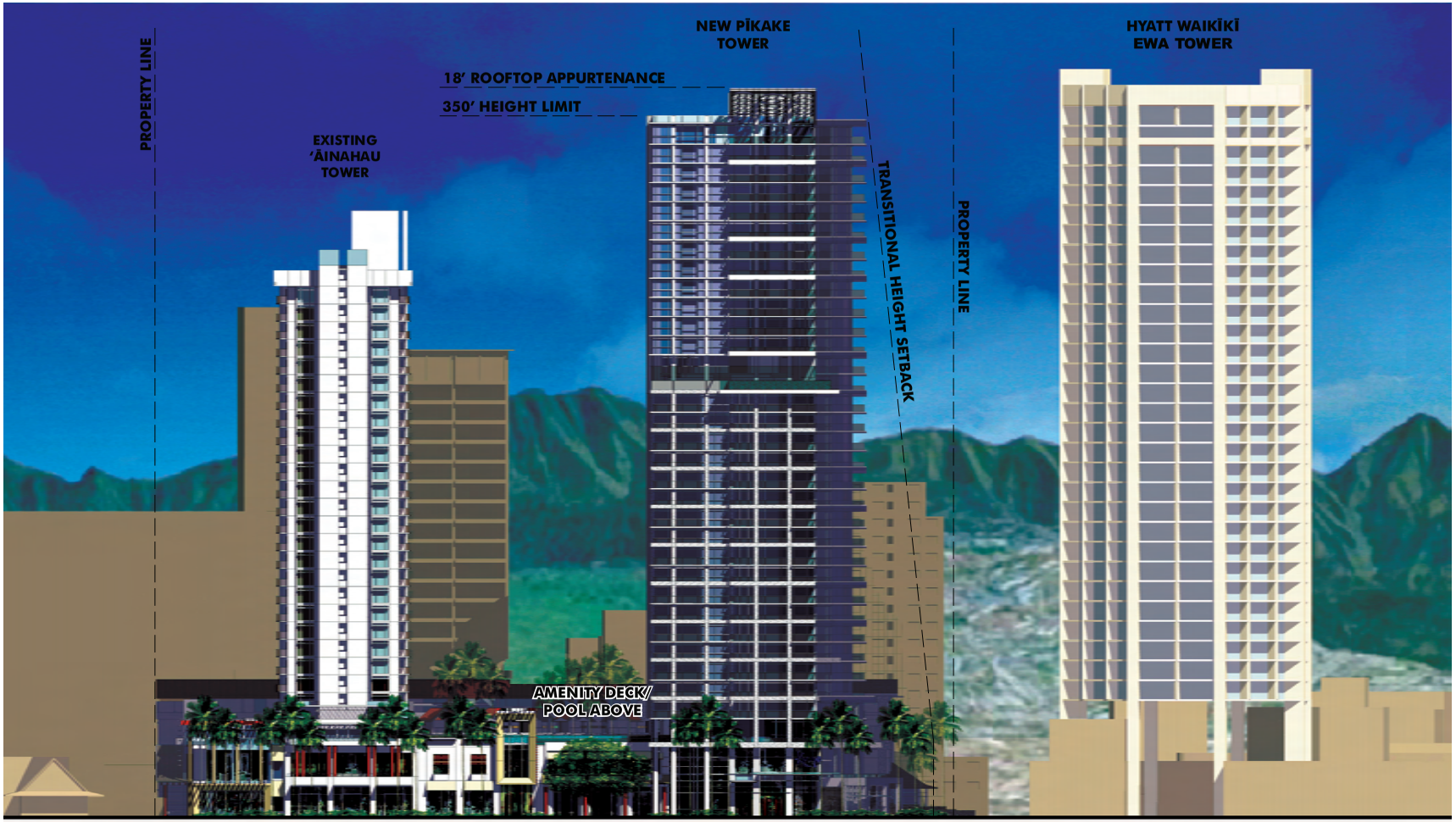
Kyoya

CONCEPT DESIGN
07.02.09

KALAKAUA
ELEVATION
EXISTING TOWER OVERLAY

APPENDIX 1-26

WCITARCHITECTURE



PRINCESS KAʻIULANI
REDEVELOPMENT

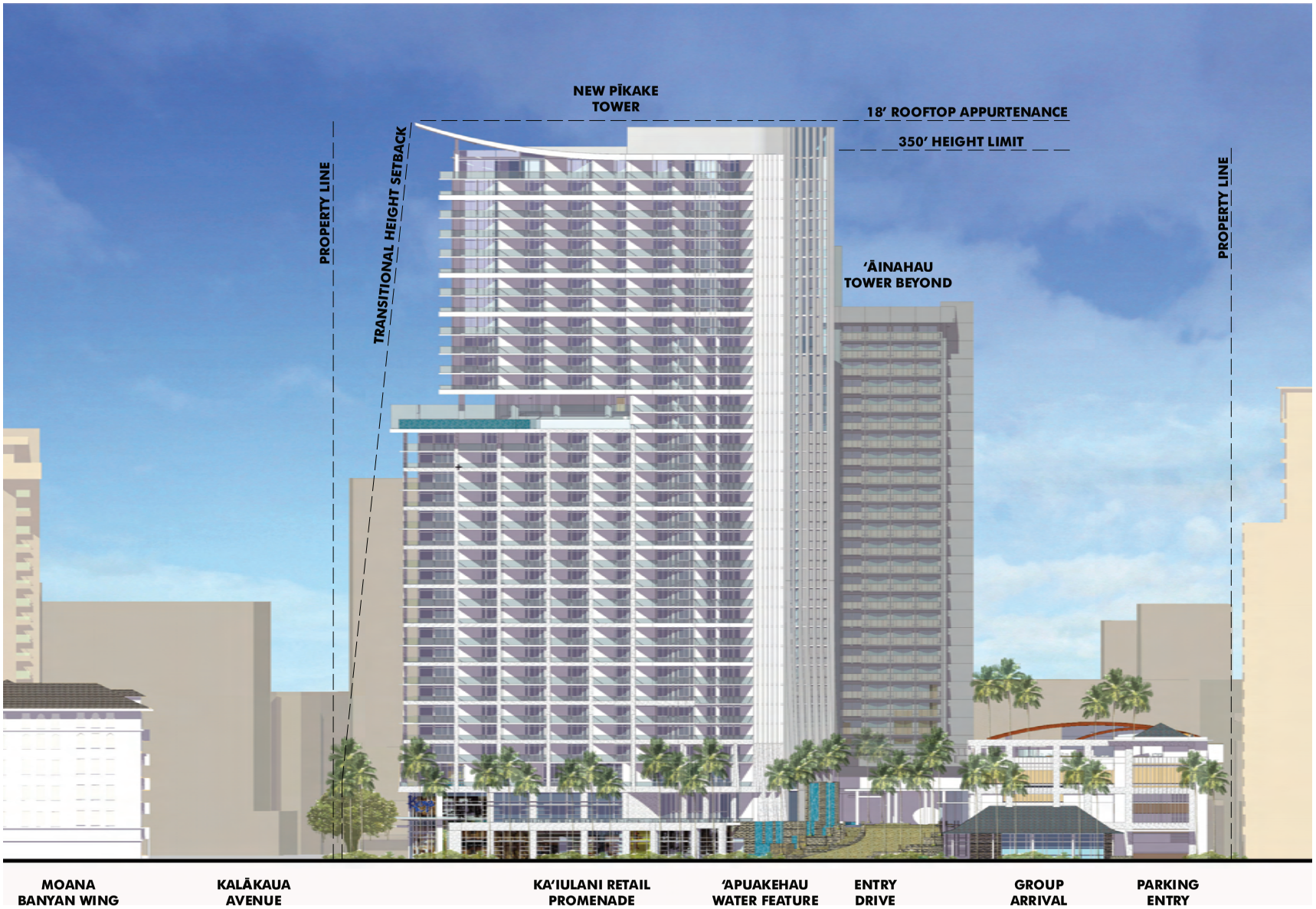
Kyoya

CONCEPT DESIGN
07.02.09

KALAKAUA ELEVATION

APPENDIX 1-27

WCITARCHITECTURE



PRINCESS KA'IULANI REDEVELOPMENT

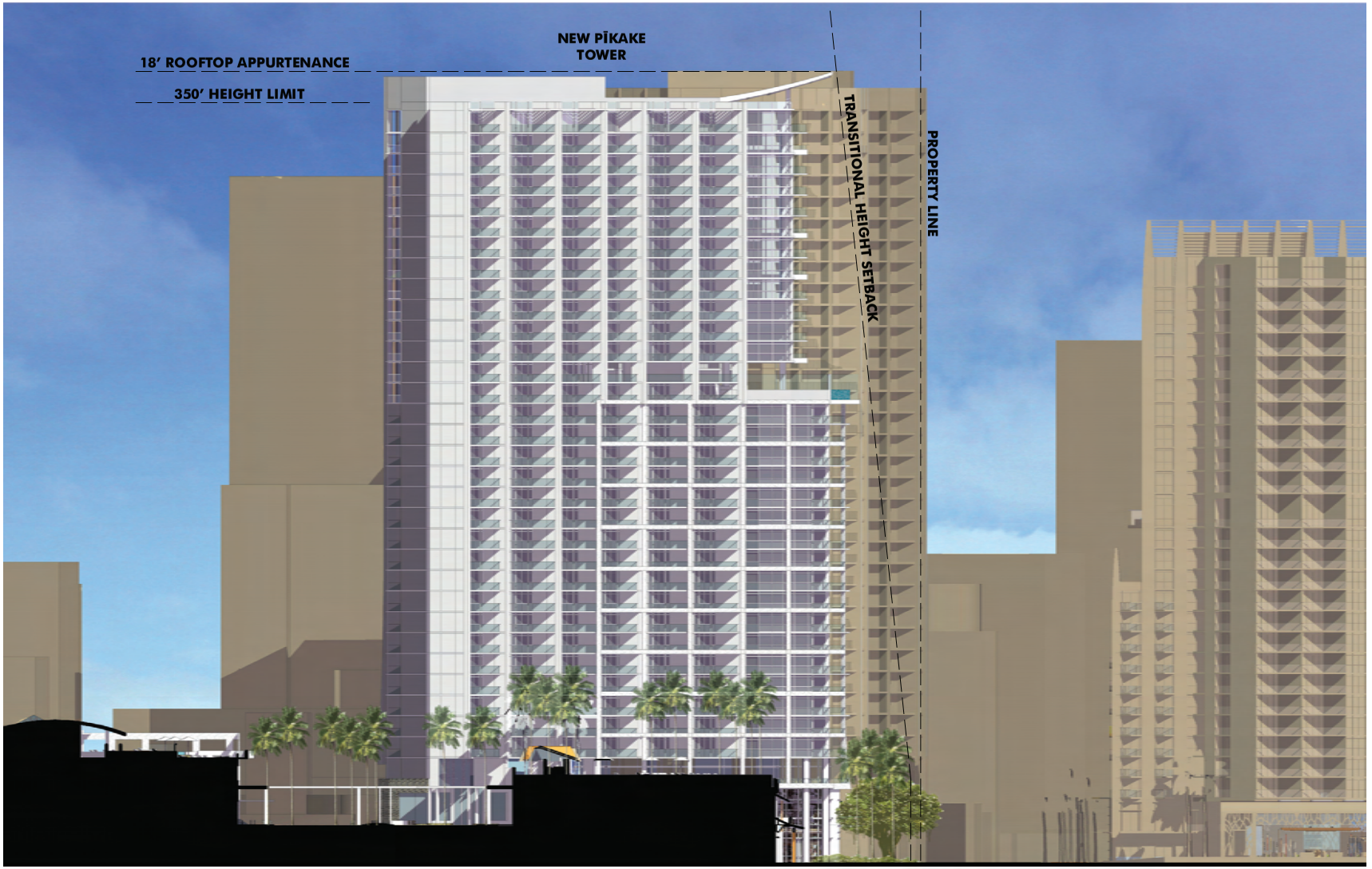
Kyoya

CONCEPT DESIGN
07.02.09

DIAMOND HEAD ELEVATION

APPENDIX 1-28

WCITARCHITECTURE



PRINCESS KA'IULANI REDEVELOPMENT

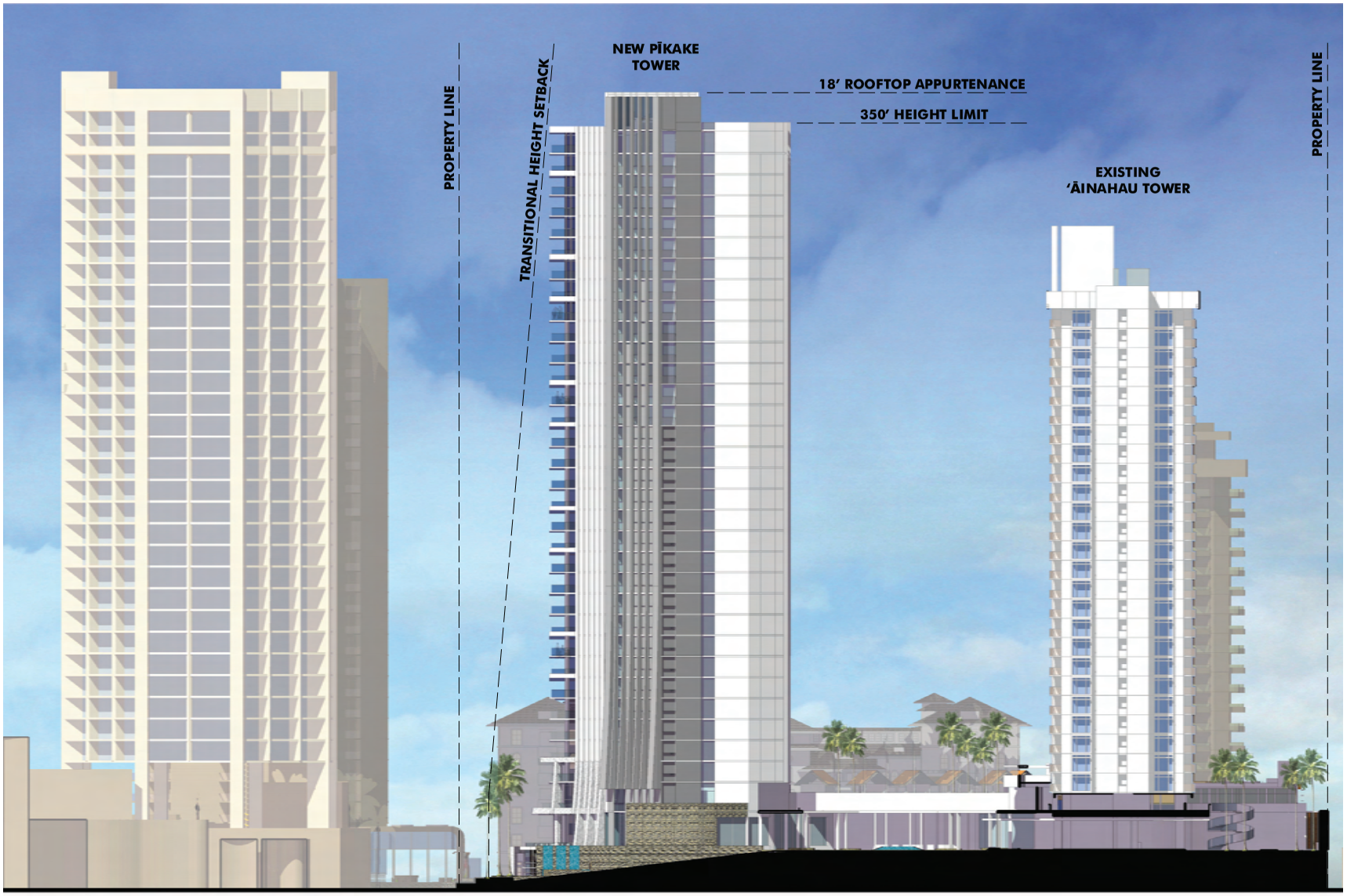
Kyoya

CONCEPT DESIGN
07.02.09

EWA ELEVATION

APPENDIX 1-29

WCITARCHITECTURE



PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

MAUKA ELEVATION

APPENDIX 1-30

WCITARCHITECTURE

PRINCESS
KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

AERIAL
PERSPECTIVE

APPENDIX 1-31

WCITARCHITECTURE

CULTURAL INFUSION

culture & history: waikīkī

Ahupua'a Waikīkī – land of spouting waters

- Playground for the Ali'i
- 3 major streams fed the low-lying lands – Apuakehau, Piinaio, & Kuekaunahi
- Rich in agricultural history – lo'i

PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

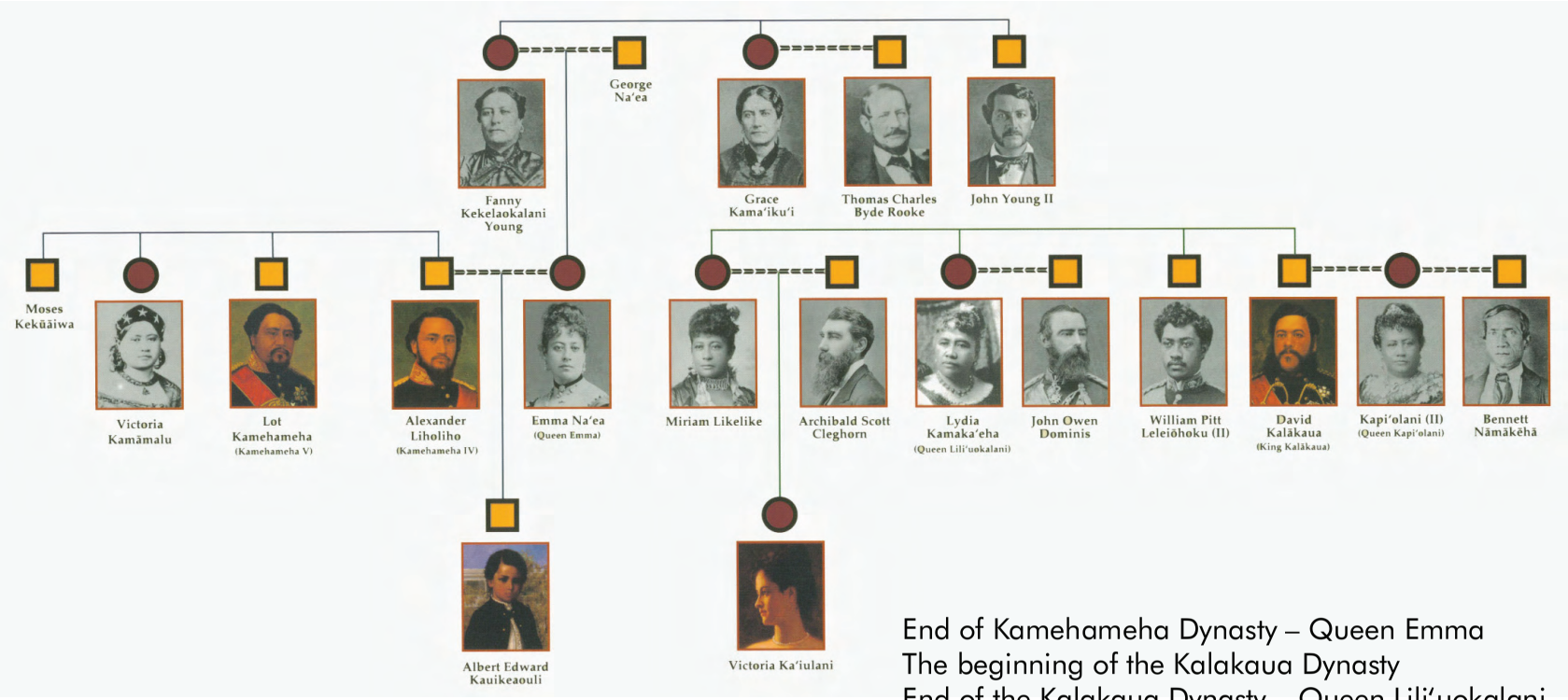
CONCEPT DESIGN
07.02.09

CULTURAL INFUSION - WAIKIKI & WATER

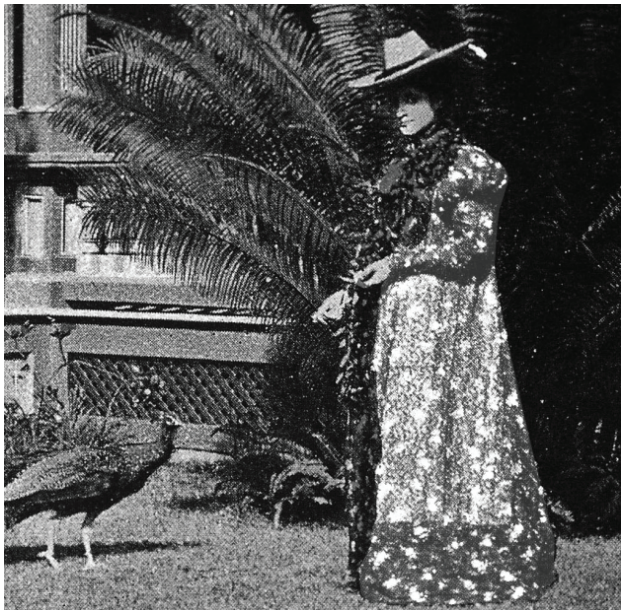
APPENDIX 1-33

WCITARCHITECTURE

culture & history: monarchy



End of Kamehameha Dynasty – Queen Emma
The beginning of the Kalakaua Dynasty
End of the Kalakaua Dynasty – Queen Lili'uokalani
Heir apparent – Princess Ka'iulani



culture & history: Princess Ka‘iulani

Daughter of Archibald Cleghorn & Princess Likelike
Lived on the site of the current hotel – ‘Āinahau
Banyan at home said to be the first in Waikīkī
Hosted luau under the banyan tree
Introduced her favorite bird, the peacock, to Hawai‘i
Pīkake (Chinese Jasmine) was named in her honor
Her mother, Princess Likelike’s last words to Ka‘iulani,
“You will never be Queen.”

LIKE MUCH OF THE ROYAL FAMILY, PRINCESS KA'IULANI LIVED LIVES FILLED WITH DUALITIES. THE ALI'I ARE GIVEN "KULEANA", WHICH IS BOTH RIGHT AND RESPONSIBILITY FOR THEIR PEOPLE. PRINCESS KA'IULANI, BEING THE HEIR TO THE THRONE, TOOK THAT RESPONSIBILITY SERIOUSLY.
HER LIFE WAS FILLED WITH ADVENTURE AND PLAY, KANIKAPILA WITH THE MAKA'AINANA (SINGING AND DANCING WITH THE PEOPLE), OR SURFING OFF HELUMOA AND ULUKOU.
THE PRINCESS BALANCED THE JOVIALITY WITH SERIOUS FOCUS, EDUCATION ABROAD, AND LOBBYING TO REGAIN THE SOVEREIGNTY OF HER NATION. ALONE SHE STOOD TALL BEFORE THE UNITED STATES GOVERNMENT TO PROTECT HER PEOPLE.

PRINCESS KA'IULANI WAS ALSO "HAPA", MIXED OF HAWAIIAN AND CAUCASIAN ANCESTRIES. MANY IMAGES OF HER SHOW THE COMPLEMENTING ELEMENTS OF HER LIFE, THE FINELY DETAILED FABRICS OF THE VICTORIAN FASHION, BALANCED WITH A ROYAL LEI OF FEATHERS FROM THE INDIGENOUS MANU OF HAWAI'I.

TRADITION	MODERNIZATION
SERIOUS FOCUS	JOYFUL PLAY
RULE THE MAKA'ĀINANA	SERVE THE MAKA'ĀINANA
FORMAL EVENTS, CONGRESSIONAL LOBBYING	DANCING, SINGING, SURFING, HORSEBACK RIDING WITH FAIRY
SUNSET	SUNRISE
PŌ, NIGHT	AO, DAY
'EWA	DIAMOND HEAD
MAUKA	MAKAI

PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

CULTURAL INFUSION - PRINCESS KA'IULANI HER LIFE OF DUALITY

APPENDIX 1-36

WCITARCHITECTURE

PRINCESS RUTH KE'ELIKOLANI BEQUEATHED THE LAND OF 'AINAHAU TO PRINCESS KA'IULANI. PRINCESS KA'IULANI'S FATHER, ARCHIBALD CLEGHORN BROUGHT MANY UNIQUE FLORA AND FAUNA TO 'AINAHAU, PARTICULARLY BANYANS AND PEACOCKS. THE PRINCESS WAS FOND OF THE PEACOCKS, WHO WERE SAID TO FOLLOW HER DURING HER STROLLS OF THE GROUNDS. HER FONDNESS INSPIRED THE STATUE OF HER WITH ONE OF HER PEACOCKS AT HER SIDE. IT IS SAID THAT UPON HER PASSING AT THE UNTIMELY AGE OF 23, HER PEACOCKS WAILED WILDLY THROUGHOUT THE NIGHT.
TODAY, THE PRINCESS' LEGACY IS CARRIED ON IN THE PEACOCKS OF THE HONOLULU ZOO.
ALSO, MANY BANYANS ACROSS THE ISLAND OWE THEIR LINEAGE TO THE 'AINAHAU BANYAN.
TO HONOR THEIR PRINCESS, THE PEOPLE OF HAWAI'I RENAMED THE CHINESE JASMINE, A FAVORITE OF THE PRINCESS, TO "PIKAKE", WHICH IS HAWAIIAN FOR PEACOCK. THE BUDS AND BLOSSOMS OF THE FLOWER ARE OFTEN STRUNG INTO LEI.

THE ARCHITECTURE OF THE NEW PRINCESS KA'IULANI WILL BE INSPIRED BY THE PRINCESS' LIFE, AND THE THINGS SHE LOVED IN LIFE, SUCH AS HER BELOVED 'AINAHAU, HER PEACOCKS, AND HER CULTURE.

PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

CULTURAL INFUSION - PRINCESS KA'IULANI HER PEACOCKS AND PIKAKE

APPENDIX 1-37

WCITARCHITECTURE

PRINCESS KA'IULANI
REDEVELOPMENT

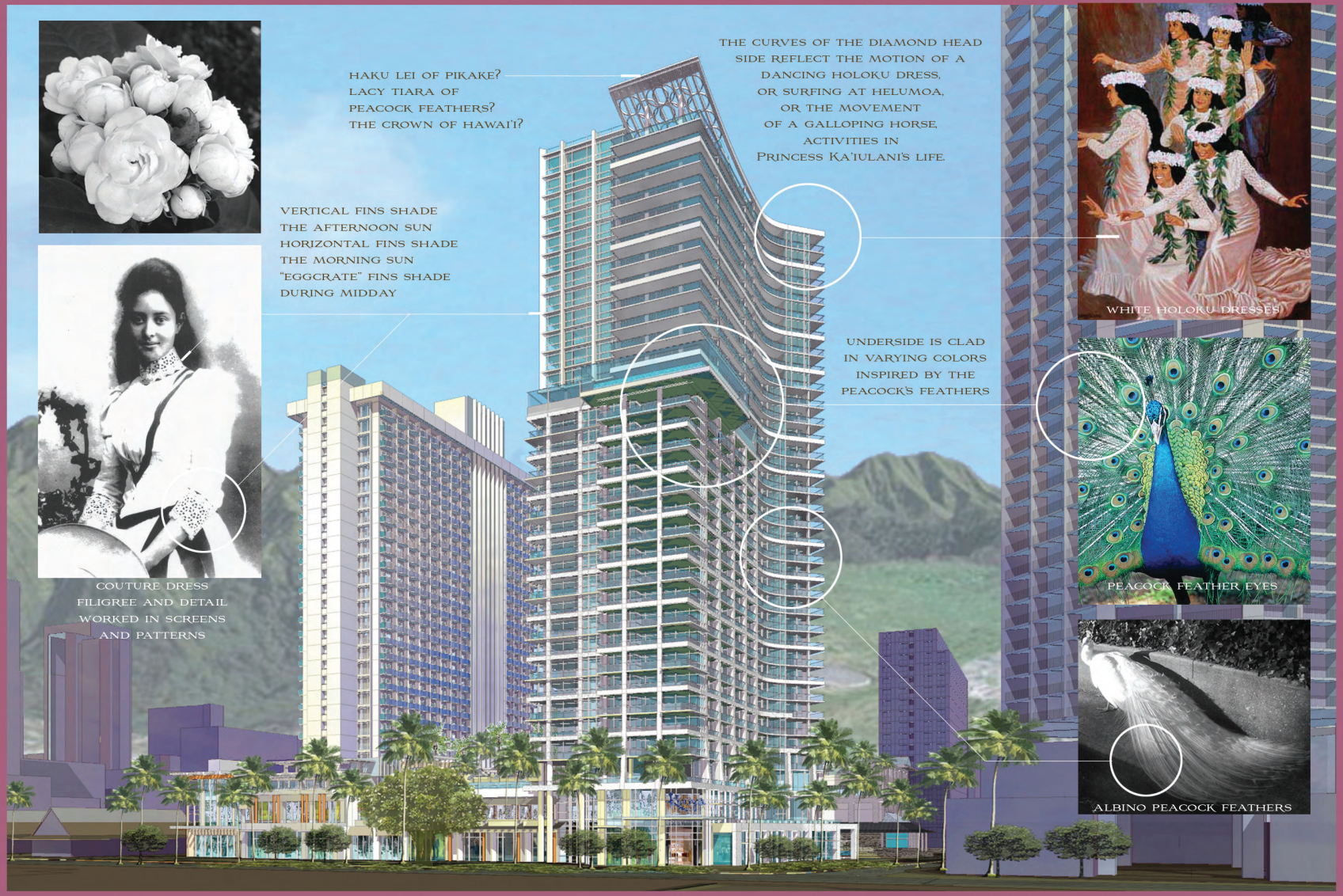
Kyoya

CONCEPT DESIGN
07.02.09

CULTURAL INFUSION - MAKAI-'EWA VIEW

APPENDIX 1-38

WCITARCHITECTURE



PRINCESS KA'IULANI
REDEVELOPMENT

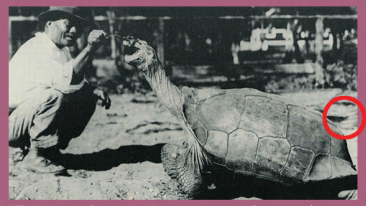
Kyoya

CONCEPT DESIGN
07.02.09

CULTURAL INFUSION - MAKAI-DIAMOND HEAD VIEW

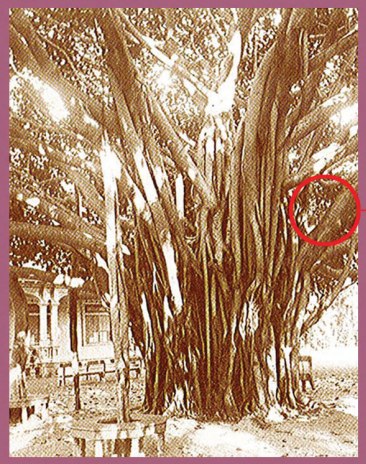
APPENDIX 1-39

WCITARCHITECTURE



ʻĀINAHAU'S ANIMALS, LIKE KAʻIULANI'S TURTLE, ENLIVEN THE NEW HOTEL AMENITIES DECK IN THE FORM OF STATUES AND WATER FEATURES.

ʻĀINAHAU'S BANYAN TREE WAS A PLACE FOR FREQUENT GATHERINGS. THE EXISTING BANYAN WILL BE INTEGRATED INTO THE NEW PROMENADE TO BECOME ANOTHER GATHERING PLACE FOR VISITORS AND CULTURAL PRACTITIONERS.



LARGE PROMENADE AND PLAZA WITH PLACES FOR GATHERING

THE PATH TO ʻĀINAHAU

GROUPS ARRIVE AT THE GROUND LEVEL TO A PAVILION REMINISCIENT OF THE PREVIOUS RETAIL STRUCTURES

THE NEW TOWER'S ELEVATOR LOBBIES ARE ALIGNED TO FACE BOTH THE STATUE OF PRINCESS KAʻIULANI AND THE FORMER LOCATION OF ʻĀINAHAU'S BANYAN TREE.

PRINCESS KAʻIULANI REDEVELOPMENT

KYOYA

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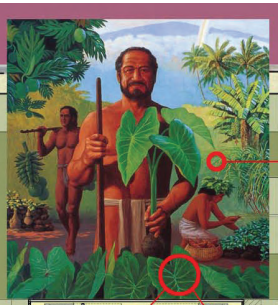
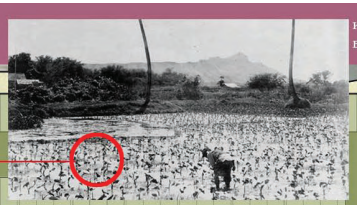
CULTURAL INFUSION - ʻĀINAHAU AND WAIKĪKĪ

APPENDIX 1-40

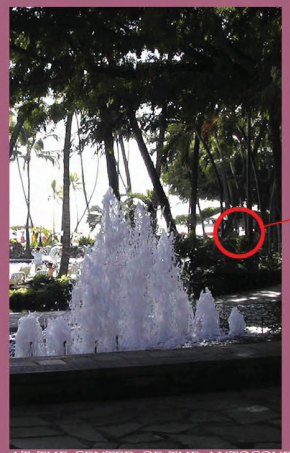
WCITARCHITECTURE

'ĀINAHAU'S WATER GARDENS ARE REINTERPRETED IN THE LOBBY AND LOUNGE OF THE HOTEL AND IN THE AMENITIES DECKS OF THE HOTEL AND CONDO.

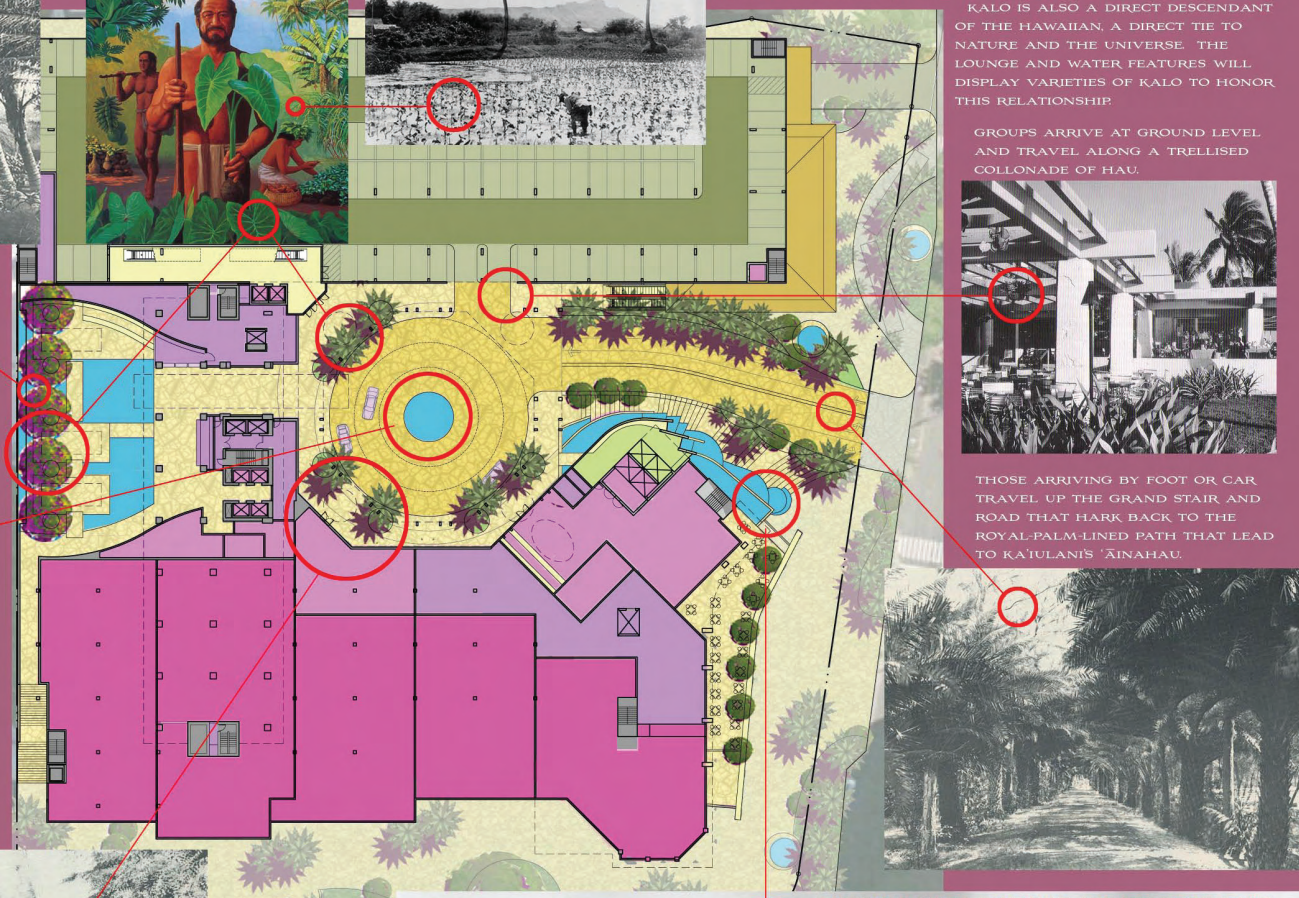




KALO FIELDS ONCE DOMINATED THE WAIKĪKĪ LANDSCAPE, ENGINEERED BY ALI'I KALAMAKUA. (HE ALSO MARRIED THE FAMED SURFER, KELEA) KALO IS ALSO A DIRECT DESCENDANT OF THE HAWAIIAN, A DIRECT TIE TO NATURE AND THE UNIVERSE. THE LOUNGE AND WATER FEATURES WILL DISPLAY VARIETIES OF KALO TO HONOR THIS RELATIONSHIP.

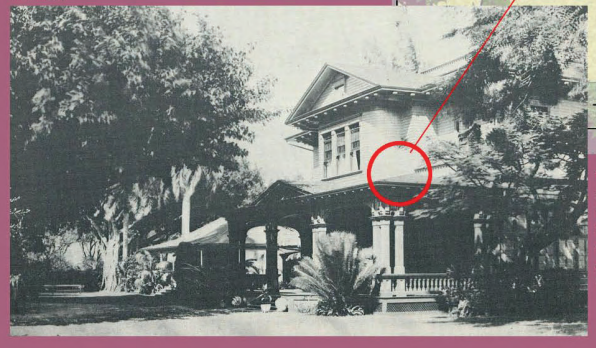


AT THE CENTER OF THE AUTOCOURT IS A FOUNTAIN, TO PAY HOMAGE TO 'ĀPUAKĒHAU AND WAIKĪKĪ, WHICH MEANS "SPOUTING WATER."



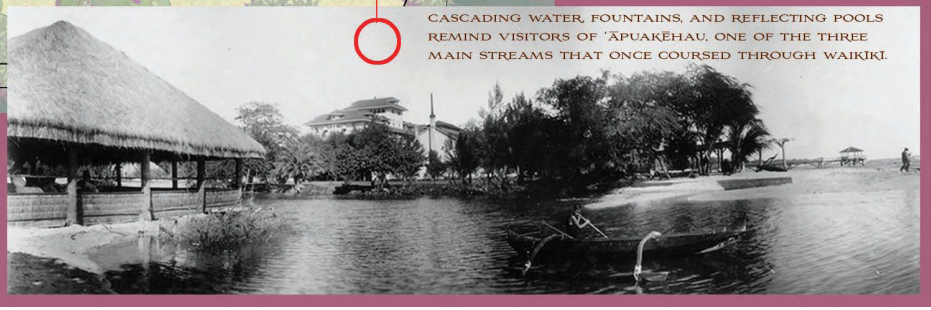
GROUPS ARRIVE AT GROUND LEVEL AND TRAVEL ALONG A TRELLISED COLLONADE OF HAU.

THOSE ARRIVING BY FOOT OR CAR TRAVEL UP THE GRAND STAIR AND ROAD THAT HARK BACK TO THE ROYAL-PALM-LINED PATH THAT LEAD TO KA'IULANI'S 'ĀINAHAU.



THE AUTOCOURT IS ENCUCLED BY A COLLONADE AND PORCH, INSPIRED BY THE PORCH OF THE PRINCESS' HOME OF 'ĀINAHAU.

CASCADING WATER, FOUNTAINS, AND REFLECTING POOLS REMIND VISITORS OF 'ĀPUAKĒHAU, ONE OF THE THREE MAIN STREAMS THAT ONCE COURSED THROUGH WAIKĪKĪ.



PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

CULTURAL INFUSION - 'ĀINAHAU AND WAIKĪKĪ ARRIVAL SEQUENCE

APPENDIX 1-41

WCITARCHITECTURE

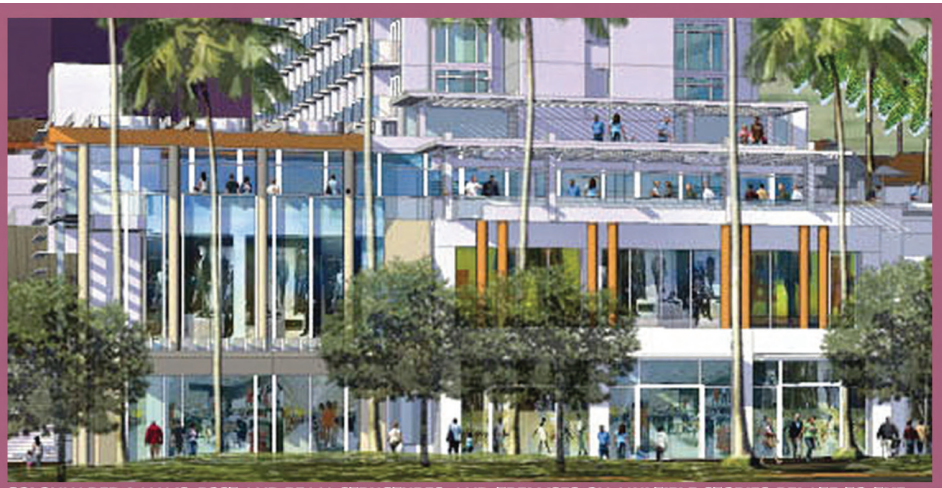
ARCHITECTURAL CONTEXTUALISM

POST-AND-BEAM RETAIL STRUCTURES, MULTIPLE LEVELS OF ACTIVITY
INTERNATIONAL MARKET PLACE

INTERNATIONAL MARKET PLACE
OUTRIGGER CANOE CLUB TRELLIS

DOUBLE COLUMNS ALONG THE PORCHES,
TIERED LANAIS, JAMES STEINER HOME, WAIKĪKĪ

ORIGINAL KA'IULANI RETAIL FRONTAGE



COLONNADED LANAIS, POST-AND-BEAM STRUCTURES, AND TRELLISES ON MULTIPLE STORIES RELATE TO THE ARCHITECTURAL CHARACTER OF WAIKĪKĪ, SUCH AS THE INTERNATIONAL MARKET PLACE, THE OLD MANOR HOMES ALONG THE WATERFRONT, AND THE OUTRIGGER CANOE CLUB LANAI.

A TERRACED PODIUM CREATES PLACES THAT ENGAGE THE STREET LIFE. LANDSCAPE ON MULTIPLE LEVELS ALSO EXTENDS THE GREENERY UP. THESE CONCEPTS ARE SIMILAR TO THE PODIUM OF THE HYATT. TOGETHER, THESE TWO PROPERTIES WILL CREATE A VALLEY OF GREEN ALONG KA'IULANI AVENUE.

ACTIVITES SUCH AS THE RESIDENTIAL POOL AND AMENITIES DECKS ARE PUSHED TO THE EDGES OF THE BUILDINGS, TO ADD TO THE ENERGY OF THE STREETFRONT RETAIL, AND TO ENRICHI THE PEDESTRIAN AND GUEST EXPERIENCE.

STEPPED 2-STORY RETAIL PODIUM ALONG KA'IULANI AVENUE

HYATT'S 2-STORY RETAIL PODIUM AND LANDSCAPED UPPER TERRACE

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

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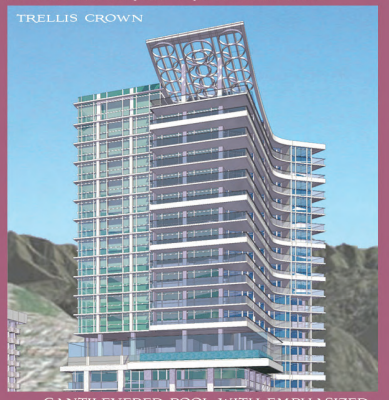
ARCHITECTURAL CONTEXT - PODIUM ELEMENTS

APPENDIX 1-43

WCITARCHITECTURE

THE CANTILEVERED POOL AND TRELLIS CROWN OF PĪKAKE TOWER RELATE TO THE CROWN OF THE EXISTING 'ĀINAHAU TOWER, WITH FRAMED BAND AND PATTERNED TRELLIS ELEMENTS



CANTILEVERED POOL WITH EMPHASIZED HORIZONTAL BAND

PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

ARCHITECTURAL CONTEXT - TOWER ELEMENTS

APPENDIX 1-44

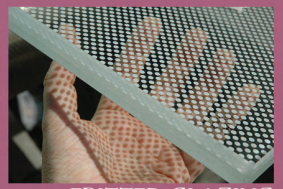
WCITARCHITECTURE

SUSTAINABILITY

WEST-FACING FACADE
VERTICAL PLANES, SUCH AS FINS AND WALLS, OFFER THE MOST SOLAR PROTECTION. THE SAWTOOTH FACADE NATURALLY ORIENTS SOLID WALLS DUE WEST TO SHIELD INTERIORS FROM THE AFTERNOON SUN.

WEST AND SOUTHWEST FACADES

PERVIOUS PAVING



FRITTED GLAZING

LANDSCAPE CONCEPTS
PAVING CAN INCORPORATE LOCAL MATERIALS SUCH AS VOLCANIC BASALT AND CORAL, WHERE POSSIBLE. PAVING CAN ALSO UTILIZE PERVIOUS MATERIALS IN STRATEGIC PLACES TO MINIMIZE WATER RUNOFF.
THE PLAZA AND OPEN SPACES WILL ALSO UTILIZE APPROPRIATE INDIGENOUS PLANTS.

PASSIVE ENVIRONMENTAL SYSTEMS
OPTIMIZING BUILDING ORIENTATION MINIMIZES SOLAR GAIN, WHICH REDUCES COOLING REQUIREMENTS AND INCREASES COMFORT.
ARTICULATIONS IN THE SKIN, SUCH AS FINS, EXTENDED FLOORPLATES, AND TRELLISES, INCREASE SHADING.
LOW-E GLAZING WILL FURTHER LOWER HEAT TRANSMISSION. WHERE POSSIBLE, GLAZING CAN BE FRITTED TO FURTHER DEFLECT SOLAR ENERGY.
OPERABLE WINDOWS AND SLIDING LANAI DOORS, LOCATED ALONG THE LEE SIDE OF THE UNITS, WILL HELP TO DRAW HOT AIR FROM UNITS, WITH THE HELP FROM WAIKĪKĪ'S STEADY BREEZES.
LIGHT COLORS FOR SURFACES WILL HELP DEFLECT SOLAR ENERGY.
THE DECKS AND ROOFS OF THE PROJECT ARE DESIGNED TO RETAIN AS MUCH RAINFALL AS POSSIBLE IN A CATCHMENT SYSTEM; FURTHER STUDIES WILL SEE HOW THE PROJECT CAN REUSE WATER FOR IRRIGATION, FLUSHING, ETC.

LOW-E GLAZING

SOUTH-FACING FACADE
HORIZONTAL PLANES, SUCH AS DEEP LANAIS AND FASCIA, OFFER THE MOST SOLAR PROTECTION. THE SAWTOOTH FACADE AND TRIANGULAR LĀNAIS CREATE DEEP HORIZONTAL PLANES TO MAXIMIZE PROTECTION..

SOUTH AND SOUTHWEST FACADES

SOUTHWEST-FACING FACADE
EGGCRATED, OR COMBINED HORIZONTAL AND VERTICAL PLANES, OFFER THE MOST SOLAR PROTECTION. DEEP LANAIS AND BRIS SOLEIL PROTECT THE MAKAI FACADES.

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

SUSTAINABILITY CONCEPTS - PASSIVE SYSTEMS

APPENDIX 1-46

WCITARCHITECTURE

HELIOSTATS

SUNLIGHT FOR THE CONDO AMENITIES DECK CAN POTENTIALLY BE SUPPLEMENTED WITH HELIOSTATS THAT REFLECT NATURAL SUNLIGHT ONTO THE DECKS.

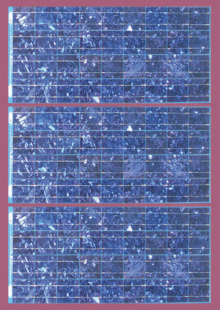
LARGE MIRRORS TRACK THE SUN'S PATH TO MAXIMIZE GUEST COMFORT. SIMILAR SYSTEMS HAVE BEEN INSTALLED IN URBAN CONDITIONS, SUCH AS NEW YORK.

HELIOSTATS ON A RESIDENTIAL TOWER, SHINING ON TEARDROP PARK, NEW YORK

CFL BULBS WILL SUPPLEMENT NATURALLY-LIT SPACES, AND HIGH-EFFICIENCY FANS WILL SUPPLEMENT NATURALLY-VENTILATED SPACES WHERE POSSIBLE.

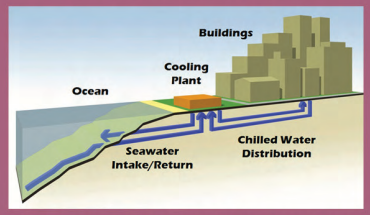
GALLERY, DALLAS, TEXAS

KYO-YA IS STUDYING OPPORTUNITIES FOR BUILDING-INTEGRATED PHOTO-VOLTAICS AND SMALL WIND TURBINES ON THE FLAT ROOFS AND OTHER SURFACES OF BOTH THE EXISTING ʻĀINAHAU TOWER AND THE NEW PĪKAKE TOWER, FURTHER REDUCING ENERGY USAGE.



KYO-YA CURRENTLY UTILIZES A SPRING TO SUPPLY MOST OF THEIR WATER TO THEIR PROPERTIES, LESSENING THE IMPACT ON WAIKĪKĪ'S SUPPLY. LOW-FLUSH TOILETS, AND OTHER WATER-SAVING DEVICES WILL BE USED TO MINIMIZE WATER USAGE. GREY WATER COLLECTED FROM RUN-OFF WILL BE REUSED FOR IRRIGATION AND POTENTIALLY FLUSHING.

KYO-YA IS ALSO CURRENTLY STUDYING A DEEP WELL AND/OR SEA WATER AIR COOLING SYSTEM THAT WILL COOL A/C AIR NATURALLY AND LOWER ENERGY COSTS. OTHER INTERNAL SYSTEMS LIKE COGENERATION PLANTS ARE BEING CONSIDERED TO FURTHER REDUCE IMPACT UPON THE CITY GRID.



SEA WATER AIR COOLING SYSTEM

DYNAMIC ENVIRONMENTAL SYSTEMS

WAIKĪKĪ IS IN ABUNDANCE OF SUN, WIND, AND WATER (OCEAN AND RAIN). VARIOUS SYSTEMS WILL BE IMPLEMENTED TO MINIMIZE RESOURCE AND ENVIRONMENTAL IMPACT.

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

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SUSTAINABILITY CONCEPTS - DYNAMIC SYSTEMS

WCITARCHITECTURE

ADDITIONAL PLANNING STUDIES & DIAGRAMS

Existing Porte Cochere Arrival

TIGHT AREA FOR ARRIVAL

NO AREA/METHOD FOR HANDLING GROUP LUGGAGE

Existing Tour Bus Congestion

LARGE BUSES STAGE/ LOAD ON KA'IULANI AVE.

TOUR BUSES STAGING DOWN KOA AVE.

PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

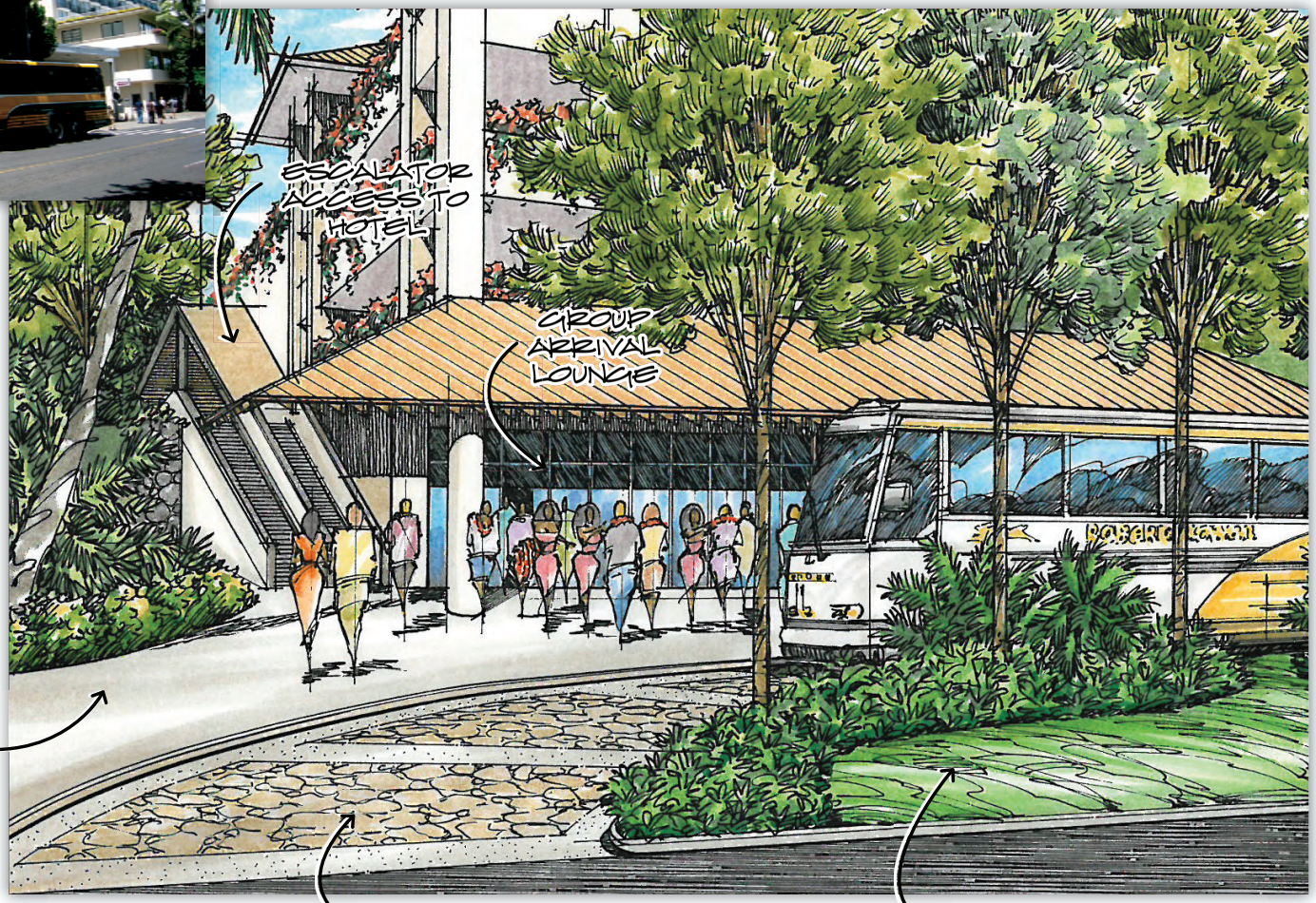
EXISTING CONDITIONS

APPENDIX 1-49

WCITARCHITECTURE

Existing

*NOTE: EXPLORE PROVISION OF A PASSING LANE ADJACENT TO BUSES. ALTERNATIVE MEASURE: RESORT SECURITY TO ENSURE VEHICLES DO NOT REVERSE OUT OF PULLOUT AREA



Proposed

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
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PROPOSED GROUP ARRIVAL

APPENDIX 1-50

WCITARCHITECTURE

Existing Retail and "Public Open Space"

PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

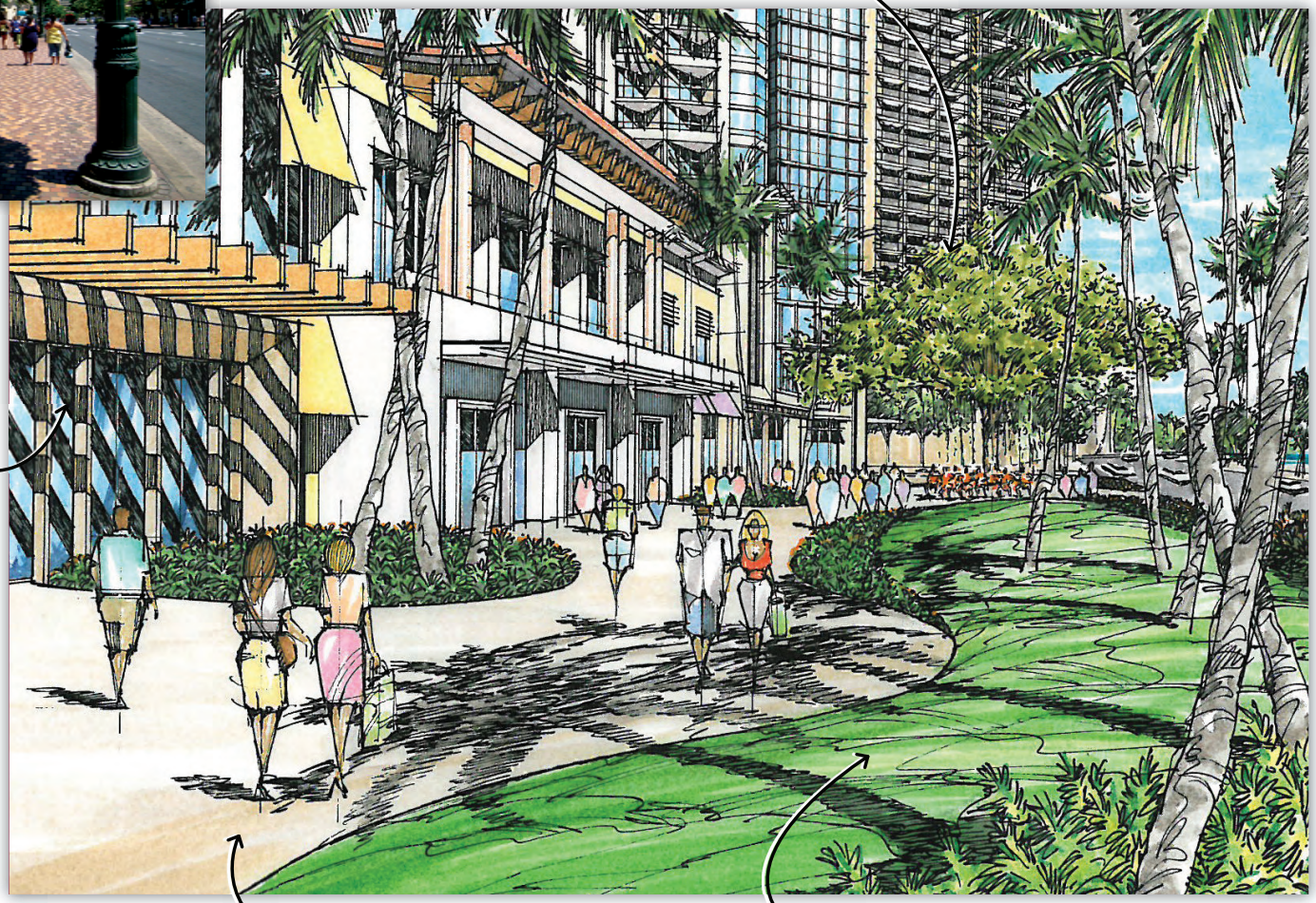
CONCEPT DESIGN
07.02.09

EXISTING CONDITIONS

APPENDIX 1-51

WCITARCHITECTURE

Existing



Proposed

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

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PROPOSED KALAKAUA PROMENADE

APPENDIX 1-52

WCITARCHITECTURE

Existing

Proposed

Existing

Proposed

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

VIEW STUDIES

APPENDIX 1-54

WCITARCHITECTURE

Existing

Proposed

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

VIEW STUDIES

APPENDIX 1-55

WCITARCHITECTURE

Existing

Proposed

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

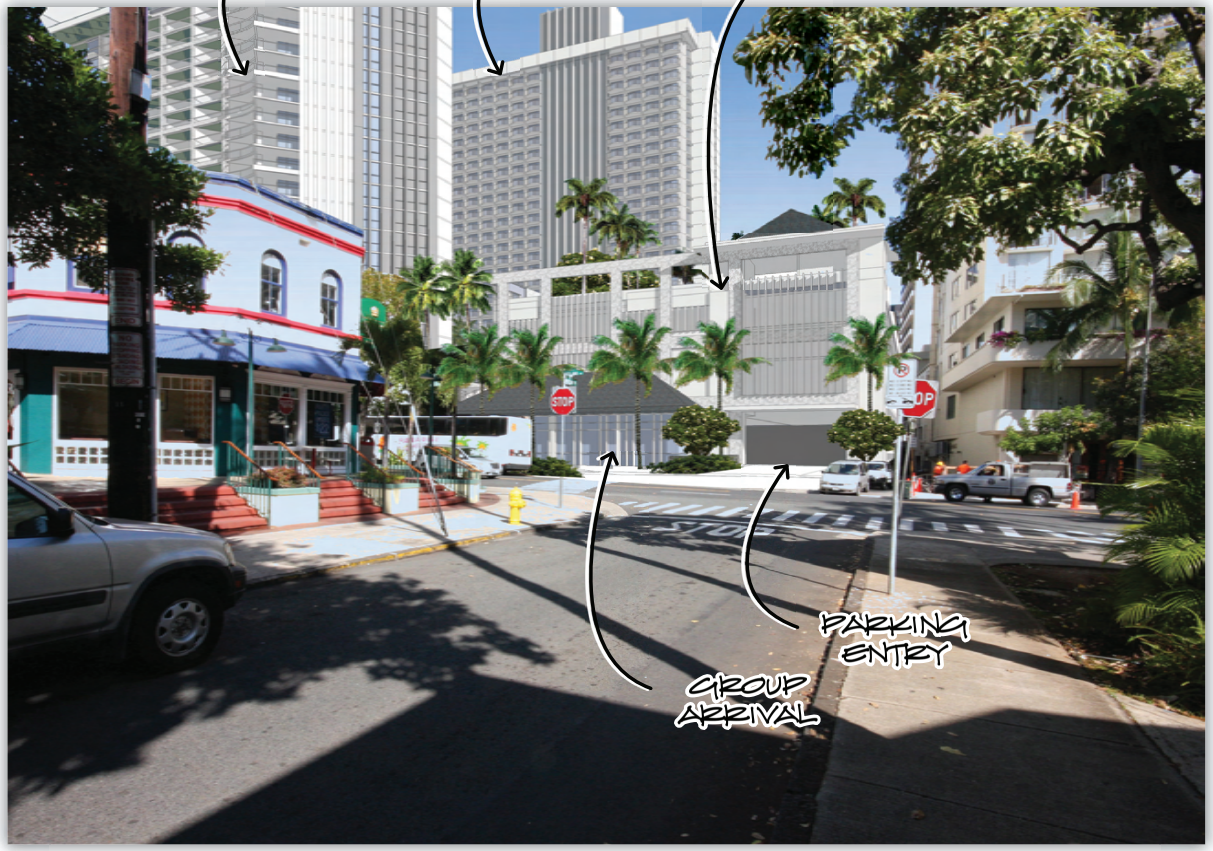
CONCEPT DESIGN
07.02.09

VIEW STUDIES

APPENDIX 1-56

WCITARCHITECTURE

Existing



Proposed

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

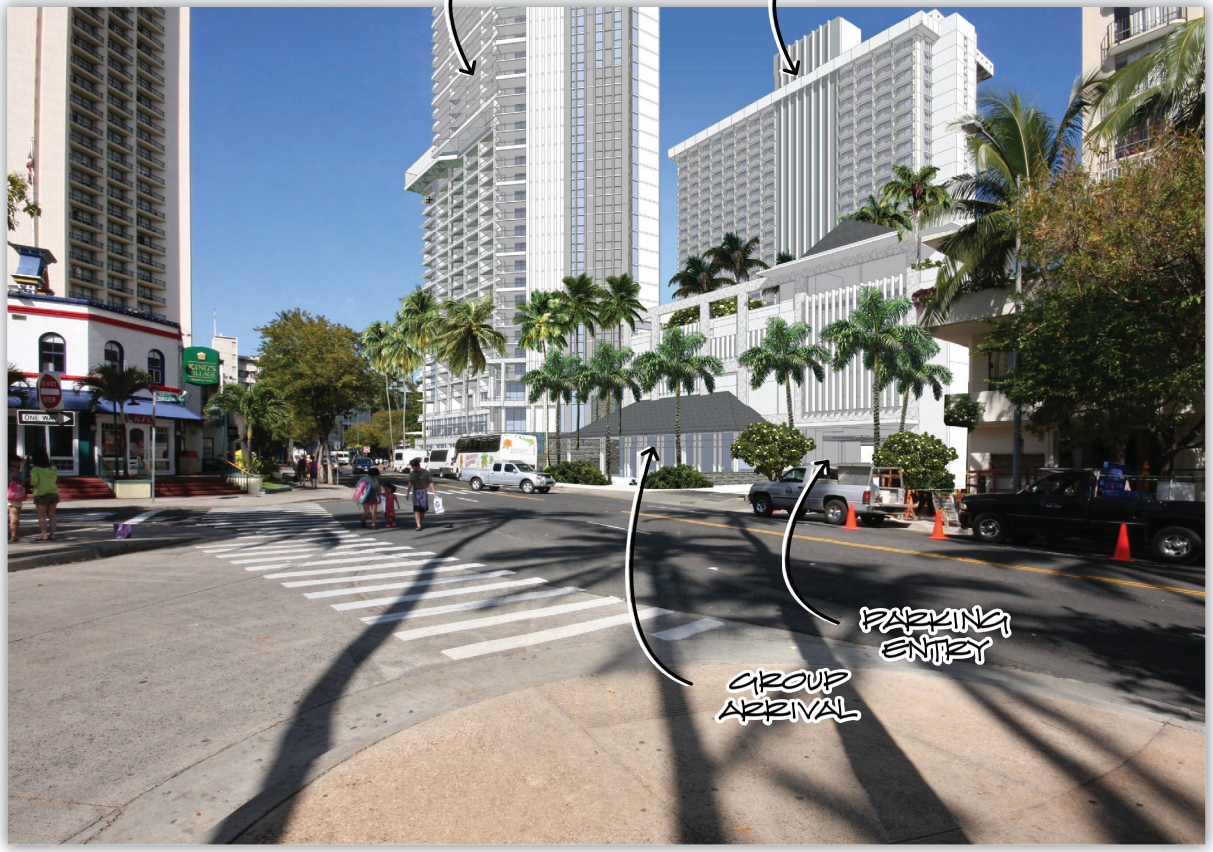
CONCEPT DESIGN
07.02.09

VIEW STUDIES

APPENDIX 1-57

WCITARCHITECTURE

Existing



Proposed

PRINCESS KA'IULANI
REDEVELOPMENT

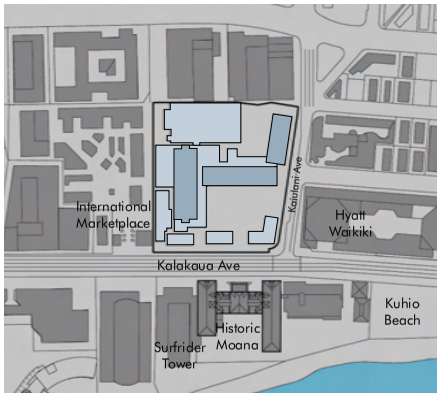
Kyoya

CONCEPT DESIGN
07.02.09

VIEW STUDIES

APPENDIX 1-58

WCITARCHITECTURE



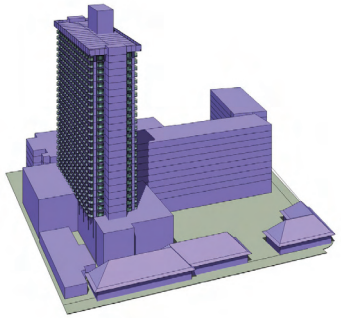
Vicinity Map
Scale: none

Maximum Allowable FAR Available for PK through PDR:	664,325 sf
Maximum Allowable FAR Available for PK through PDR:	**0 sf** (Non-Conforming)

LUO/WSD/PDR Compliance

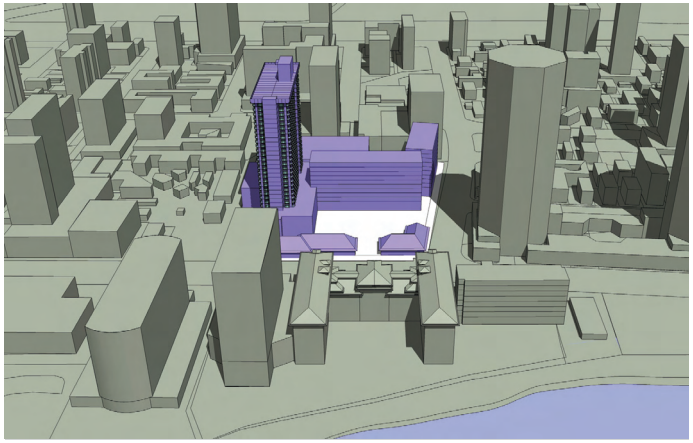
350' Height Limit (PDR)	Yes
20' Front Yard Setback	Yes
15' Side Yard Setback	Yes

Existing FAR, Kalakaua Avenue setback, Ka'iulani Avenue setback, Ka'iulani Transitional Height Setback, and open space requirements are non-conforming. A development that follows the general criteria set in the LUO for Resort Mixed Use Precinct under the WSD Development Standards is not possible without application through the PD-R process. Since the existing development already exceeds the FAR allowed by the LUO, a redevelopment for less density is not economically feasible.



Ewa/Makai Perspective
Scale: none

Plan
Scale: 1"=80'



Aerial Perspective
Scale: none

PRINCESS KA'IULANI
REDEVELOPMENT

Kyoya

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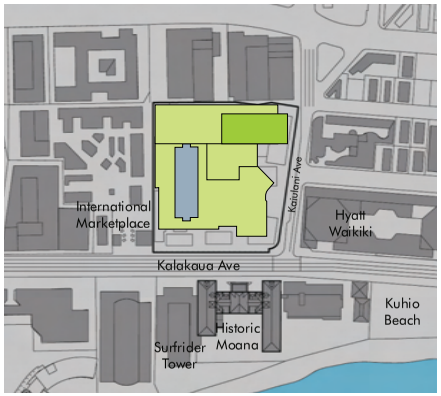
07.02.09

ALTERNATIVE I
(NO PDR)

WCITARCHITECTURE

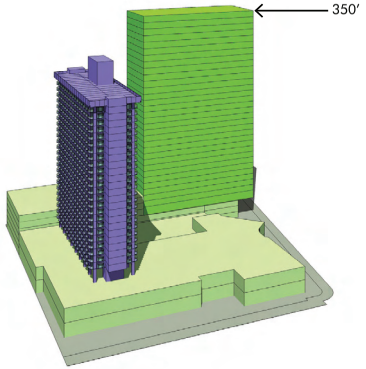


Vicinity Map
Scale: none

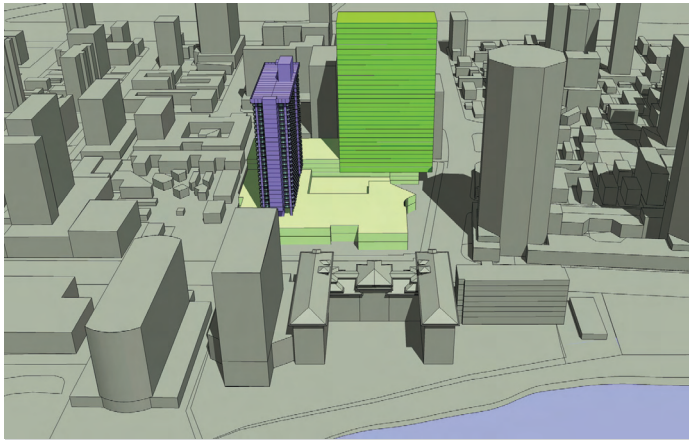
Maximum Allowable FAR Available for PK through PDR: (Excluding Ainahau Tower)	664,325 sf
Total Proposed FAR: (Excluding Ainahau Tower)	**557,500 sf**
LUO/WSD/PDR Compliance	
350' Height Limit (PDR)	Yes
20' Front Yard Setback	Yes
15' Side Yard Setback	Yes

Plan
Scale: 1"=80'

Kyo-ya determined that the existing 'Ainahau Tower is the only structure feasible to retain and refurbish on the site and that a reduction of the existing FAR is not economically feasible. Any redevelopment of the Princess Ka'iulani would need to include an increase in the existing FAR to make the project viable. An alternative to the proposed project was studied that locates the Pikake Tower further mauka on the site, above the parking garage. The tower would span in a 'Ewa-Diamond Head direction, contrary to WSD recommendations. The tower would impact views from both high and low rise developments mauka of the site. A building in this location would also result in potential shadowing effects that would impact the mauka side neighboring properties. This alternative does not meet the intent of the WSD and PD-R and would result in undesirable view corridors for guests and adjacent properties.



Ewa/Makai Perspective
Scale: none



Aerial Perspective
Scale: none

PRINCESS KA'IULANI
REDEVELOPMENT

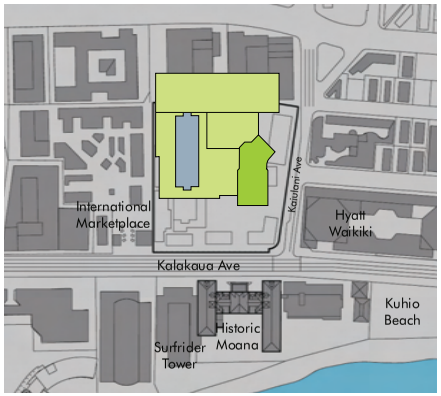
Kyoya

CONCEPT DESIGN
07.02.09

ALTERNATIVE II

APPENDIX 1-60

WCITARCHITECTURE

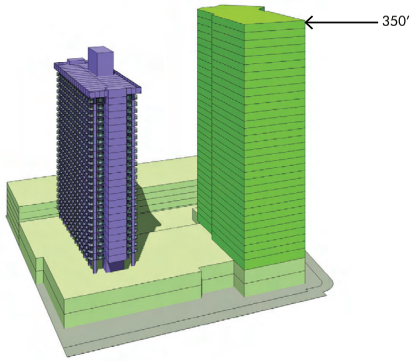


Vicinity Map
Scale: none

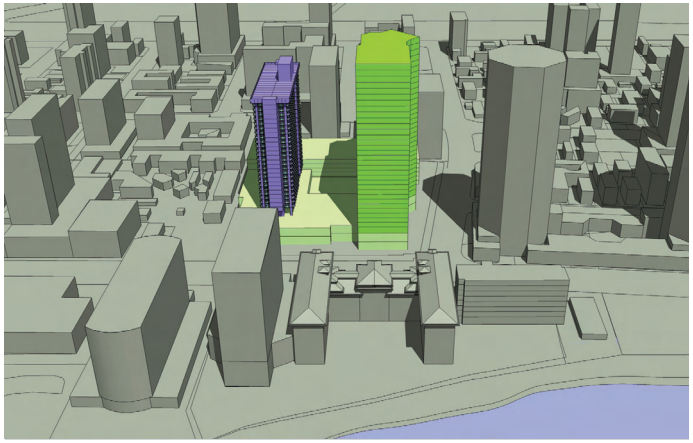
Maximum Allowable FAR Available for PK through PDR: (Excluding Ainahau Tower)	664,325 sf
Total Proposed FAR: (Excluding Ainahau Tower)	**557,500 sf**
LUO/WSD/PDR Compliance	
350′ Height Limit (PDR)	Yes
20′ Front Yard Setback	Yes
15′ Side Yard Setback	Yes

Plan
Scale: 1″=80′

The proposed alternative for the Princess Ka'iulani was selected because it will allow for the redevelopment of physically obsolete buildings at this important corner in the center of Waikiki and provide significant public benefits. The increase in public open space along Kalakaua and Ka'iulani avenues will create an area for gathering and a focal point for this hub. The large front yard along Kalakaua Avenue will wrap around Ka'iulani Avenue providing an inviting introduction to the new retail establishments along this street frontage. The congestion and mix of pedestrian and vehicles will be minimized by creating an internal auto court for staging with remote pick up and drop off, as well as an area for tour buses to pull off of Ka'iulani Avenue. The removal of the existing Princess and Ka'iulani Towers and the Mauka/Makai orientation of the proposed Pikake Tower will considerably improve public as well as private view corridors.



Ewa/Makai Perspective
Scale: none



Aerial Perspective
Scale: none

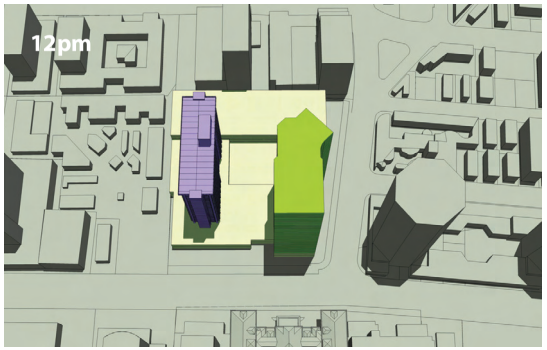
PRINCESS KA'IULANI
REDEVELOPMENT

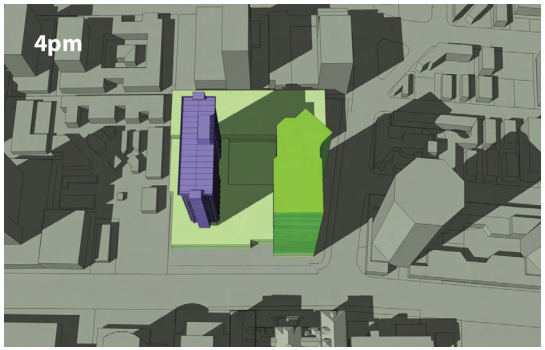
Kyoya

CONCEPT DESIGN
07.02.09

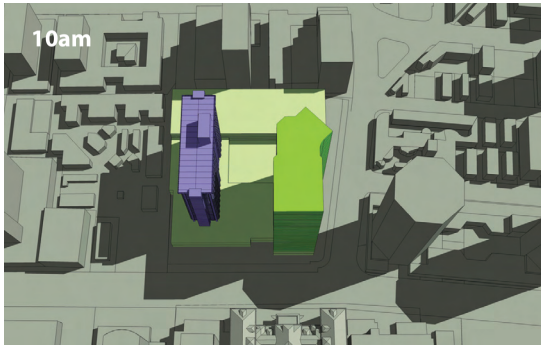
PREFERRED ALTERNATIVE

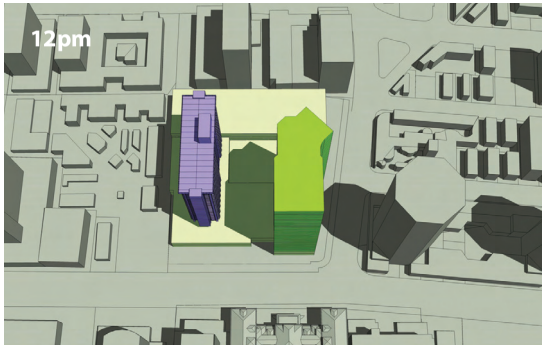
WCITARCHITECTURE

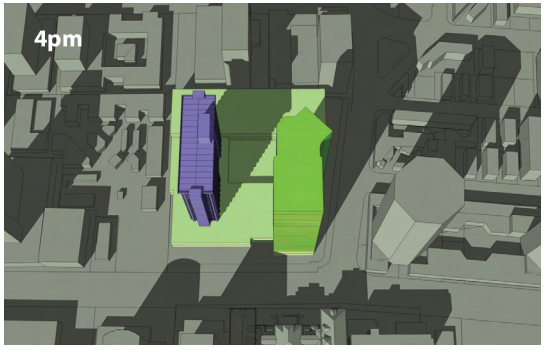




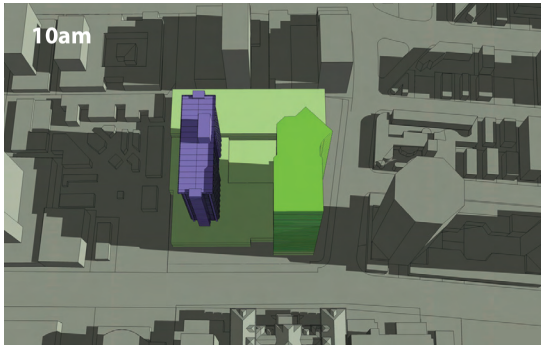
Summer Solstice (Jun 21)

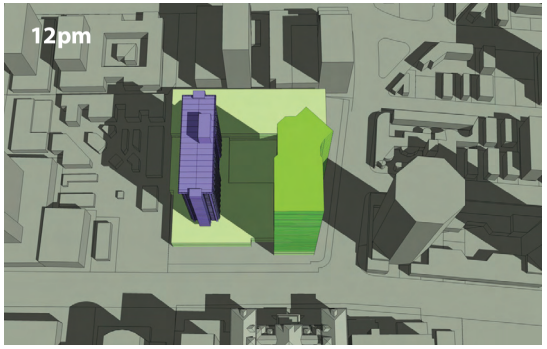


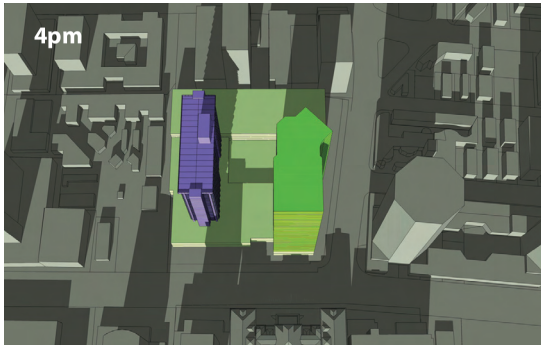




Equinox (Sep 22, Mar 20)







Winter Solstice (Dec 21)

PRINCESS KA'IULANI REDEVELOPMENT

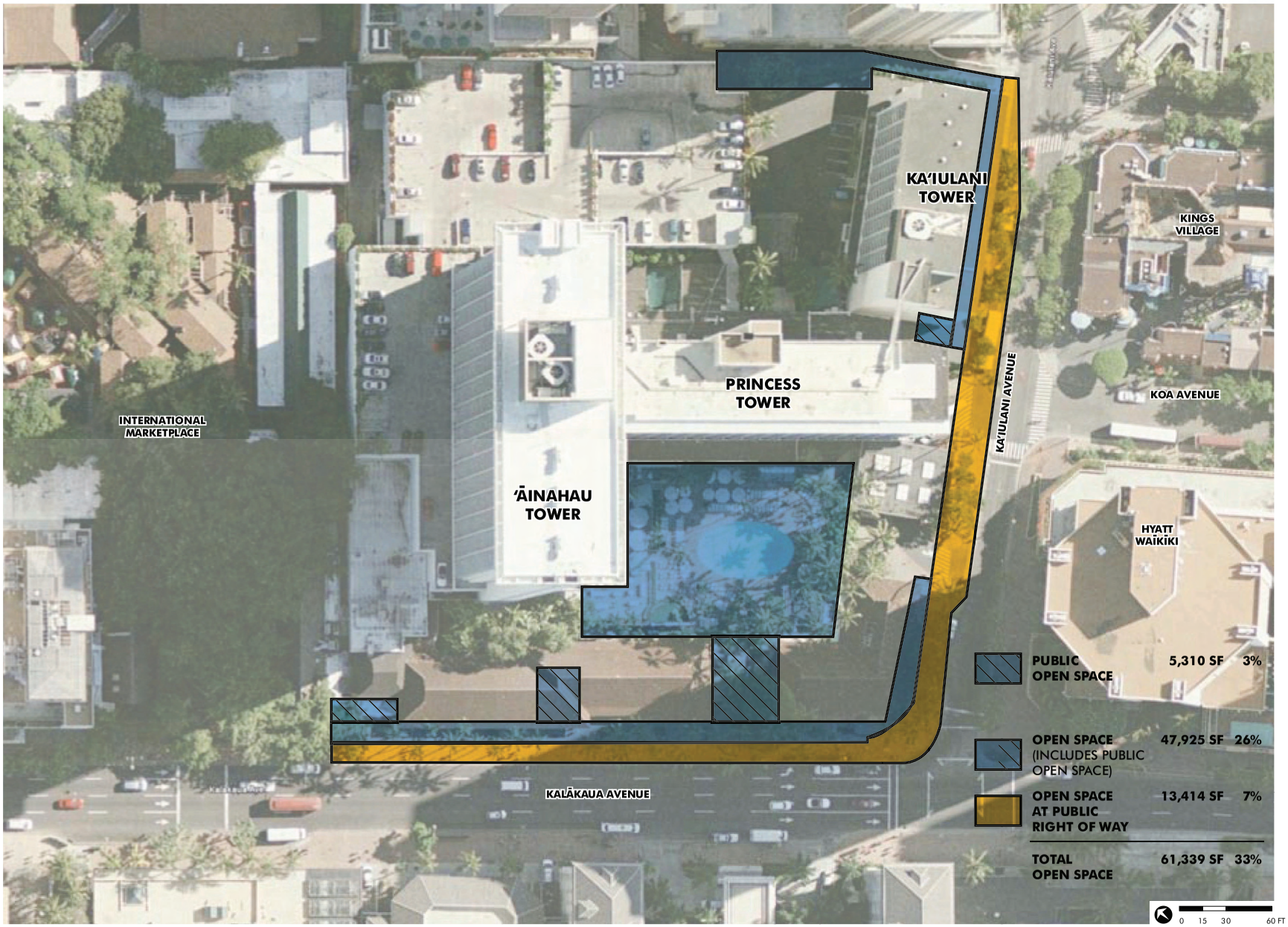
Kyoya

SHADOW STUDIES
05.11.09

SHADOW STUDIES

APPENDIX 1-62

WCITARCHITECTURE



PRINCESS KA'IULANI
REDEVELOPMENT

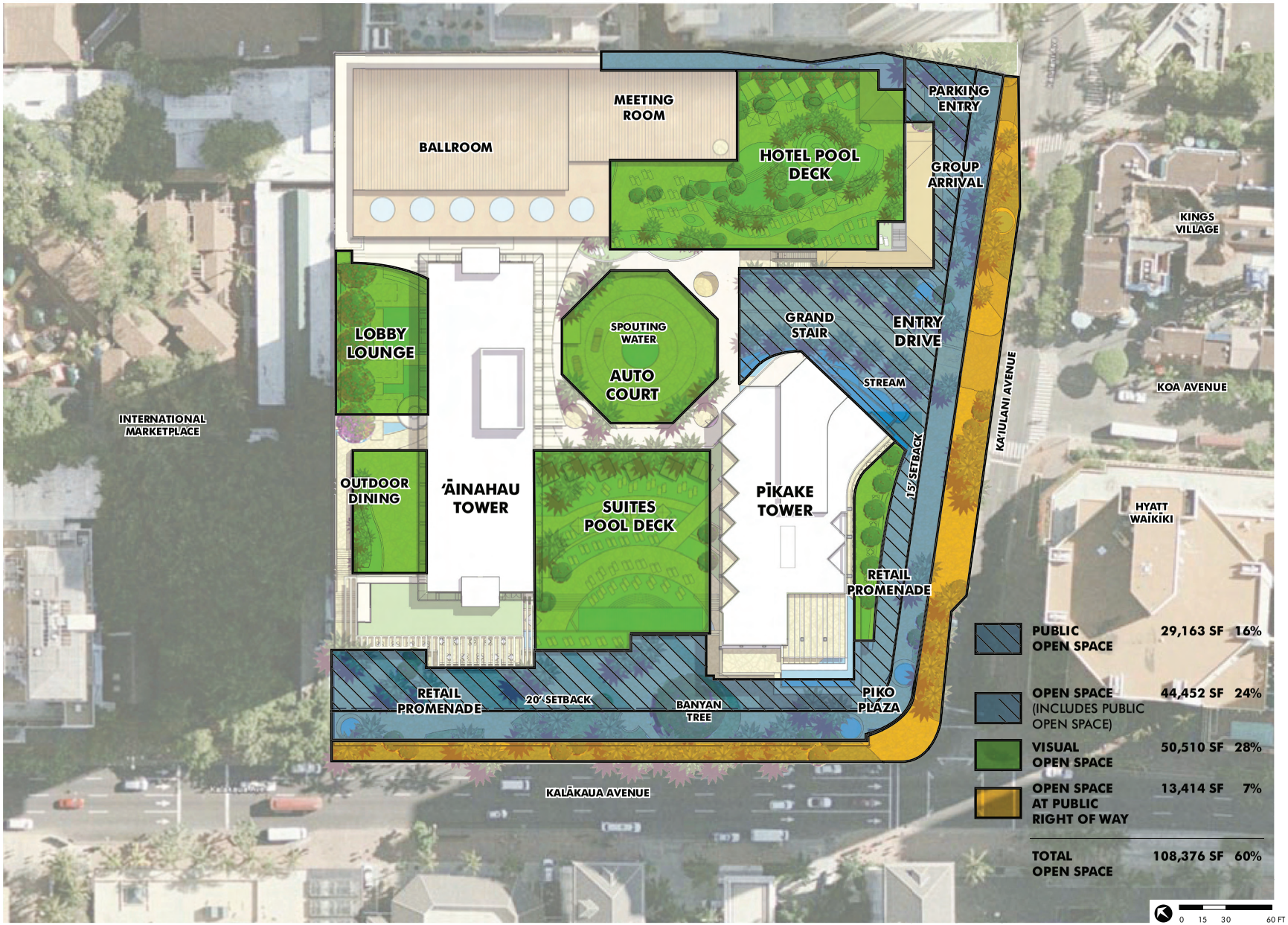
Kyoya

CONCEPT DESIGN
07.02.09

EXISTING OPEN SPACE

APPENDIX 1-63

WCITARCHITECTURE



PRINCESS KA'IULANI REDEVELOPMENT

Kyoya

CONCEPT DESIGN
07.02.09

PROPOSED OPEN SPACE

APPENDIX 1-64

WCITARCHITECTURE

Diamond Head Tower

Diamond Head Tower

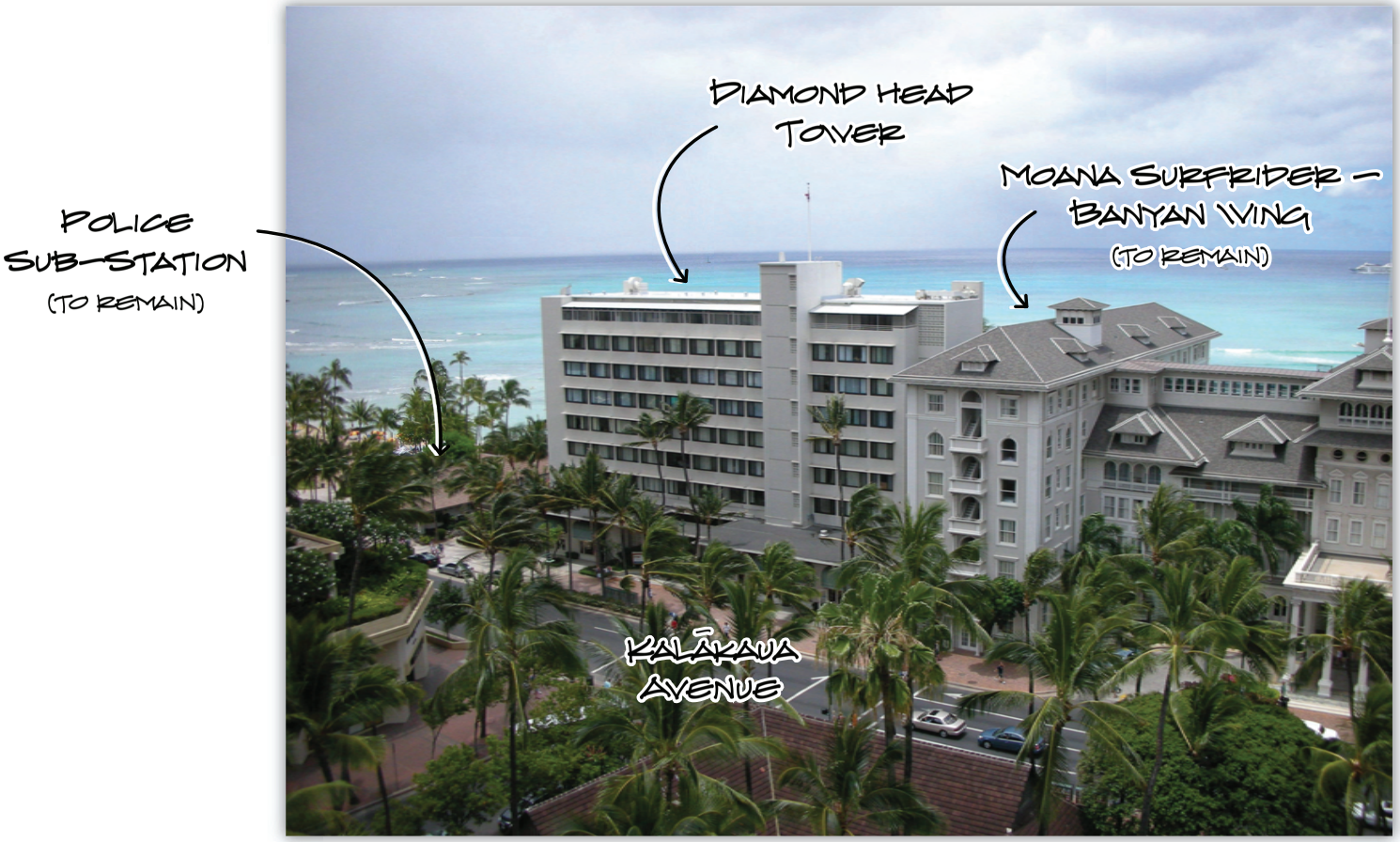
Kyoya

CONCEPT DESIGN
07.02.09

VICINITY MAP
(EXISTING)

APPENDIX 66

WCIT ARCHITECTURE



Diamond Head Tower

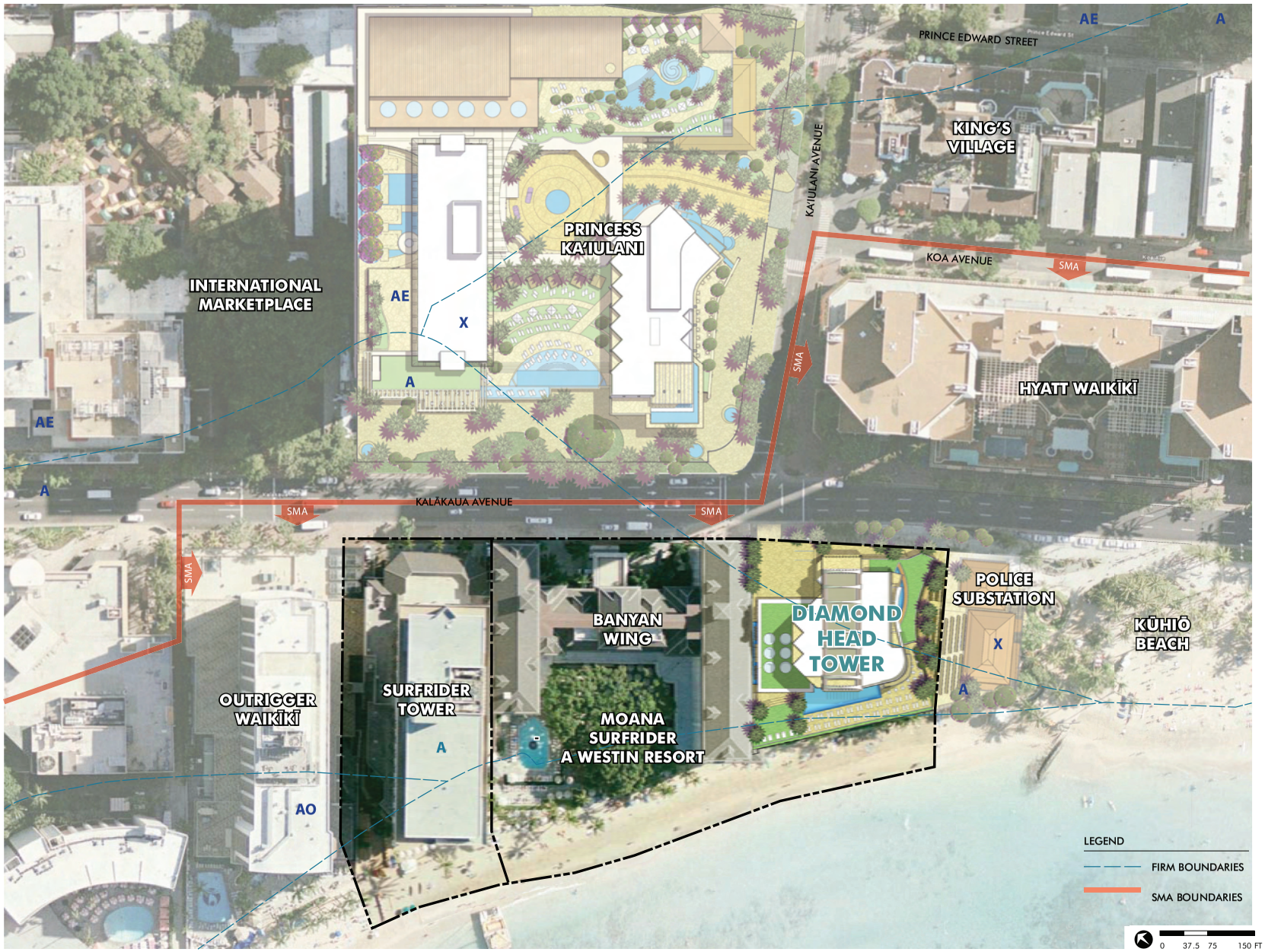
Kyoya

CONCEPT DESIGN
07.02.09

EXISTING CONDITIONS

APPENDIX 67

WCIT ARCHITECTURE



Diamond Head Tower

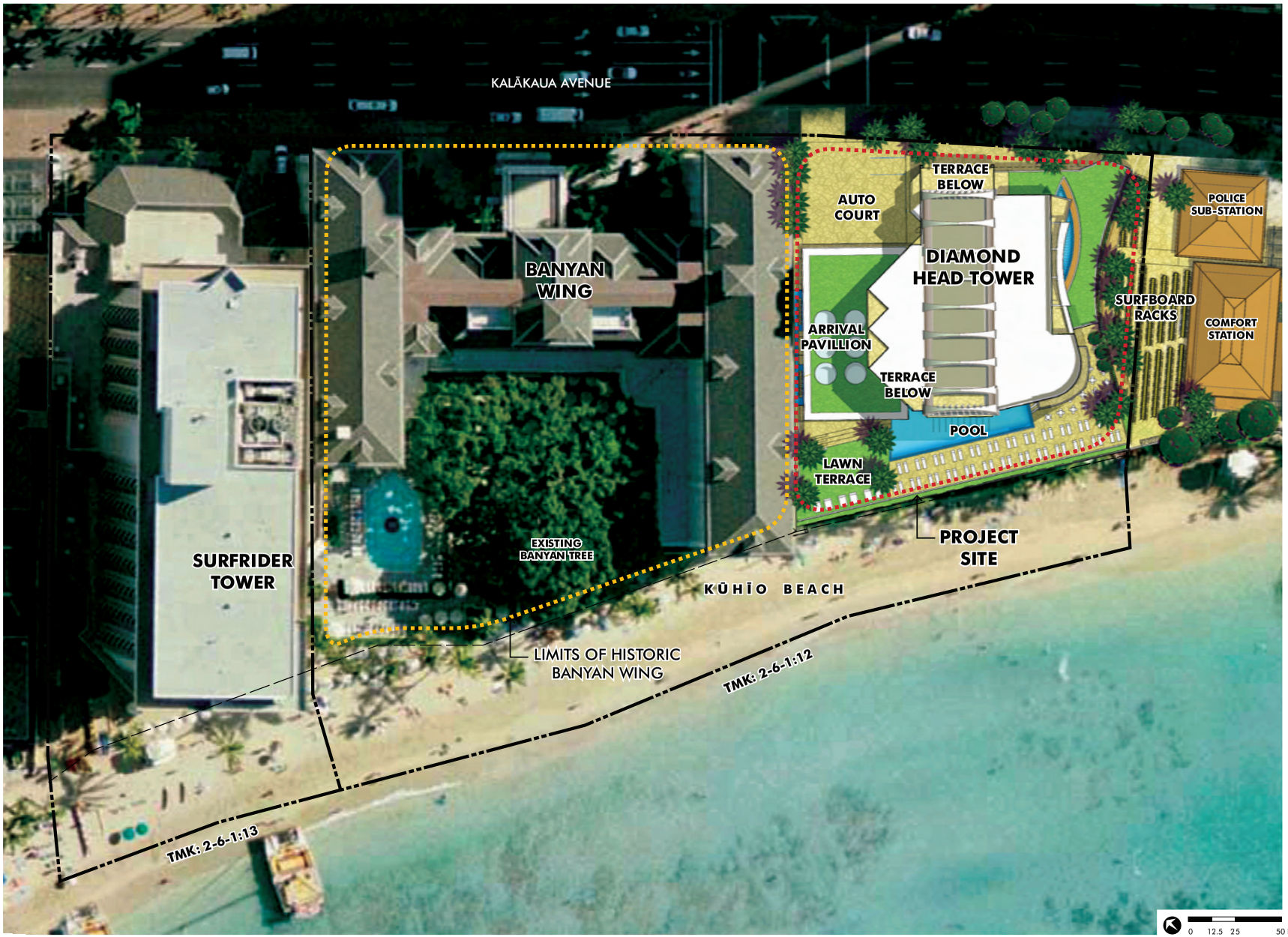
Kyoya

CONCEPT DESIGN
07.02.09

VICINITY MAP
(PROPOSED)

APPENDIX 68

WCIT ARCHITECTURE



Diamond Head Tower

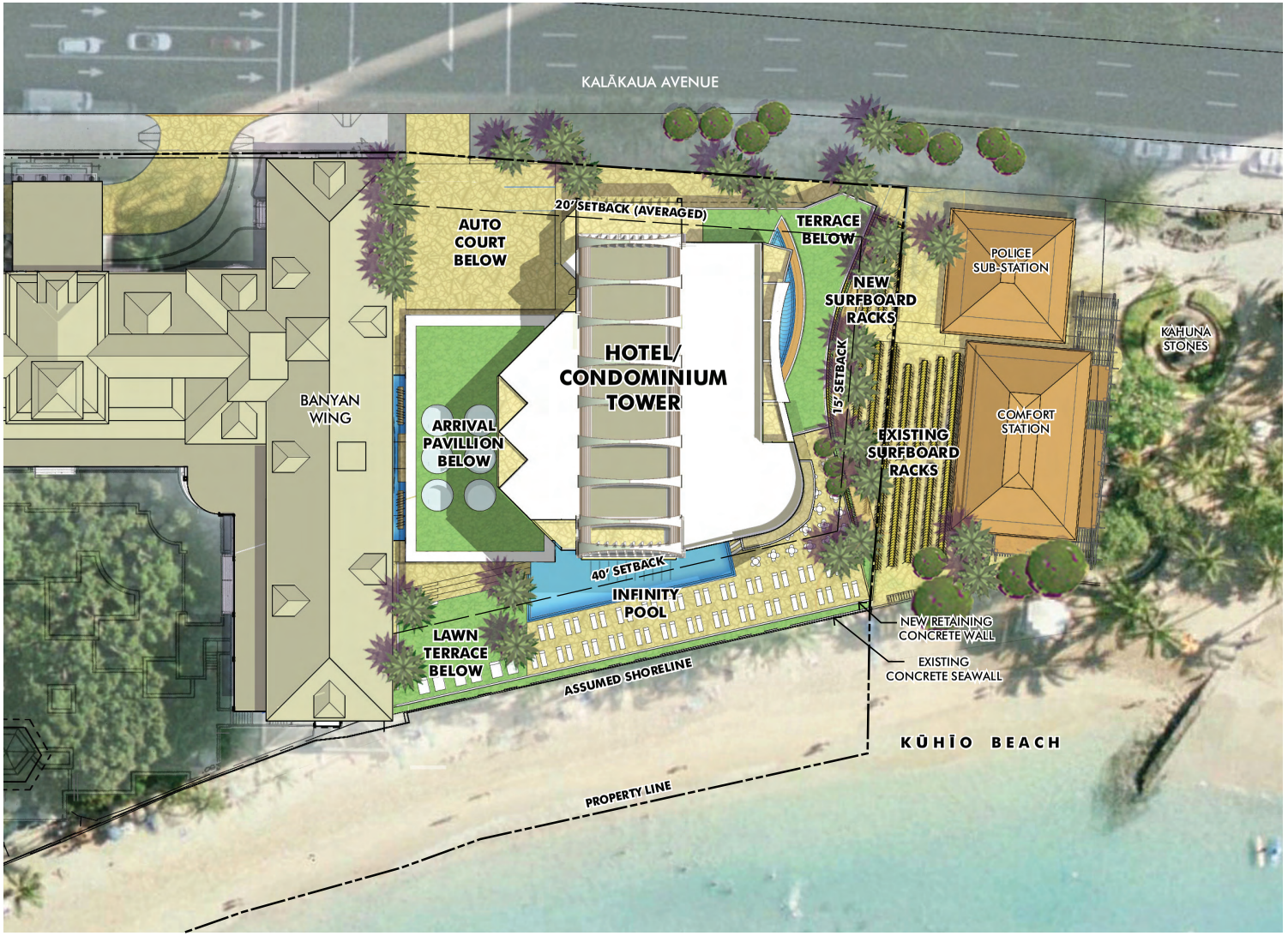
Kyoya

CONCEPT DESIGN
07.02.09

OVERALL SITE PLAN

APPENDIX 69

WCIT ARCHITECTURE



0 10 20 40 FT

Diamond Head Tower

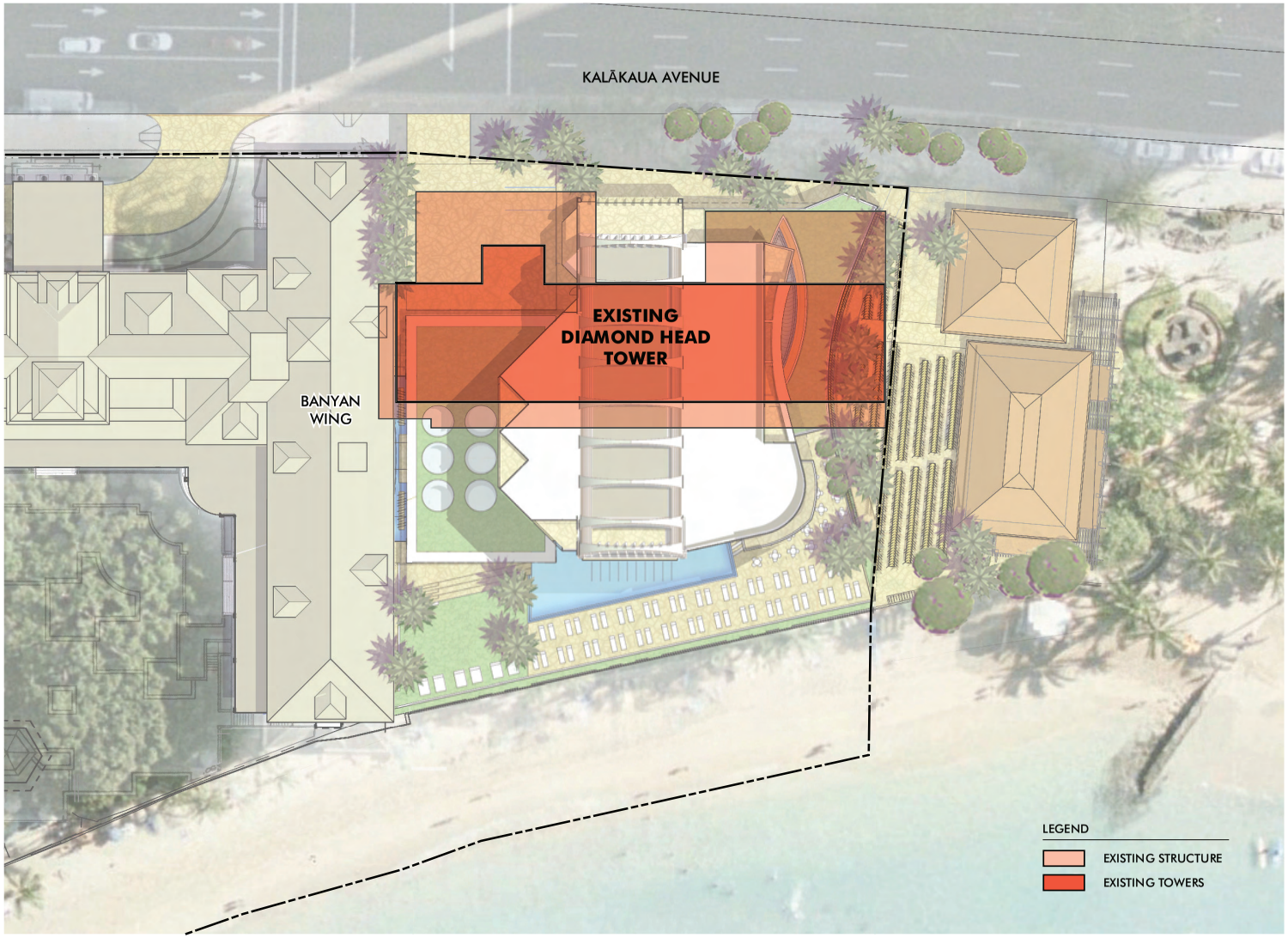
Kyoya

CONCEPT DESIGN
07.02.09

PROPOSED
SITE PLAN

APPENDIX 1-70

WCIT ARCHITECTURE



0 10 20 40 FT

Diamond Head Tower

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CONCEPT DESIGN
07.02.09

OVERLAY

APPENDIX 1-71

WCITARCHITECTURE

0 10 20 40 FT

Diamond Head Tower

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CONCEPT DESIGN
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LEVEL 1 PLAN

EL+7'

APPENDIX 1-72

WCIT ARCHITECTURE

0 10 20 40 FT

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CONCEPT DESIGN
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LEVEL 2 PLAN

EL+22'

APPENDIX 1-73

WCIT ARCHITECTURE

0 10 20 40 FT

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CONCEPT DESIGN
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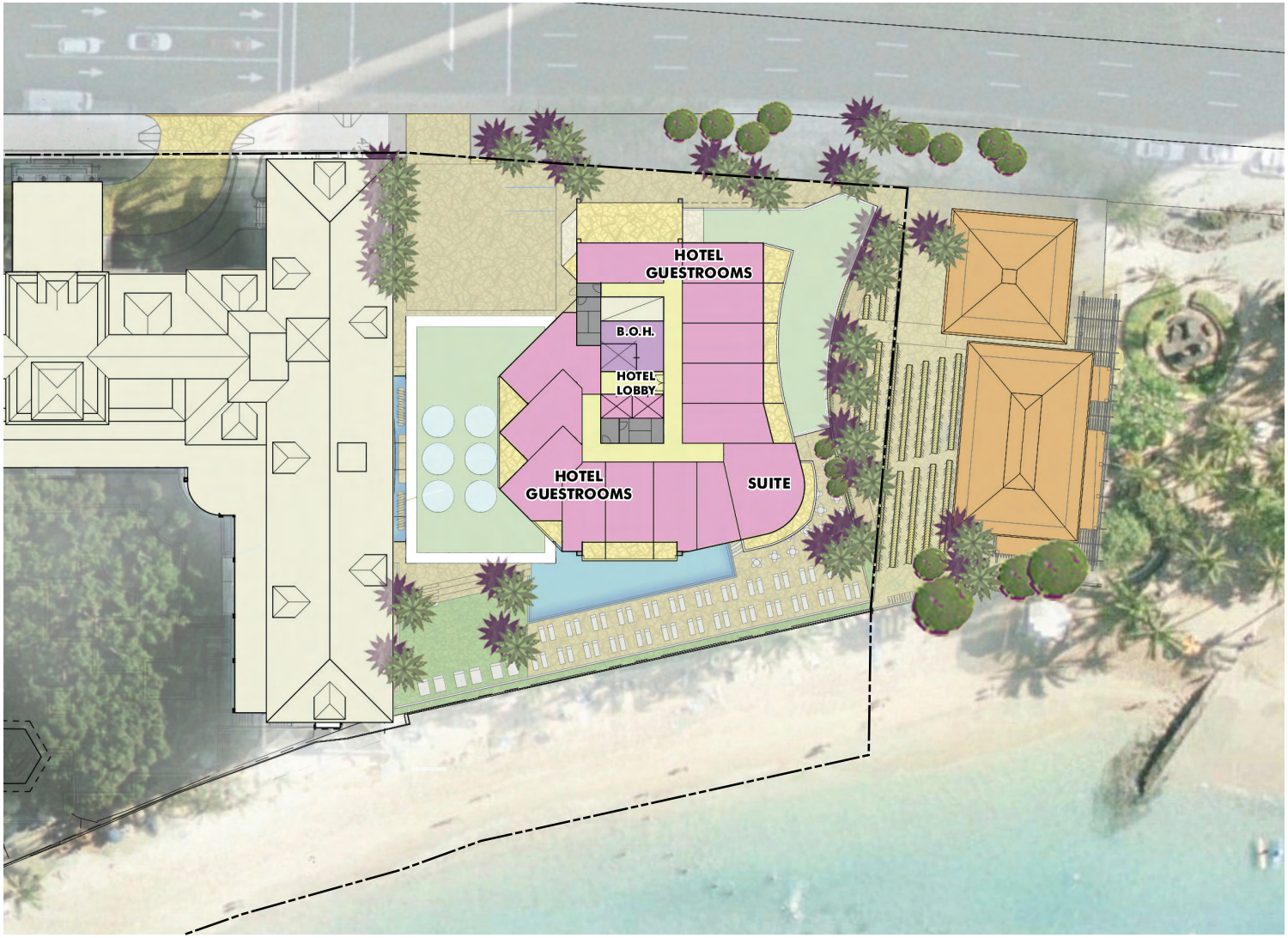
LEVELS 3-12

HOTEL

APPENDIX 1-74

WCIT ARCHITECTURE



0 10 20 40 FT

Diamond Head Tower

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CONCEPT DESIGN
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LEVELS 13-14

HOTEL

APPENDIX 1-75

WCIT ARCHITECTURE

0 10 20 40 FT

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CONCEPT DESIGN
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LEVEL 15

SUITES

APPENDIX 1-76

WCIT ARCHITECTURE

0 10 20 40 FT

Diamond Head Tower

Kyoya

CONCEPT DESIGN
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LEVEL 16

RESIDENCE AMENITIES DECK

APPENDIX 1-77

WCIT ARCHITECTURE

0 10 20 40 FT

Diamond Head Tower

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CONCEPT DESIGN
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LEVELS 17-25

RESIDENCE

APPENDIX 1-78

WCIT ARCHITECTURE

0 10 20 40 FT

Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

LEVEL 26

RESIDENCE

APPENDIX 1-79

WCIT ARCHITECTURE

DIAMOND HEAD TOWER REDEVELOPMENT

WAIKIKI SPECIAL DISTRICT AND PLANNED DEVELOPMENT RESORT REQUIREMENTS
7/31/2009

LOT

ZONING LOT AREA [1]	136,844	SF
DEVELOPABLE LOT AREA [2]	159,761	SF

	ALLOWED/REQ STANDARD WSD	EXISTING	ALLOWED/REQ UNDER PDR [2]	PROPOSED UNDER PDR [2]
ENVELOPE				
FAR	2.80	3.93	4.72	4.72
FLOOR AREA (SF)[4]	383,163	538,253	754,072	754,072
			[299,072][3]	[299,072][3]
BUILDING HEIGHT				
HEIGHT LIMIT	260 FT	260 FT	350 FT	300 FT
YARDS				
KALAKAUA BLVD	20 FT (AVG)	14 FT (AVG)	20 FT (AVG)	28 FT (AVG)
EWA SIDE YARD	0 FT	0 FT	15 FT	0 FT
DH SIDE YARD	0 FT	0 FT	15 FT	11 FT - 25 FT
SHORELINE SETBACK				
40' SETBACK	REQUIRED	CONFORMING	REQUIRED	SSV
100' SETBACK	REQUIRED	CONFORMING	REQUIRED	PDR
TRANSITIONAL SETBACKS				
KALAKAUA BLVD	REQUIRED	CONFORMING	REQUIRED	CONFORMING
DIAMOND HEAD	REQUIRED	NON-CONFORMING	REQUIRED	CONFORMING
COASTAL SETBACK	REQUIRED	CONFORMING	REQUIRED	PDR
OPEN SPACE				
PERCENTAGE	50%	42%	50%	45%
AREA (SF)	68,422	58,575	68,422	61,547
PUBLIC OPEN SPACE				
PERCENTAGE		2%		6%
AREA (SF)		3,223		8,069

1 - PARCELS 12 & 13
2 - PARCELS 12 & 13 PLUS ONE-HALF AREA OF ABUTTING STREETS
3 - TOTAL NEW AREA EXCLUDING LANAI (EXISTING BANYAN AND SURFRIDER TOWER TO REMAIN = 455,000)
4 - FLOOR AREAS EXCLUDE LANAIS AND BALCONIES PER WSD PRECINCT DEVELOPMENT STANDARDS

PRELIMINARY DIAMOND HEAD TOWER UNIT MIX

Unit Type	Avg Size	Count	Bays/Unit	Bays
Hotel	500	167	1	167
Hotel Suite	980	18	2	36
Hotel Total		185		203
Condo 1BR	1475	1	2	2
Condo 2BR	1580	9	3	27
Condo 2BR + Den	1870	19	4	76
Condo 3BR	1980	10	4	40
Penthouse	7800	1	9	9
Condominium Total		40		154

Diamond Head Tower

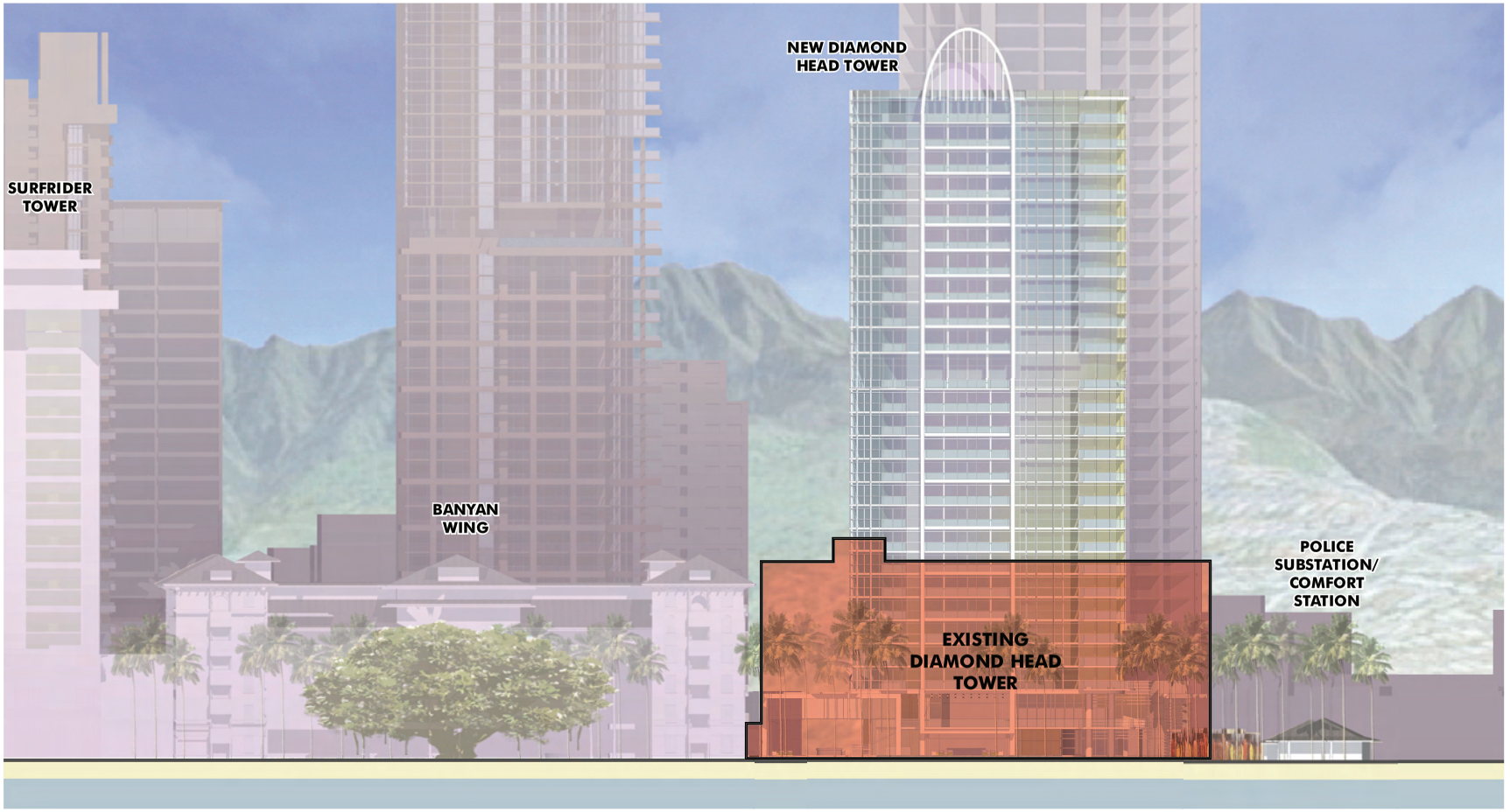
Kyoya

CONCEPT DESIGN
07.02.09

PROJECT SUMMARY

APPENDIX 1-80

WCIT ARCHITECTURE



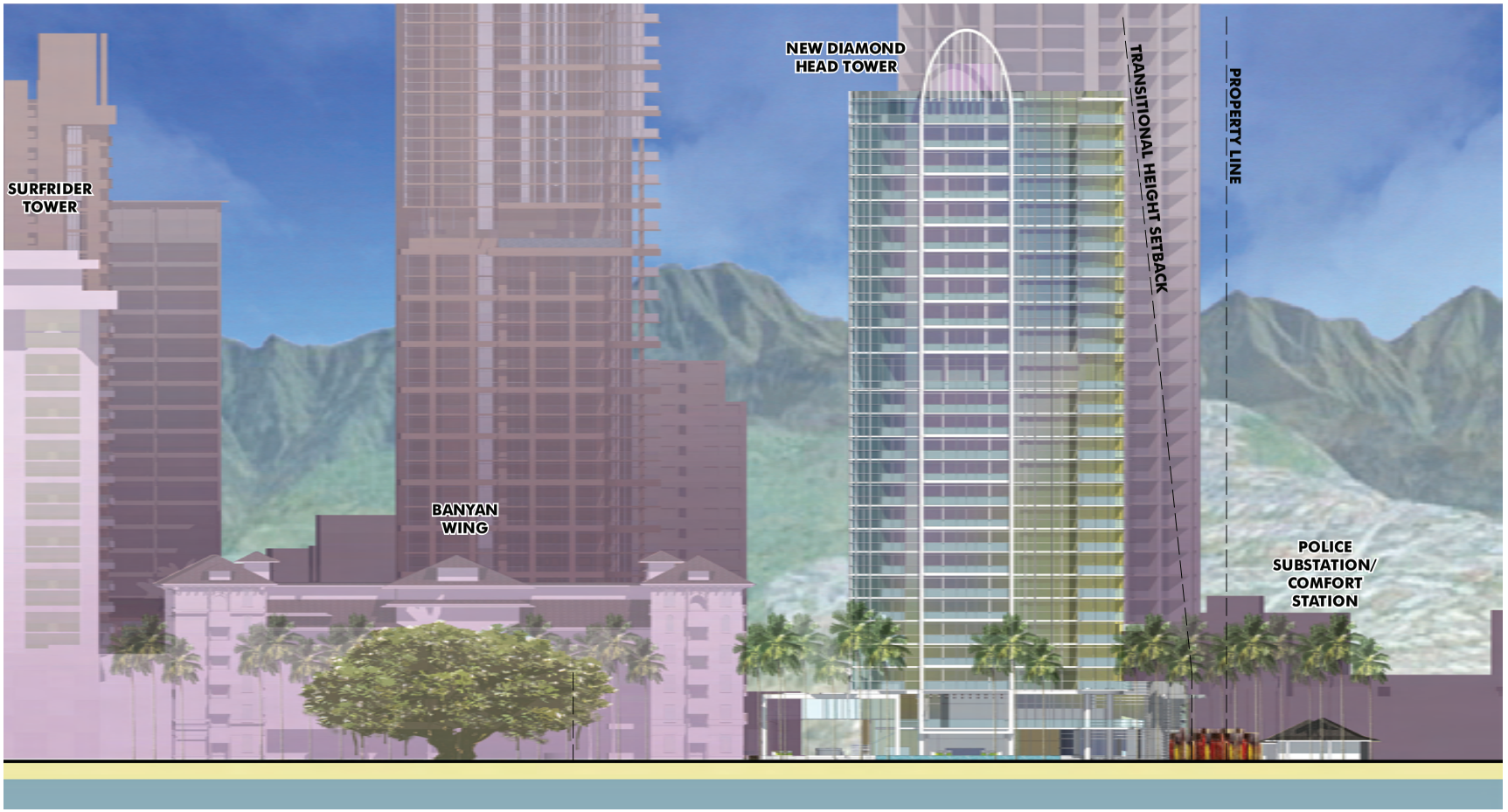
Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

MAKAI ELEVATION
(EXISTING TOWER OVERLAY)

WCITARCHITECTURE



Diamond Head Tower

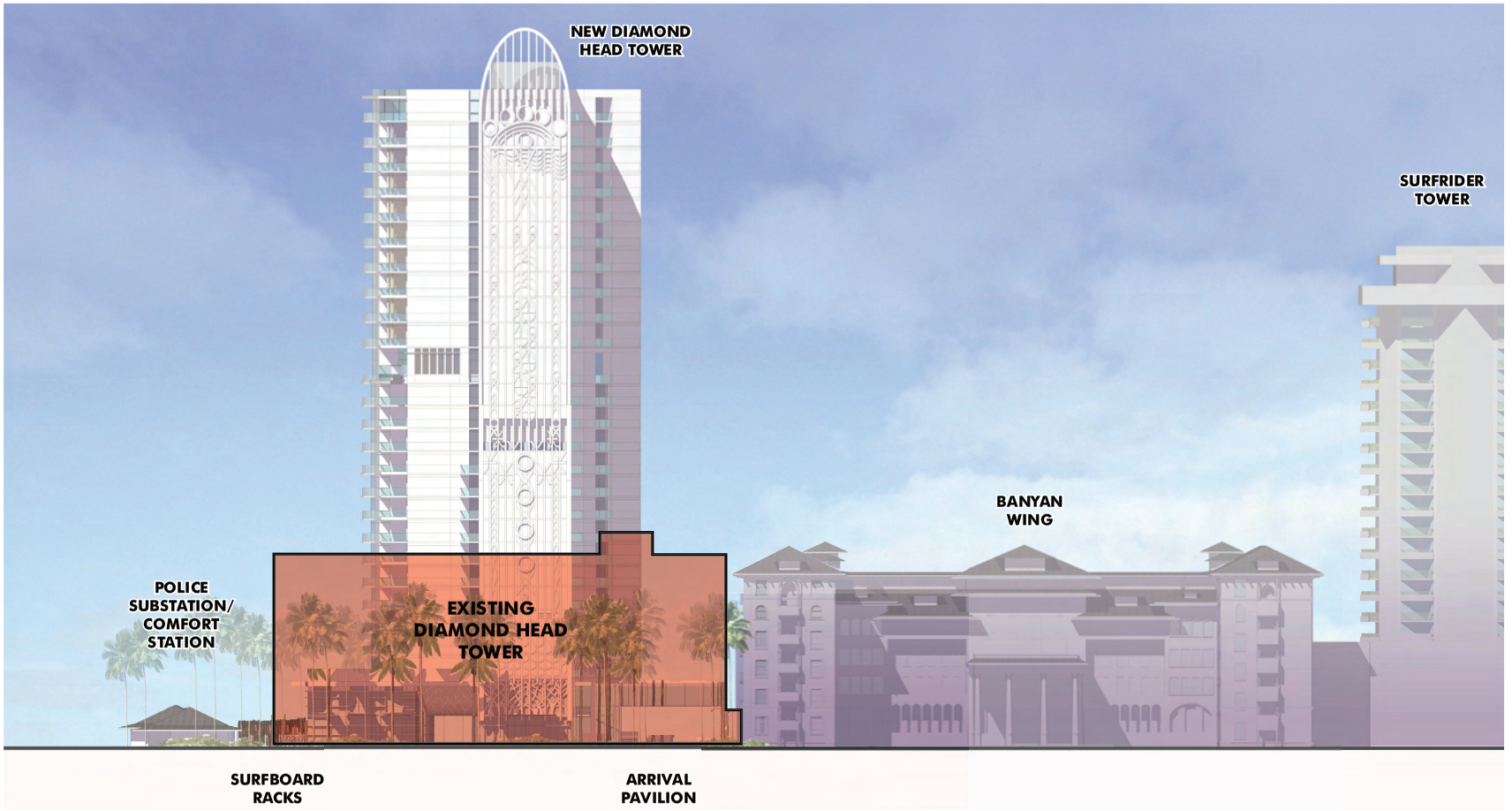
Kyoya

CONCEPT DESIGN
07.02.09

MAKAI ELEVATION

APPENDIX 1-82

WCIT ARCHITECTURE



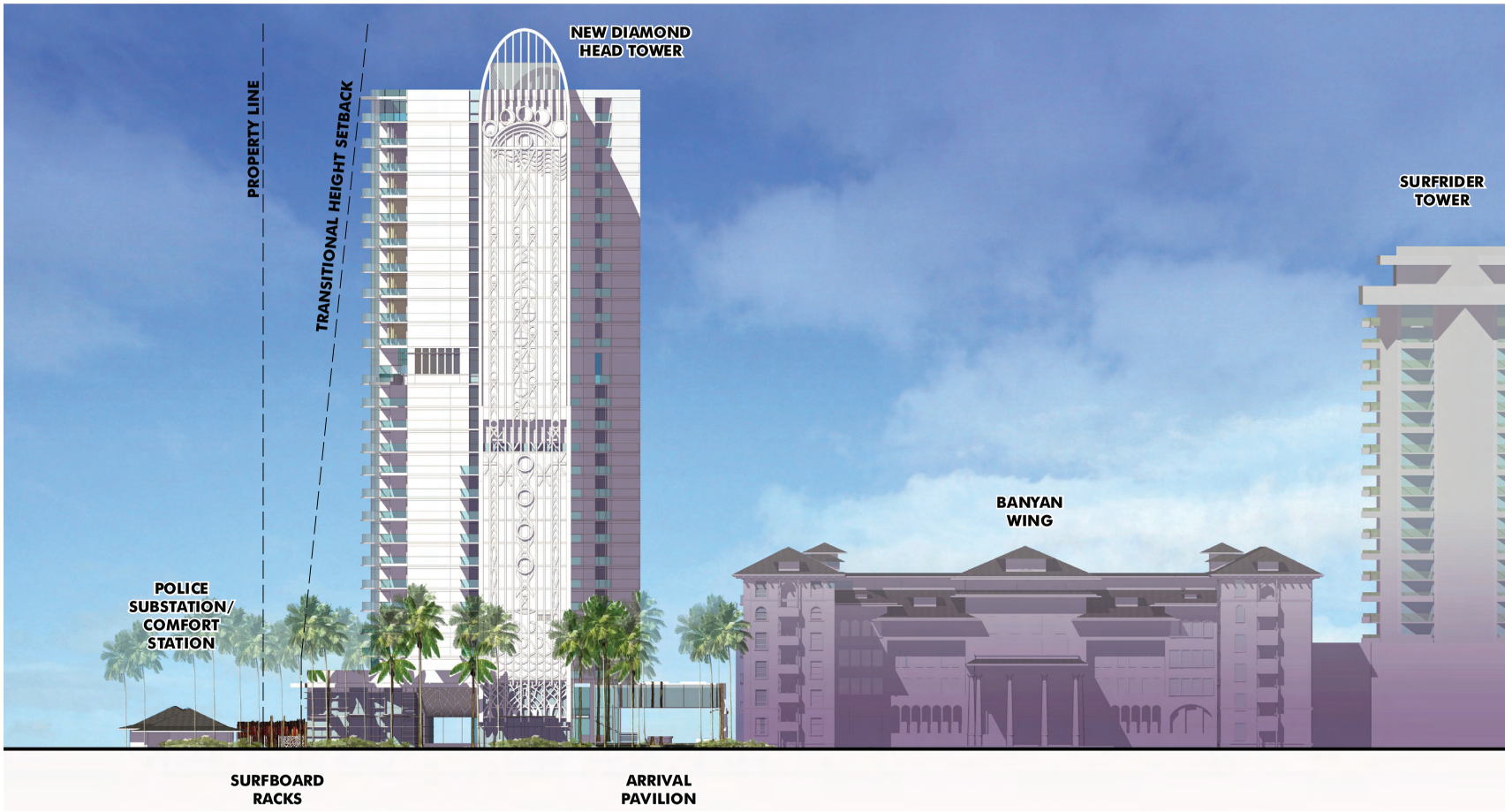
Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

KALAKAUA ELEVATION
(EXISTING TOWER OVERLAY)

WCIT ARCHITECTURE



Diamond Head Tower

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KALAKAUA

ELEVATION

APPENDIX 1-84

WCIT ARCHITECTURE

Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

DIAMOND HEAD ELEVATION

APPENDIX 1-85

WCIT ARCHITECTURE

Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

'EWA

ELEVATION

APPENDIX 1-86

WCIT ARCHITECTURE

Diamond Head Tower

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CONCEPT DESIGN
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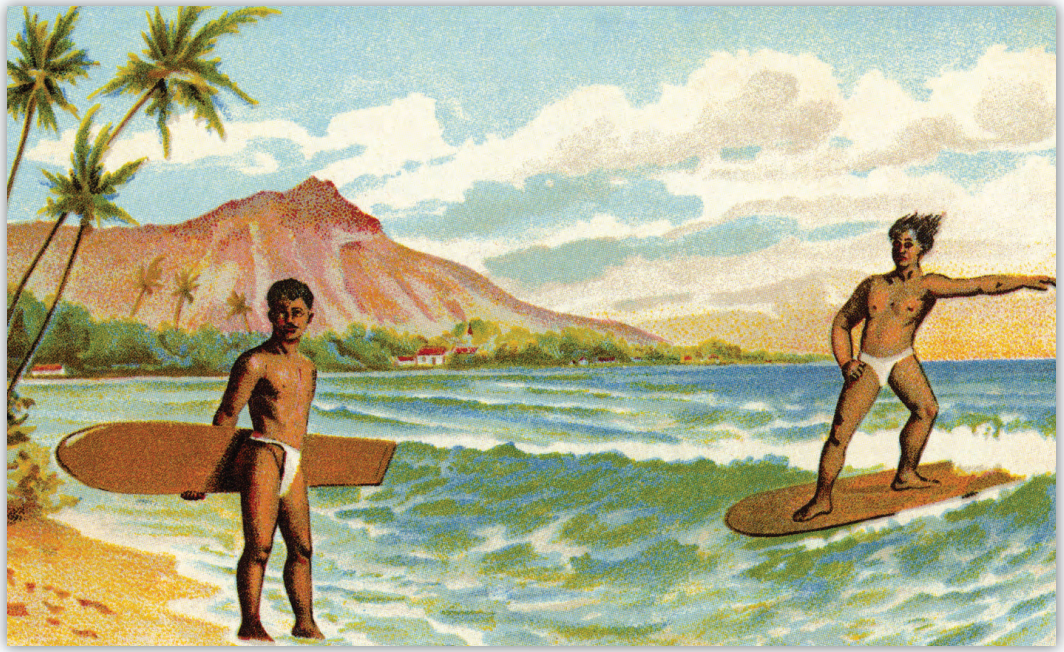
MAKAI-DIAMOND HEAD PERSPECTIVE

APPENDIX 1-87

WCIT ARCHITECTURE

CULTURAL INFUSION

culture & history: he‘e nalu



He‘e Nalu: Surfing

- Once known as the “Sport of the Ali‘i”, surfing and its culture is deeply rooted in Waikīkī.
- From the Ali‘i of long ago to the residents and visitor today, every day for the past 500+ years, someone has been surfing in Waikīkī.

culture & history: beachboys

Waikiki Beachboys

- The "Waikīkī Beachboy" can trace their history back to early days of Moana Surfrider Hotel .
- Height of the beachboy era was in the 50's and 60's led by legendary watermen including Duke.
- Carefree, charming and cajoling, the oldtime Waikīkī beachboy remains a lively presence in the memories of residents and visitor alike and is still a iconic and active function of Waikīkī today.

Diamond Head Tower

Kyoya

CONCEPT DESIGN
09.09.08

CULTURAL INFUSION - SURFBOARD HISTORY

APPENDIX 1-91

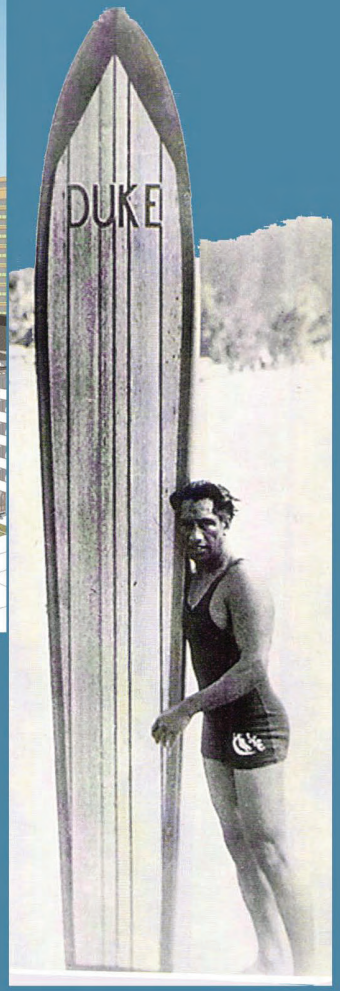
WCITARCHITECTURE

Alaia style board, photo taken 1890. these boards were hand-carved of by the riders. shapes were simple, with the sides often near-parallel. the alaia board was the performance board of the time, made for faster breaks and tubes.
modern shapers have tried variations of this board profile as well.
Profile works well for the mauka facade, as the sides are nearly parallel for the majority of the facade.

MODERN-DAY ALAIA

Many of Duke's boards were hand made by himself. Boards often reached 12' and weighed up to 150 pounds.
board shape is a classic profile of the early years of surfing, and the golden age of the beachboy.

Fins and striations mimic the stringers and patterns on the surfboards, a common theme (most are actually structural) on longboards and boards of the era and of today.



Diamond Head Tower

Kyoya

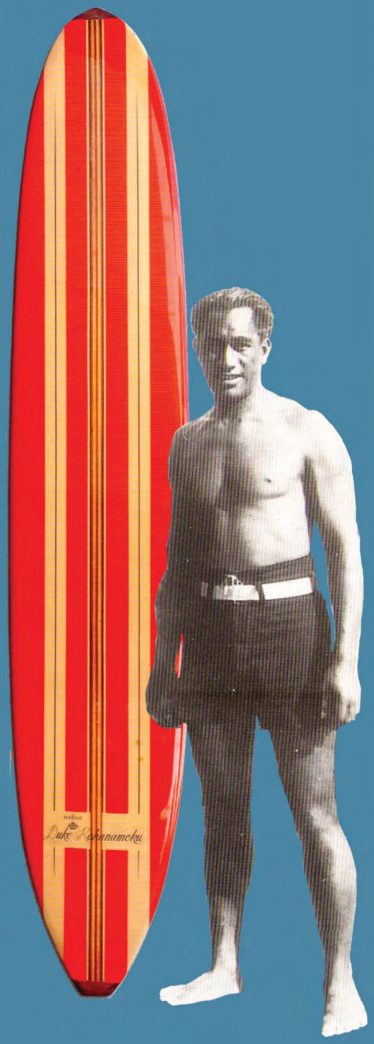
CONCEPT DESIGN
09.09.08

CULTURAL INFUSION - EARLY SURFBOARDS

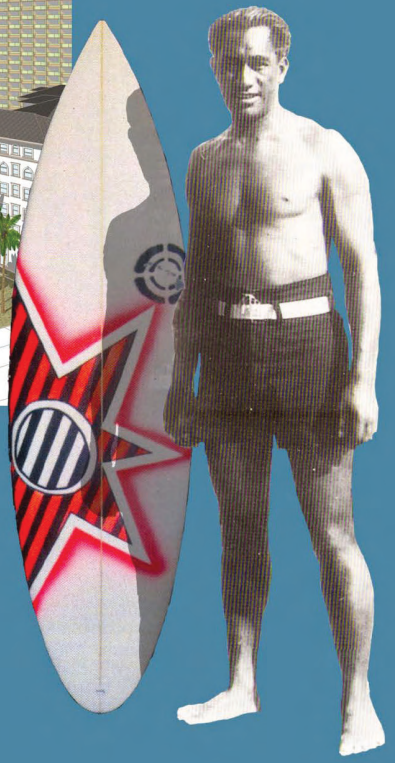
APPENDIX 1-92

WCITARCHITECTURE

Built by Harold "Hap" Jacobs, 1965
Classic longboard profile and size, ideal for the proportions of the tower facade. Tapering at top still challenging for the elevator overruns Profile associated with the nostalgic era of surfing, from a wide audience. Fins and striations mimic the stringers and patterns on the surfboards, a common theme (some are actually structural) on longboards and boards of the era and of today.



A 6' board, made primarily for high performance maneuvers, aerials, tricks, sharp turns, etc. board profile, while easily recognizable by most, is challenging for the facade, due to its short and wide proportions, especially at the top.



Diamond Head Tower

Kyoya

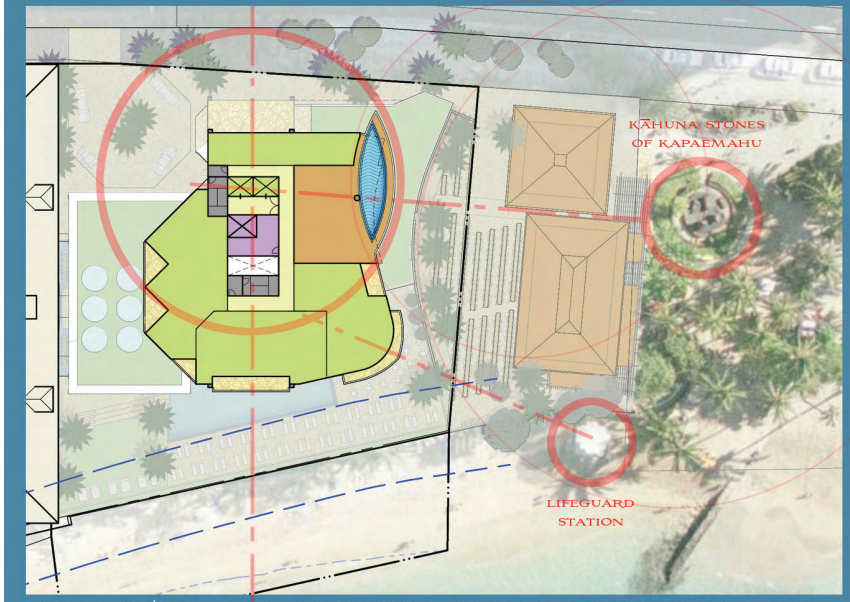
CONCEPT DESIGN
09.09.08

CULTURAL INFUSION - MODERN SURFBOARDS

APPENDIX 1-93

WCITARCHITECTURE

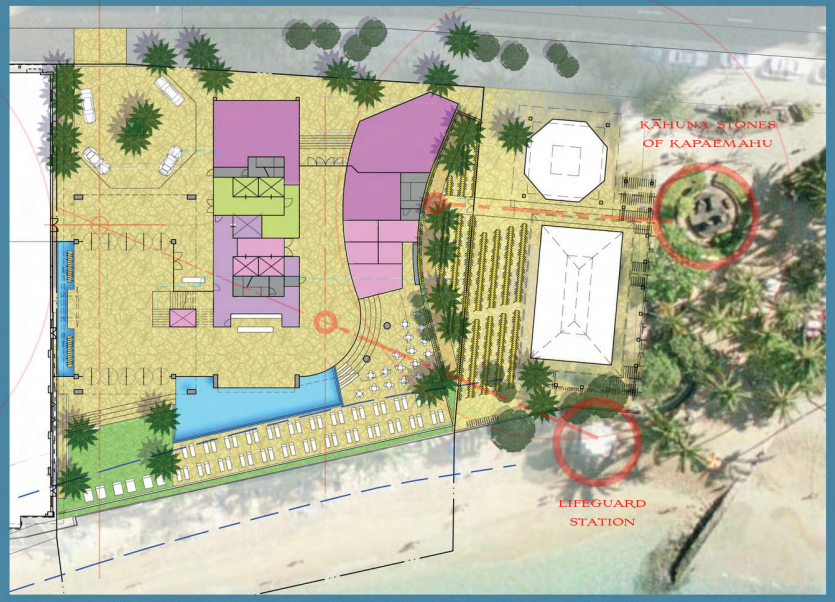
KŪHIŌ BEACH IS ONE OF THE MOST IDENTIFIABLE BEACHES IN THE WORLD. THE GROUND FLOOR AND PUBLIC SPACES ALIGN THEIR VIEWS TO THE SPECIAL ELEMENTS OF THE BEACH. FROM THE SURFBOARD RACKS AND RESIDENCE POOL, THE AHU OF THE KĀHUNA STONES. FROM THE DIAMOND HEAD BREEZEWAY, THE LIFEGUARD STATION. FROM THE ARRIVAL PAVILION, THE LAWN AND BEACHES WHERE THE CANOES AND BOARDS WERE STORED.



TODAY, THERES AN IMPROMPTU KANIKAPILA ON THE LAWN, PERFORMED BY THE BEACH-BOYS AND GUEST PERFORMERS. MUSIC FLOWS INTO THE ARRIVAL PAVILION. GUESTS LOUNGING IN THE PAVILION, ON THE LAWN STEPS, AND AT THE POOL DECK ARE ENGAGED BY THE LOCAL MUSIC AND CULTURE. MUSIC AND DANCE WERE NOT ONLY MEANS OF ENTERTAINMENT, BUT WAS A WAY TO PASS DOWN CULTURE AND HISTORY.

THE MOANA AND NOW THE DIAMOND HEAD TOWER ARE THE ONLY TWO HOTELS ON KALĀKAUA AVE. WITH AUTOCOURTS AND PORTE COCHERES JUST OFF THE STREET. THIS EXTENDS THE CHARACTER OF THE MOANA FROM FIRST IMPRESSION.

UNIQUE TO THE PROJECT, UPON ARRIVAL, VISITORS ARE GREETED BY BEACHBOYS, THE AMBASSADORS OF WAIKĪKĪ. THE BEACHBOY WOULD BE BOTH CONCIERGE AND SURF INSTRUCTOR, GUIDE AND LIFEGUARD, SINGER AND DANCER.



WHEN SURFERS STEP OUT FROM THE EXTENED SURFBORAD RACK, THEY ARE ALIGNED WITH THE KĀHUNA STONES OF KAPAEMAHU, TO PAY THEIR RESPECTS BEFORE THEY SURF. THE FOUR KĀHUNA WERE HEALERS FROM TAHITI THAT UPON RETURNING TO THEIR HOMELANDS, INFUSED SOME OF THEIR MANA INTO THE STONES. PRINCESS KA'IULANI AND OTHERS WERE SAID TO TOUCH THE STONES BEFORE ENTERING THE SURF.

LIFEGUARD STATION

IMPROMPTU KANIKAPILA

BEACHBOYS BRINGING OUT THE CANOES

KĀHUNA STONES OF KAPEMAHU

Diamond Head Tower

Kyoya

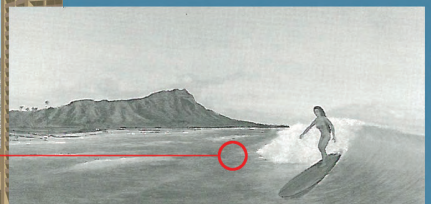
CONCEPT DESIGN
09.09.08

CULTURAL INFUSION - WAIKIKI & THE BEACHBOY ERA

WCITARCHITECTURE

ORIGINALLY STRUCTURAL, THE STRINGERS OF A SURFBOARD ALSO GAVE THE BOARD BEAUTY.

THE TOP OF THE TOWER PAYS HOMAGE TO THE CLASSIC PHOTOS OF ROWS OF SURFBOARDS AND THEIR RIDERS, AND TO TODAY'S SURFBOARD RACKS AT KŪHIŌ BEACH.



KELEA, FAMED WAHINE ALI'I SURFER, ONE OF THE MANY ROYAL MEMBERS THAT PLAYED IN THE WAIKIKI SURF

NA WAHINE OF TODAY

THE TOWER IS MADE OF 4 DISTINCT PARTS.
THE BASE AND ARRIVAL LOBBY ARE INSPIRED BY WAVES AND SEALIFE.
THE 'EWA SIDE OF THE TOWER, MORE ANGULAR, REPRESENTS KANE, THE MALE.
THE DIAMOND HEAD SIDE, MORE ORGANIC, CURVACEOUS, REPRESENTS WAHINE, THE FEMALE.
THE CENTER ELEMENT, NOT ONLY IS SHAPED LIKE A SURFBOARD, BUT ALSO REPRESENTS THE AHUPUA'A OF WAIKĪKĪ.

THERE ARE OTHER CORRELATIONS, LIKE MAUKA AND MAKAI, WIND AND SURF, REST AND MOTION, TRADITIONAL AND MODERN.

THE BASE UTILIZES TRELLISES AND OPEN-AIRED LANAIS, LIKE THE OUTRIGGER CANOE CLUB LANAI

Diamond Head Tower

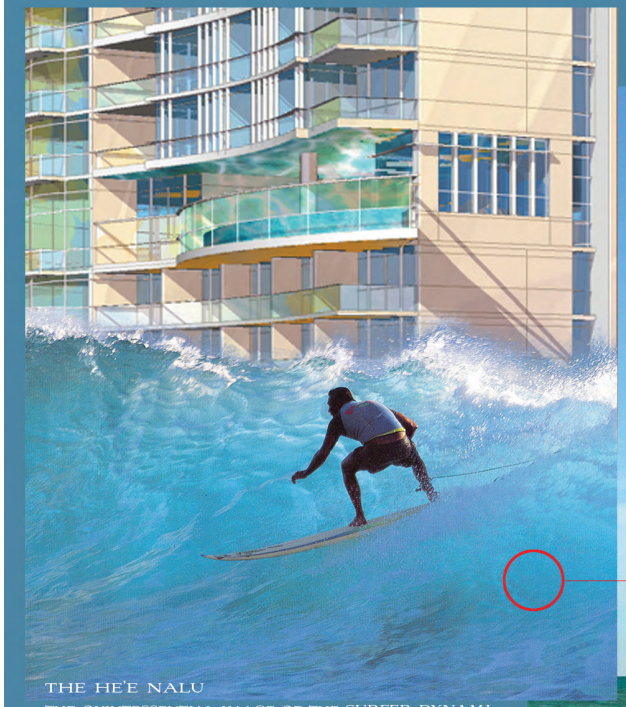
Kyoya

CONCEPT DESIGN
09.09.08

CULTURAL INFUSION - MAKAI ELEMENTS

APPENDIX 1-95

WCITARCHITECTURE



THE HE'E NALU

THE QUINTESSENTIAL IMAGE OF THE SURFER DYNAMICALLY BALANCED UPON A MOVING WALL OF WATER.

THE RESIDENTIAL POOL IS SHAPED AND CANTILEVERED OFF THE UNDULATING FACE OF THE DIAMOND HEAD FACADE TO CAPTURE A FEELING OF POWER, GRACE, AND MOTION.

IN A HUMOROUS TWIST, THE WALL OF WATER IS OF CONCRETE AND GLASS, THE BOARD A TRANSPARENT VESSEL OF WATER.

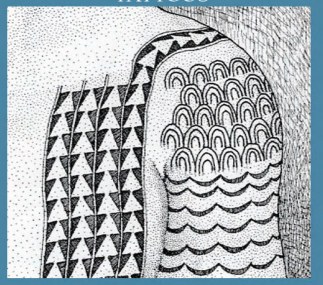
A FURTHER INTERPRETATION FOR THE MAUKA FACADE IS AN ABSTRACTED FORM WITH MULTIPLE INSPIRATIONS: SURFBOARDS, WAVES, KAPA CLOTH, TATOOS, KI'I (PETROGLYPHS), ETC. THE MAUKA WALL CAN BECOME THE STORY OF WAIKĪKĪ, FROM IT'S EARLIEST EXISTENCE AS AN AHUPUA'A, TO MODERN TIMES.

COSMOLOGY, STARS, LUNAR CYCLES

KI'I

KAPA PATTERNS

TATTOOS



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CONCEPT DESIGN
09.09.08

CULTURAL INFUSION - MAUKA ELEMENTS

APPENDIX 1-96

WCITARCHITECTURE

DIAMOND HEAD WING SCREENBLOCK

KAMEHAMEHA SCHOOLS

THE "PINEAPPLE" BUILDING

STARS, MOON PHASES
RAINBOW
WIND, RAIN
MOUNTAINS
WAO NAHELE, FORESTS
KALO LO'I
COCONUT GROVE
HALE
THE FOUR KĀHUNA AND KĀHUNA STONES
SURFBOARDS
HE'E NALU (SURFER)
JELLYFISH
WAVES, SURF
FISH
CORAL

HAWAI'I HAS A STRONG HISTORY OF GRAPHIC INTERPRETATION, FROM KAPA CLOTH AND PETROGLYPHS, TO TODAY'S MODERN METHODS IN CONCRETE AND WOOD.

GOOD EXAMPLES OF MODERN INTERPRETATIONS OF HAWAIIAN PATTERNS AND MOTIFS CAN BE FOUND IN WAIKĪKĪ AND OTHER PARTS OF THE ISLANDS.

THE MAUKA WALL OF THE TOWER OFFERS A CANVAS, UPON WHICH A STORY CAN BE TOLD. THE STORY OF WAIKĪKĪ'S AHUPUA'A.

THE WALL CAN HONOR THE MAJOR ELEMENTS OF WAIKĪKĪ'S HISTORY, SUCH AS THE FOUR KĀHUNA FROM TAHITI, THE 3 MAJOR RIVERS THAT RAN THROUGH THE AHUPUA'A, AND THE ROYAL PASTTIME OF SURFING.

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CONCEPT DESIGN
09.09.08

CULTURAL INFUSION - WAIKIKI WALL

APPENDIX 1-97

WCITARCHITECTURE

ARCHITECTURAL CONTEXTUALISM

A 2-STORY ARRIVAL PAVILION MATCHES THE MOANA PORTE COCHERE'S SENSE OF ARRIVAL IN VOLUME AND AIRINESS (UNIQUE TO PROPERTIES ALONG KALĀKAUA). ARRIVAL PAVILION WALLS WITH SCREENS AND FRAMED OPENINGS ALIGNED TO FENESTRATION OF THE MOANA. LIKE THE MOANA PORTE COCHERE, THE PAVILION ROOF ALIGNS WITH THE MOANA'S THIRD FLOOR.

MOANA PORTE COCHERE

MUCH LIKE THE SHERATON WAIKĪKĪ AND ROYAL HAWAIIAN HOTEL, THE AMENITIES DECK AND POOL TERRACE OUT TOWARDS THE SURF. THE POOL HAS BEEN PUSHED AS FAR MAUKA AS POSSIBLE, ALLOWING LAWN AND DECK SPACE ALONG THE BEACH. THE DECK IS LIFTED UP TO ALIGN AND MATCH WITH THE ADJACENT MOANA AND COMFORT STATION (AS WELL AS TO MITIGATE STORMWATERS) INDIGENOUS ELEMENTS, LIKE PŌHAKU, CORAL, AND NAUPAKA, WILL HELP BLEND THE EDGE WITH THE BEACH AND CONTEXT.

SHERATON WAIKĪKĪ AMENITIES DECK AND POOL

NEW AMENITIES DECK AND POOL

KŪHIŌ COMFORT STATION

THE NEW AMENITIES DECK LAWN, LOOKING MAUKA THROUGH THE ARRIVAL PAVILION, AND UP KA'IULANI AVENUE TO THE MOUNTAINS.

Diamond Head Tower

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CONCEPT DESIGN
09.09.08

ARCHITECTURAL CONTEXT - PODIUM & ARRIVAL ELEMENTS

APPENDIX 1-99

WCITARCHITECTURE

'EWA FACADE

THE NEW TOWER'S MASSING IS DESIGNED TO CONTINUE SOME OF THE MASSING RHYTHMS AND CONCEPTS SET UP BY THE MOANA.

MASSES THAT ARE FURTHEST TO KALĀKAUA AVENUE ARE VERTICAL IN PROPORTION, AND ARE SPACED OUT BETWEEN OTHER KALĀKAUA MASSES TO ALLOW FOR VISUAL RELIEF (GREEN STRIPES INDICATE VOIDS).

STARTING FROM THE ARRIVAL PORTE COCHERE OF THE MOANA, STREET FRONT MASSES ARE INCREMENTALLY RAISED TO ACCENTUATE THE FOCAL POINT OF THE MOANA ARRIVAL.

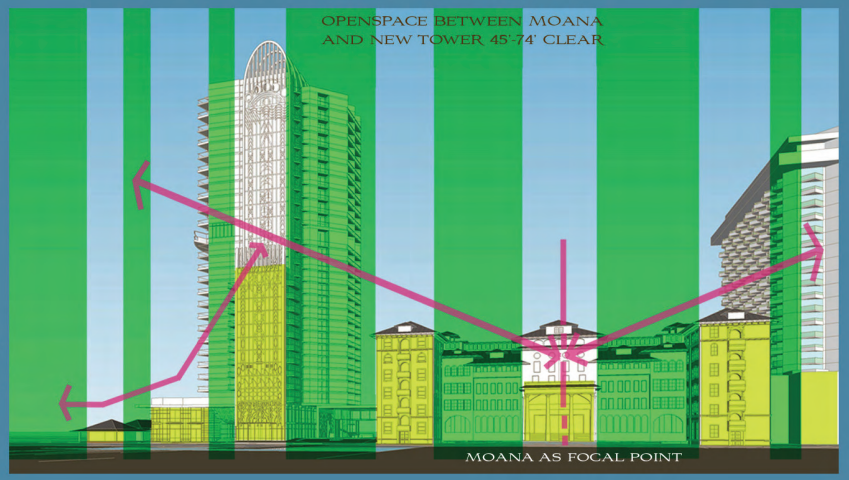
THE NEW TOWER'S STREET-FRONT MASSES ALSO ADDRESS KŪHIŌ BEACH, STEPPING DOWN TO CREATE A TRANSITIONAL MASS TO THE COMFORT STATION AND BEACH.

MAKAI-DIAMOND HEAD FACADE

TALLER MASSES ALSO FOLLOW CUES FROM TEH MOANA AND SURFRIDER, STEPPING BACK FROM KALĀKAUA AVE. TO CREATE A MORE INVITING URBAN STREETRFONT. THE MAUKA-MAKAI ORIENTATION OF THE NEW TOWER HONORS PEDESTRIAN VIEW CORRIDORS AND ALSO BALANCES THE SURFRIDER TOWER TO FRAME THE MOANA.

THE NEW TOWER ALSO MAXIMIZES VISITOR ACCESSIBILITY BY CREATING TWO LARGE OPENINGS. THE ARRIVAL LEVELS ARE RAISED, BOTH ADDRESSING STORM CONDITIONS, AND ALSO MATCHING THE RAISED PORCH EXPERIENCE OF THE MOANA.

THE TOWER'S MASSING ALSO TAKES MASSING CUES FROM OTHER WAIKĪKĪ TOWERS. THE 'EWA FACADE IS FACETED LIKE THE HYATT TOWER, AND THE DIAMOND HEAD SIDE RECALLS THE WRAPPING LANAIS OF MANY OTHER HOTELS IN WAIKĪKĪ.



WINDOWS ALONG THE MAUKA-'EWA FACADE ARE RECESSED AND VERTICALLY-ORIENTED, A MODERN INTERPRETATION OF THE MOANA'S FENESTRATION. LANAIS ARE SMALL, TO RECALL THE JULIETTE-LANAIS OF THE MOANA'S DIAMOND HEAD FACADE.

STEPPED MASSING FROM THE MOANA PORTE COCHERE TO THE MOANA WINGS AND NEW TOWER

Diamond Head Tower

Kyoya

CONCEPT DESIGN
09.09.08

ARCHITECTURAL CONTEXT - MASSING & TOWER ELEMENTS

APPENDIX 1-100

WCITARCHITECTURE

COMISSIONED BY W.C. PEACOCK, ARCHITECT O.G. TRAPHAGEN
VICTORIAN/EUROPEAN STYLE INFLUENCE
GRAND PORTE-COCHERE
LĀNAI (VERANDAS) ON MAUKA AND MAKAI SIDE

EXTRA-WIDE CORRIDORS FOR STEAMER TRUNKS
HIGH VOLUMES FOR CROSS-VENTILATION
INTRICATE WOODWORK AND PLASTER DETAILING, BRASS ELEMENTS

'EWA-DIAMOND HEAD TOWER ORIENTATION

CONCRETE SCREEN WALL

HORIZONTAL CONCRETE FIN

HORIZONTAL WINDOWS, FLUSH WITH FACADE, BROWN FRAMES

1-STORY PODIUM

GREEN FABRIC AWNINGS

THE DIAMOND HEAD WING'S ARCHITECTURAL CHARACTERISTICS ARE BEING STUDIED AS WELL. A FEW ELEMENTS, SUCH AS THE SCREEN BLOCK WALLS, AND THE ARRIVAL SEQUENCE, HAVE BEEN REINTERPRETED AND ENHANCED IN THE PROPOSED DESIGN.

RECESSED LANAIS WITH JULIETTE BALCONIES, THIN STANCHIONS

MAUKA-MAKAI WINGS

SHALLOW PITCH HIPPED ROOFS AND DORMERS

DECORATIVE BRACKETS

ARCHED OPENINGS (FIRE ESCAPE), WHITE FRAMES, SOLID LANAIS

MOULDING AT TOP FLOOR, WHITE

ARCHED WINDOWS, WHITE

CANTONS AT CORNERS, WHITE

IONIC COLONETTES

GRAY FIELD, PLASTER

RECTANGULAR WINDOWS, VERTICAL ORIENTATION, RECESSED IN FACADE, WHITE FRAMES

MOULDING OVER 2ND FLOOR WINDOWS

MOULDING CREATING 1ST FLOOR BASE, WHITE

MOULDING & CONSOLE OVER 1ST FLOOR WINDOWS.

AN ONGOING STUDY OF THE ARCHITECTURAL CHARACTER OF THE MOANA HAS BEEN INTEGRAL TO THE DESIGN PROCESS.
SOME MODERN INTERPRETATIONS HAVE BEEN INCORPORATED, SUCH AS PROPORTIONED FENESTRATION, MASSING, AND ARRIVAL EXPERIENCE.

Diamond Head Tower

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CONCEPT DESIGN
09.09.08

ARCHITECTURAL CONTEXT - MOANA & EXISTING DIAMOND HEAD WING

APPENDIX 1-101

WCITARCHITECTURE

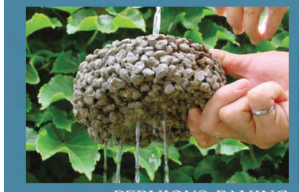
SUSTAINABILITY

WEST-FACING FACADE
VERTICAL PLANES, SUCH AS FINS AND WALLS, OFFER THE MOST SOLAR PROTECTION. THE SAWTOOTH FACADE NATURALLY ORIENTS SOLID WALLS DUE WEST TO SHIELD INTERIORS FROM THE AFTERNOON SUN.

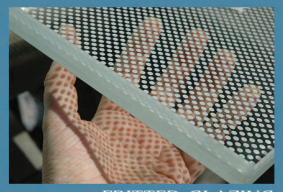
WEST AND SOUTHWEST FACADES

SOUTHWEST-FACING FACADE
EGGCRATED, OR COMBINED HORIZONTAL AND VERTICAL PLANES, OFFER THE MOST SOLAR PROTECTION. DEEP LĀNAIS AND BRIS SOLEIL PROTECT THE MAKAI FACADES.

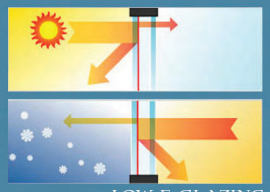
PASSIVE ENVIRONMENTAL SYSTEMS
OPTIMIZING BUILDING ORIENTATION MINIMIZES SOLAR GAIN, WHICH REDUCES COOLING REQUIREMENTS AND INCREASES COMFORT.
ARTICULATIONS IN THE SKIN, SUCH AS FINS, EXTENDED FLOORPLATES, AND TRELLISES, INCREASE SHADING.
LOW-E GLAZING WILL FURTHER LOWER HEAT TRANSMISSION. WHERE POSSIBLE, GLAZING CAN BE FRITTED TO FURTHER DEFLECT SOLAR ENERGY.
OPERABLE WINDOWS AND SLIDING LANAI DOORS, LOCATED ALONG THE LEE SIDE OF THE UNITS, WILL HELP TO DRAW HOT AIR FROM UNITS, WITH THE HELP FROM WAIKĪKĪ'S STEADY BREEZES.
LIGHT COLORS FOR SURFACES WILL HELP DEFLECT SOLAR ENERGY.
DECKS AND ROOFS OF THE PROJECT ARE DESIGNED TO RETAIN AS MUCH RAINFALL AS POSSIBLE WITH GRASS ROOFS AND CATCHMENT SYSTEMS; FURTHER STUDIES WILL SEE HOW THE PROJECT CAN REUSE WATER FOR IRRIGATION, FLUSHING, ETC.



PERVIOUS PAVING



FRITTED GLAZING



LOW-E GLAZING

GRASS ROOF

SOUTH-FACING FACADE
HORIZONTAL PLANES, SUCH AS DEEP LANAIS AND FASCIA, OFFER THE MOST SOLAR PROTECTION. THE SAWTOOTH FACADE AND TRIANGULAR LANAIS CREATE DEEP HORIZONTAL PLANES TO MAXIMIZE PROTECTION..

NORTH AND NORTHWEST FACADES

LANDSCAPE CONCEPTS
PAVING CAN INCORPORATE LOCAL MATERIALS SUCH AS VOLCANIC BASALT AND CORAL, WHERE POSSIBLE. PAVING CAN ALSO UTILIZE PERVIOUS MATERIALS IN STRATEGIC PLACES TO MINIMIZE WATER RUNOFF.
THE COURTYARDS AND OPEN SPACES WILL ALSO UTILIZE APPROPRIATE INDIGENOUS PLANTS.

Diamond Head Tower

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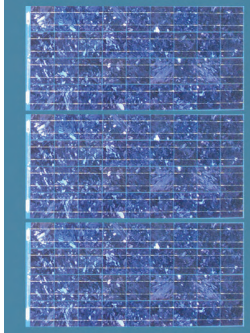
09.09.08

SUSTAINABILITY CONCEPTS - PASSIVE SYSTEMS

WCITARCHITECTURE

KYO-YA IS STUDYING OPPORTUNITIES FOR BUILDING-INTEGRATED PHOTO-VOLTAICS AND SMALL WIND TURBINES ON THE FLAT ROOFS AND OTHER SURFACES OF THE NEW TOWER, FURTHER REDUCING ENERGY USAGE.



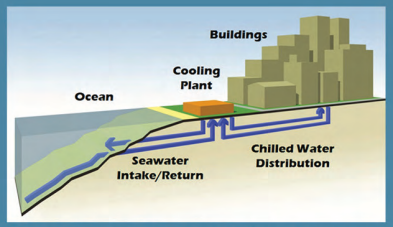
GRASSROOFS WILL BE USED TO COLLECT WATER AND NATURALLY PROVIDE A THERMAL BUFFER FOR SPACES BELOW.

CFL BULBS WILL SUPPLEMENT NATURALLY-LIT SPACES, AND HIGH-EFFICIENCY FANS WILL SUPPLEMENT NATURALLY-VENTILATED SPACES WHERE POSSIBLE.

GALLERY, DALLAS, TEXAS

KYO-YA CURRENTLY UTILIZES A SPRING TO SUPPLY MOST OF THEIR WATER TO THEIR PROPERTIES, LESSENING THE IMPACT ON WAIKĪKĪ'S SUPPLY. LOW-FLUSH TOILETS, AND OTHER WATER-SAVING DEVICES WILL BE USED TO MINIMIZE WATER USAGE GREY WATER COLLECTED FROM RUN-OFF WILL BE REUSED FOR IRRIGATION AND POTENTIALLY FLUSHING.

KYO-YA IS ALSO CURRENTLY STUDYING DEEP WELL AND/OR SEA WATER AIR COOLING SYSTEM THAT WILL COOL A/C AIR NATURALLY AND LOWER ENERGY COSTS. OTHER INTERNAL SYSTEMS LIKE COGENERATION PLANTS ARE BEING CONSIDERED TO FURTHER REDUCE IMPACT UPON THE CITY GRID.



SEA WATER AIR COOLING SYSTEM

DYNAMIC ENVIRONMENTAL SYSTEMS

WAIKĪKĪ IS IN ABUNDANCE OF SUN, WIND, AND WATER (OCEAN AND RAIN). VARIOUS SYSTEMS WILL BE IMPLEMENTED TO MINIMIZE RESOURCE AND ENVIRONMENTAL IMPACT.

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CONCEPT DESIGN
09.09.08

SUSTAINABILITY CONCEPTS - DYNAMIC SYSTEMS

APPENDIX 1-104

WCITARCHITECTURE

ADDITIONAL PLANNING STUDIES & DIAGRAMS

Existing View from
Ka'iulani Avenue Corridor

Existing View on Makai Side
of the Daimond Head Tower

Existing Makai Side & Open Space

Existing Public Access
to Public Surfboard Racks

CONGESTED DUE TO POPULAR USE

Existing Beach Edge

Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

EXISTING CONDITIONS

WCIT ARCHITECTURE

Existing

Proposed

Existing

Proposed

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VIEW STUDIES

APPENDIX 1-110

WCIT ARCHITECTURE

Existing

Proposed

4939

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VIEW STUDIES

APPENDIX 1-111

WCIT ARCHITECTURE

Existing

Proposed

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CONCEPT DESIGN
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VIEW STUDIES

APPENDIX 1-112

WCIT ARCHITECTURE

Existing

Proposed

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CONCEPT DESIGN
07.02.09

VIEW STUDIES

APPENDIX 1-113

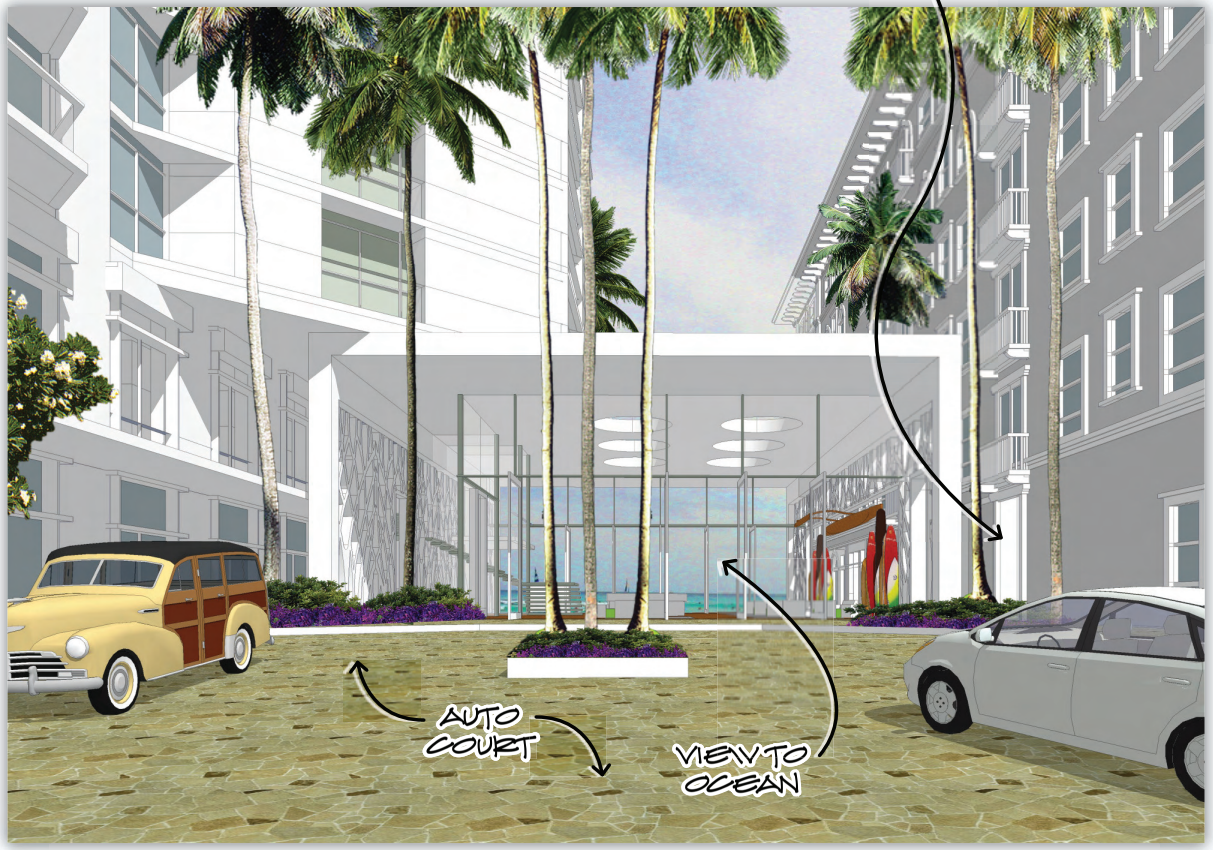
WCIT ARCHITECTURE

Existing

Proposed

*NOTE: PROVIDE RELIEF FROM THE BANYAN WING AND A COVERED CONNECTION BETWEEN THE PROPERTIES. DESIGN TO MINIMIZE IMPACT ON AND SHOWCASE THE BEAUTY OF THE CURRENTLY CONCEALED HISTORIC FACADE. FOLLOW APPROPRIATE MEASURES TO PRESERVE, PROTECT AND RESTORE AS NECESSARY THE UNVEILED AREA OF THE HISTORIC FACADE

Existing



Proposed

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07.02.09

VIEW STUDIES

APPENDIX 1-115

WCIT ARCHITECTURE

Existing

Proposed

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VIEW STUDIES

APPENDIX 1-116

WCIT ARCHITECTURE

Existing

Proposed

5008

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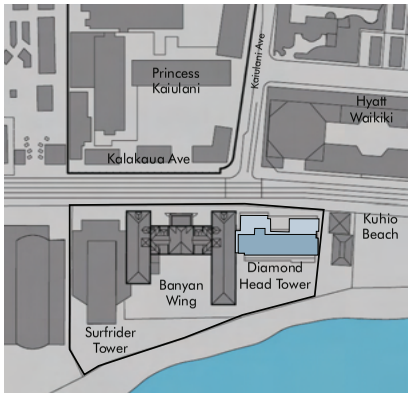
VIEW STUDIES

APPENDIX 1-117

WCIT ARCHITECTURE



Vicinity Map
Scale: none

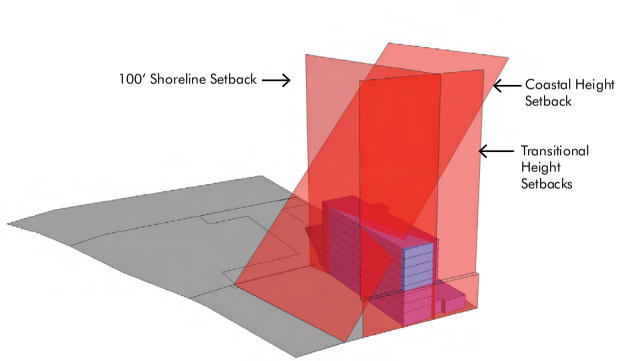
Maximum Allowable FAR Available for DHT through PDR: 299,072 sf

Maximum Allowable FAR Available for DHT through PDR: 0 sf
(Non-Conforming)

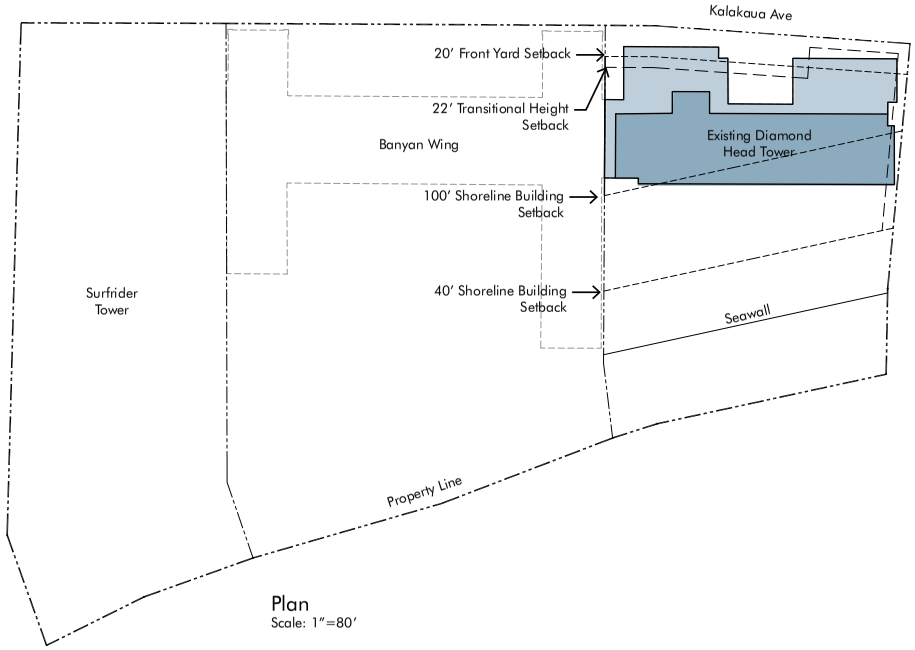
LUO/WSD/PDR Compliance

350′ Height Limit (PDR)	Yes
20′ Front Yard Setback (Averaged)	Yes
100′ Shoreline Building Setback	No
40′ Shoreline Setback	Yes
Coastal Height Setback	No
Front Transitional Height Setback (6′)	Yes
Side Transitional Height Setback (6′)	No
50% Open Space	Yes

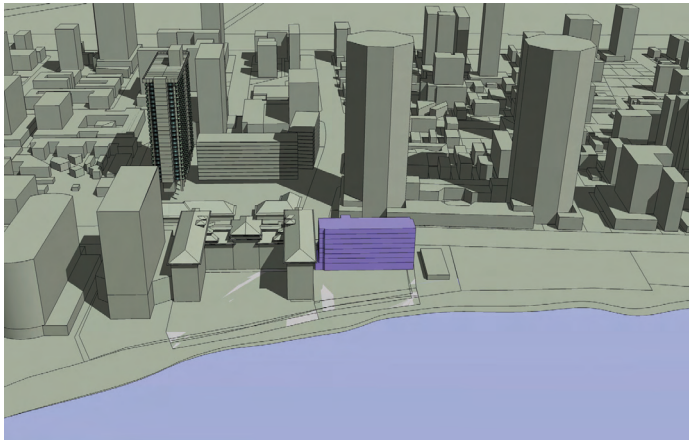
Existing FAR, Diamond Head transitional setback, and open space requirements are non-conforming. A development that follows the general criteria set in the LUO for Resort Mixed Use Precinct under the WSD Development Standards is not possible without application through the PD-R process. Since the existing development already exceeds the FAR allowed by the LUO, this alternative of redevelopment for less density is not economically feasible.



Makai/DH Perspective
Scale: none



Plan
Scale: 1″=80′



Aerial Perspective
Scale: none

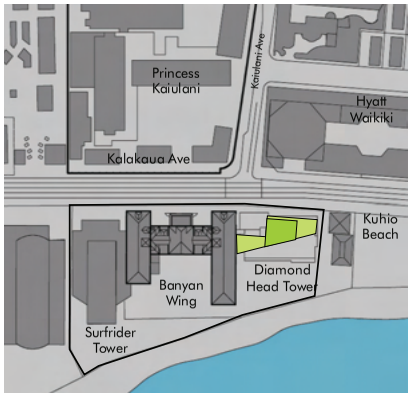
Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

ALTERNATIVE I
(NO PDR)

WCIT ARCHITECTURE



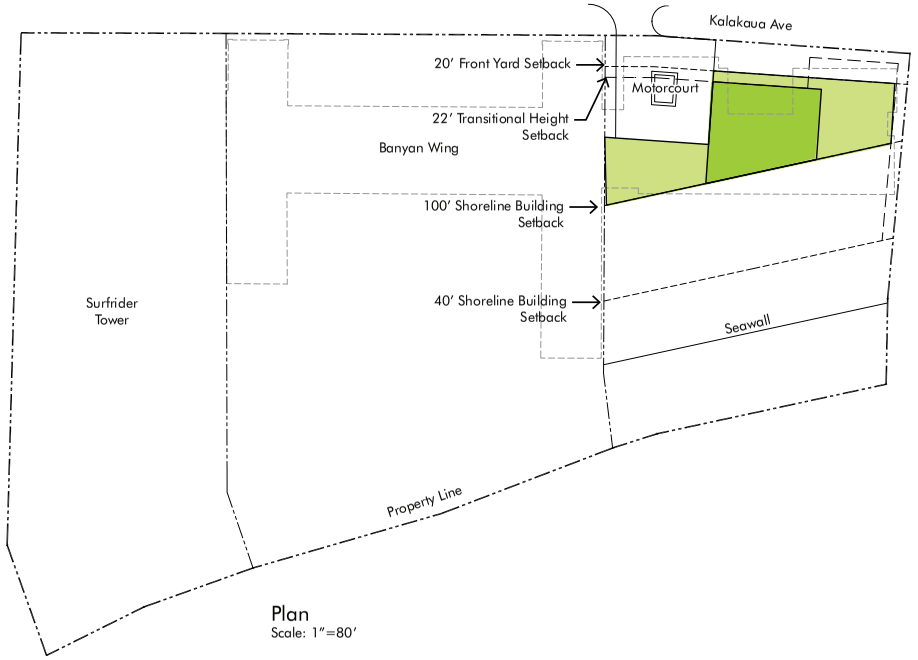
Vicinity Map
Scale: none

Maximum Allowable FAR
Available for DHT through PDR: 299,072 sf

Level 1-2	(8,700 x 2) 17,400 sf
Level 3-9	(3,770 x 7) 26,390 sf
Levels 3-9	(2,030 x 7) 4,060 sf
Total FAR	**47,850 sf**

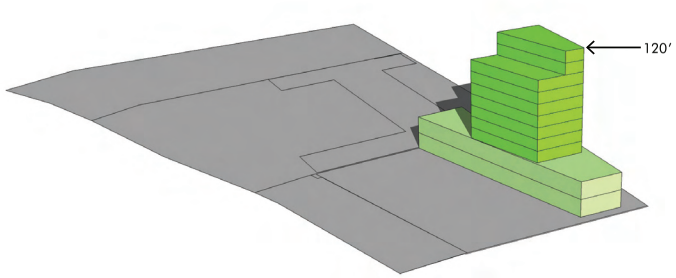
LUO/WSD/PDR Compliance

350' Height Limit (PDR)	Yes
20' Front Yard Setback (Averaged)	Yes
100' Shoreline Building Setback	Yes
40' Shoreline Setback	Yes
Coastal Height Setback	Yes
Front Transitional Height Setback (6')	Yes
Side Transitional Height Setback (6')	Yes
50% Open Space	Yes

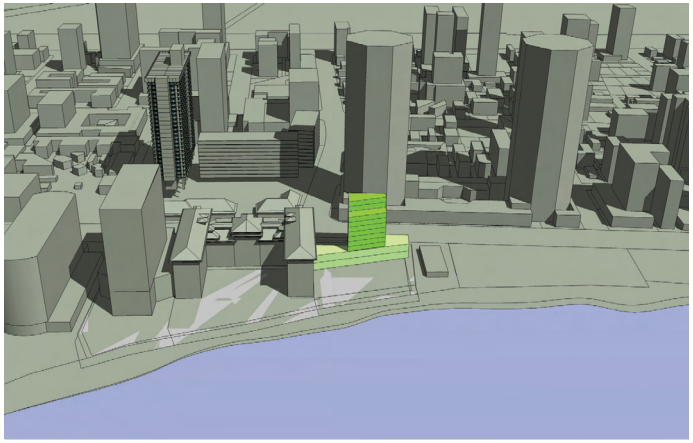


Plan
Scale: 1"=80'

Alternative IIA is a building study that complies with all requirements except for open space and FAR. The result is a 140' high structure which mimics the existing Diamond Head Tower, with a decreased floor area. This building continues to be oriented in the 'Ewa-Diamond Head direction, with no view corridors or building relief and as such, does not meet the intent of the WSD and PD-R. With a reduced total floor area, this alternative is not economically feasible to develop.



Makai/DH Perspective
Scale: none



Aerial Perspective
Scale: none

Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

ALTERNATIVE IIA

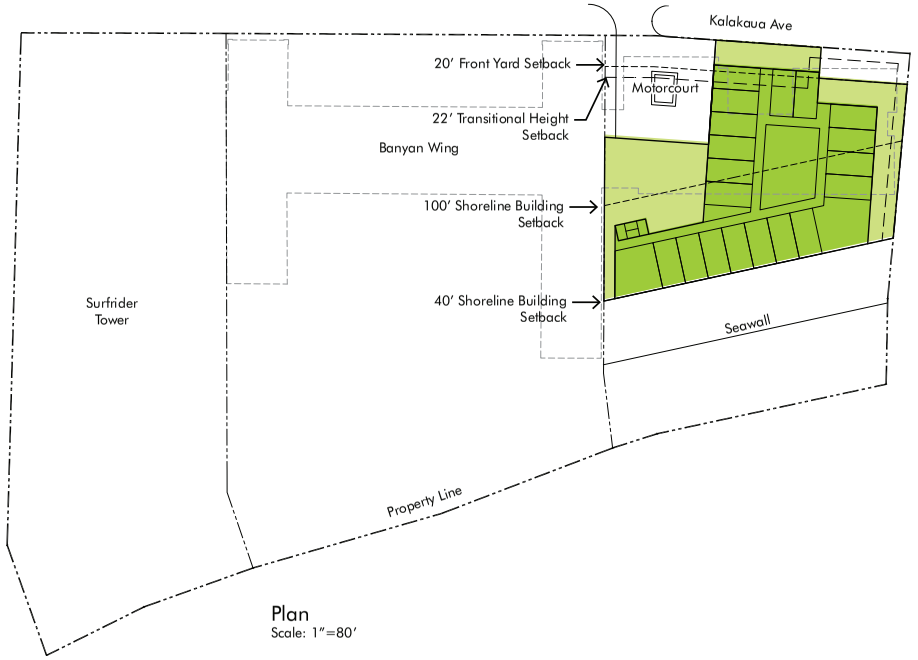
APPENDIX 1-119

WCITARCHITECTURE

Vicinity Map
Scale: none

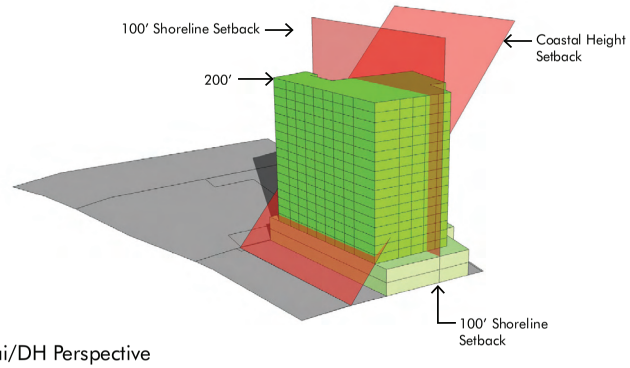
Maximum Allowable FAR	
Available for DHT through PDR:	299,072 sf
Level 1	22,032 sf
Level 2	22,032 sf
Levels 3-19	(14,664 x 17) 234,624 sf
Total FAR	**293,352 sf**

LUO/WSD/PDR Compliance	
350′ Height Limit (PDR)	Yes
20′ Front Yard Setback (Averaged)	Yes
100′ Shoreline Building Setback	No
40′ Shoreline Setback	Yes
Coastal Height Setback	No
Front Transitional Height Setback (15′)	Yes
Side Transitional Height Setback (15′)	Yes
50% Open Space	Yes

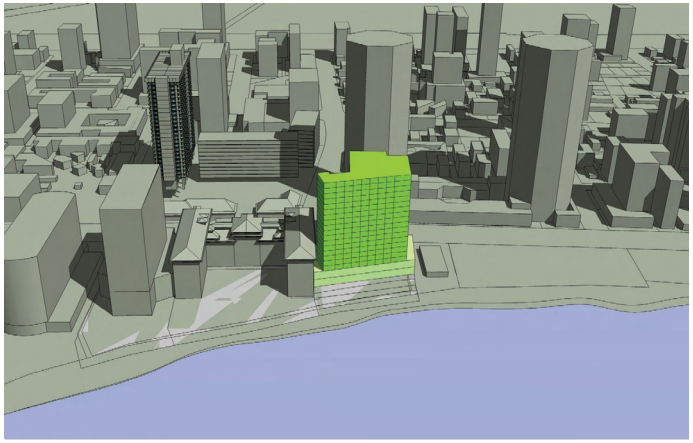


Plan
Scale: 1″=80′

Alternative IIB is a building study that complies with all requirements except for open space, FAR, 100′ Setback and Coastal Height Setbacks, but maintains a building height of 200′ high. With a program driven total floor area similar to the proposal, this building holds a larger footprint and has an asymmetrical form, with no view corridors or building relief and as such, does not meet the intent of the WSD and PD-R.



Makai/DH Perspective
Scale: none



Aerial Perspective
Scale: none

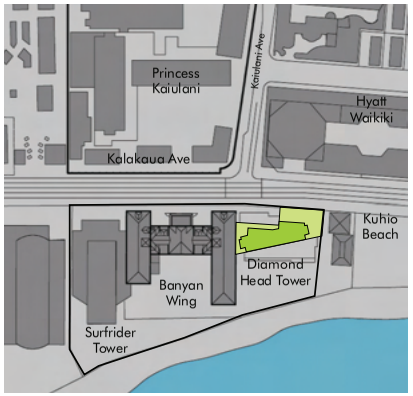
Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

ALTERNATIVE IIB

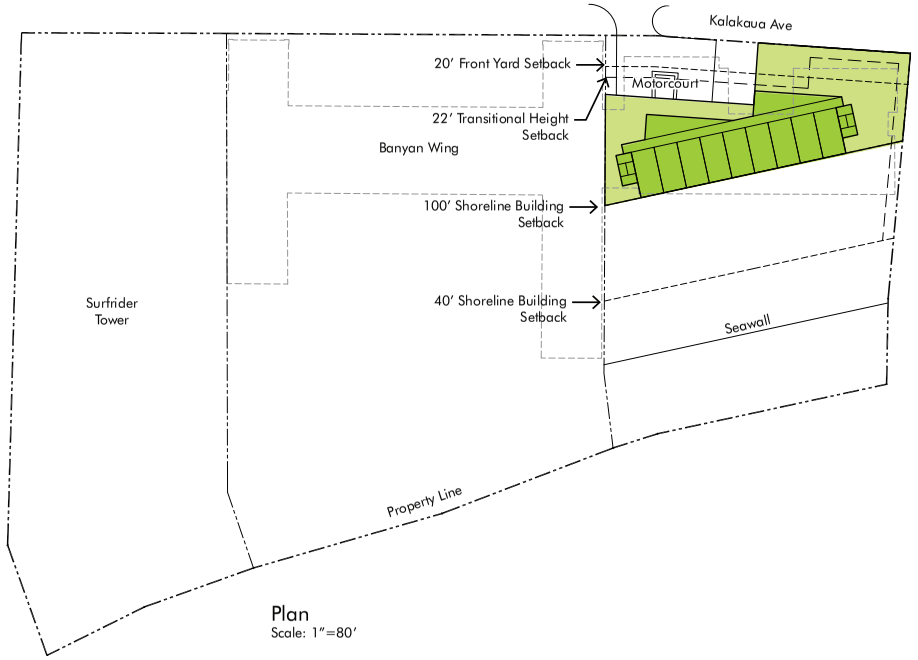
WCIT ARCHITECTURE



Vicinity Map
Scale: none

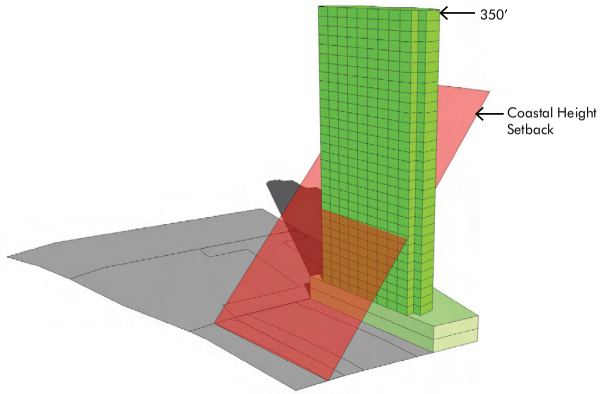
Maximum Allowable FAR	
Available for DHT through PDR:	299,072 sf
Level 1	12,366 sf
Level 2	12,366 sf
Levels 3-34	(6,234 x 32) 44,730 sf
Total FAR	**224,220 sf**

LUO/WSD/PDR Compliance	
350' Height Limit (PDR)	Yes
20' Front Yard Setback (Averaged)	Yes
100' Shoreline Building Setback	Yes
40' Shoreline Setback	Yes
Coastal Height Setback	No
Front Transitional Height Setback (31')	Yes
Side Transitional Height Setback (31')	Yes
50% Open Space	Yes

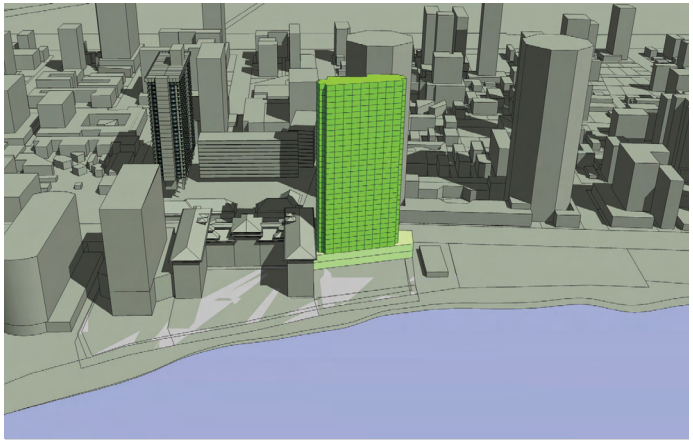


Plan
Scale: 1"=80'

Alternative IIC is a building study that complies with all requirements except for Open Space, FAR, and Coastal Height Setbacks, but in contrast to the previous alternative, complies with the 100' shoreline setback. The resultant is a single loaded building with reduced total floor area and a building height of 350' high. Again, this building continues to be oriented in the 'Ewa-Diamond Head direction, with no view corridors or building relief and as such, does not meet the intent of the WSD and PD-R.



Makai/DH Perspective
Scale: none



Aerial Perspective
Scale: none

Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

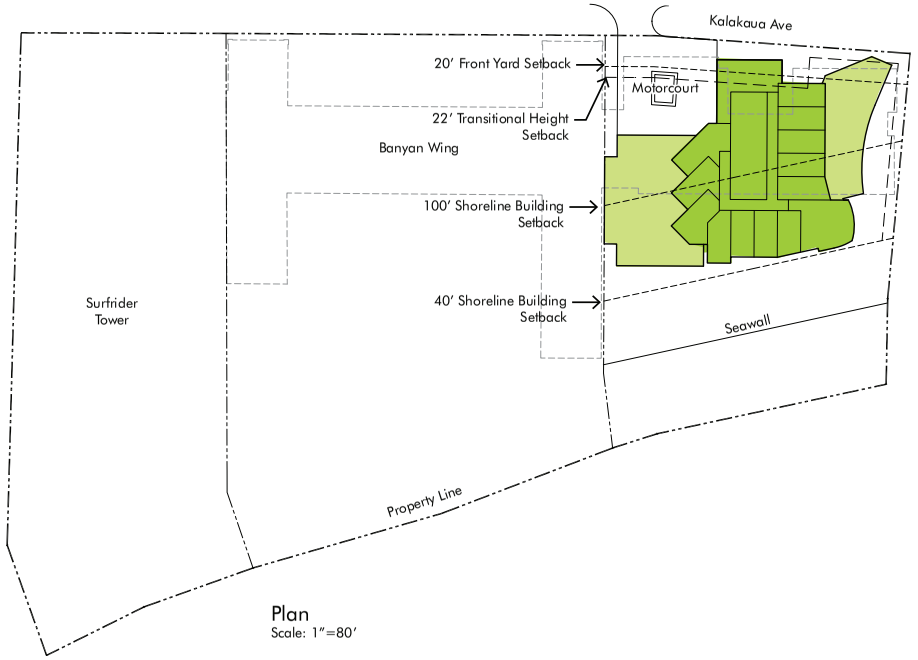
ALTERNATIVE IIC

WCIT ARCHITECTURE

Vicinity Map
Scale: none

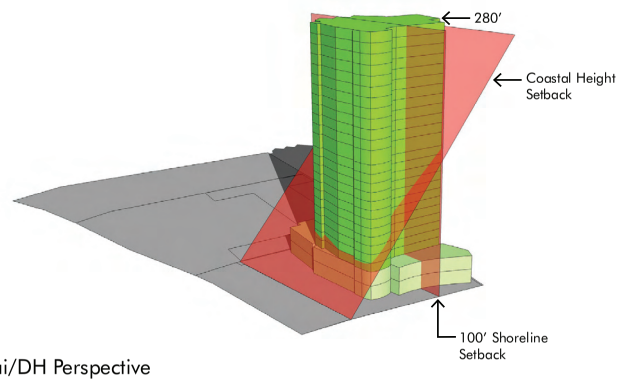
Maximum Allowable FAR		
Available for DHT through PDR:		299,072 sf
Level 1		16,937 sf
Level 2		14,079 sf
Levels 3-14	(11,484 x 12)	137,808 sf
Levels 15-26	(10,854 x 12)	130,248 sf
Total FAR		**299,072 sf**

LUO/WSD/PDR Compliance	
350′ Height Limit (PDR)	Yes
20′ Front Yard Setback (Averaged)	Yes
100′ Shoreline Building Setback	No
40′ Shoreline Setback	Yes
Coastal Height Setback	No
Front Transitional Height Setback (22′)	Yes
Side Transitional Height Setback (22′)	Yes
50% Open Space	Yes

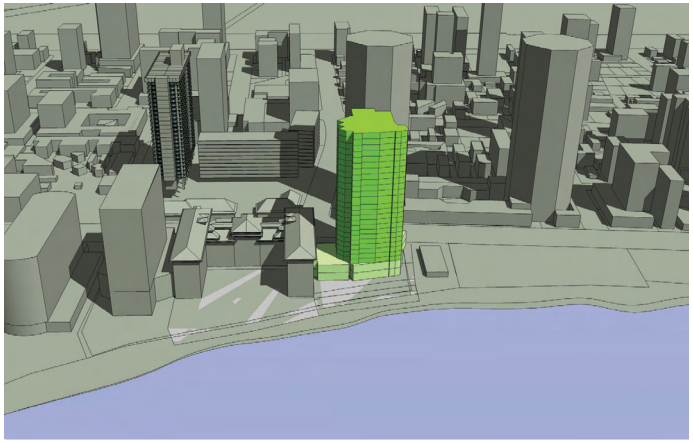


Plan
Scale: 1″=80′

The redevelopment of Diamond Head Tower will result in the removal of a dated and obsolete hotel tower that blocks public view corridors from Kalakaua Avenue. The new Diamond Head Tower will be the first new resort hotel on Waikiki Beach in nearly 30-years, greatly improving the overall hotel product in Waikiki. The tower will be oriented in a Mauka/Makai orientation, opening up view corridors at the public or pedestrian level. The improved orientation of the building will permit the creation of a new auto court, which will positively redistribute some of the traffic along Kaakaua Avenue near the existing entrance. As additional public benefits, Kyo-ya is proposing to provide a public access to Waikiki Beach, public surfboard racks, and public art celebrating the ahupua'a of Waikiki and its beach culture.



Makai/DH Perspective
Scale: none



Aerial Perspective
Scale: none

Diamond Head Tower

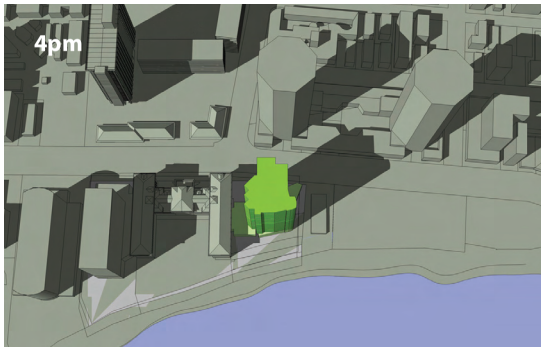
Kyoya

CONCEPT DESIGN
07.02.09

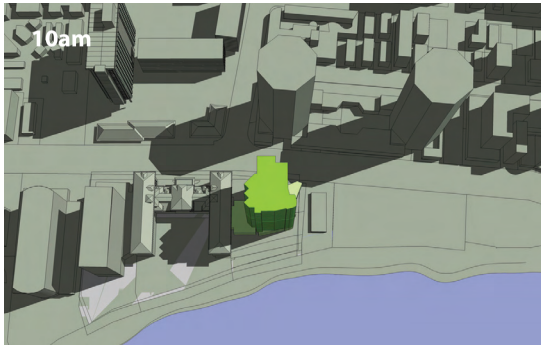
PREFERRED ALTERNATIVE

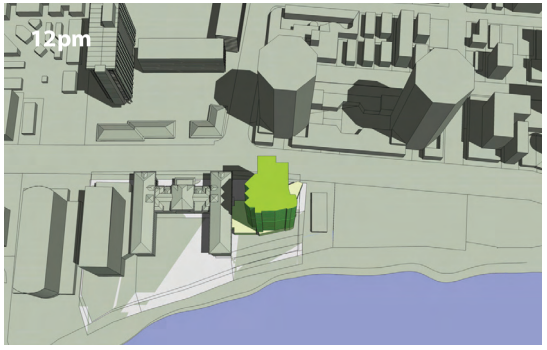
APPENDIX 1-122

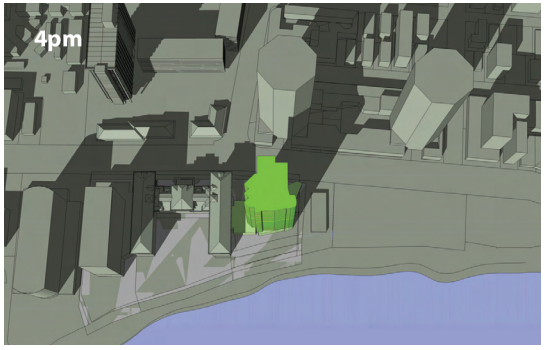
WCIT ARCHITECTURE



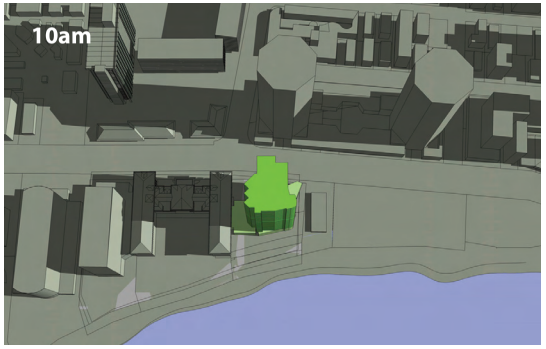
Summer Solstice (Jun 21)

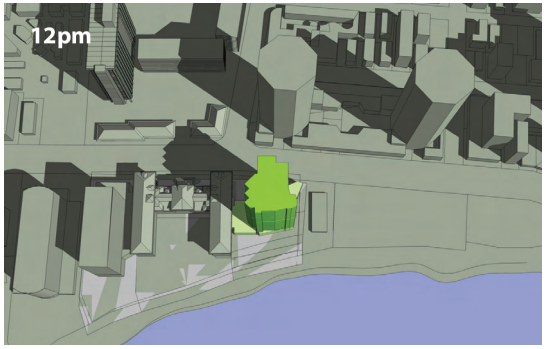


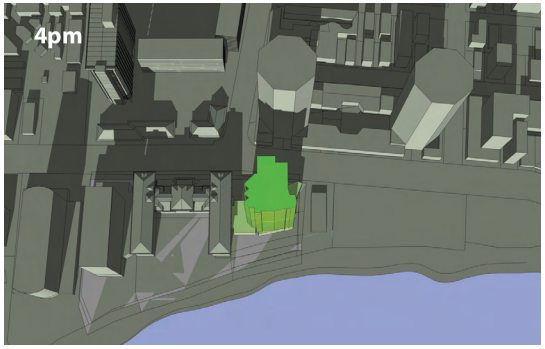




Equinox (Sep 22, Mar 20)







Winter Solstice (Dec 21)

Diamond Head Tower

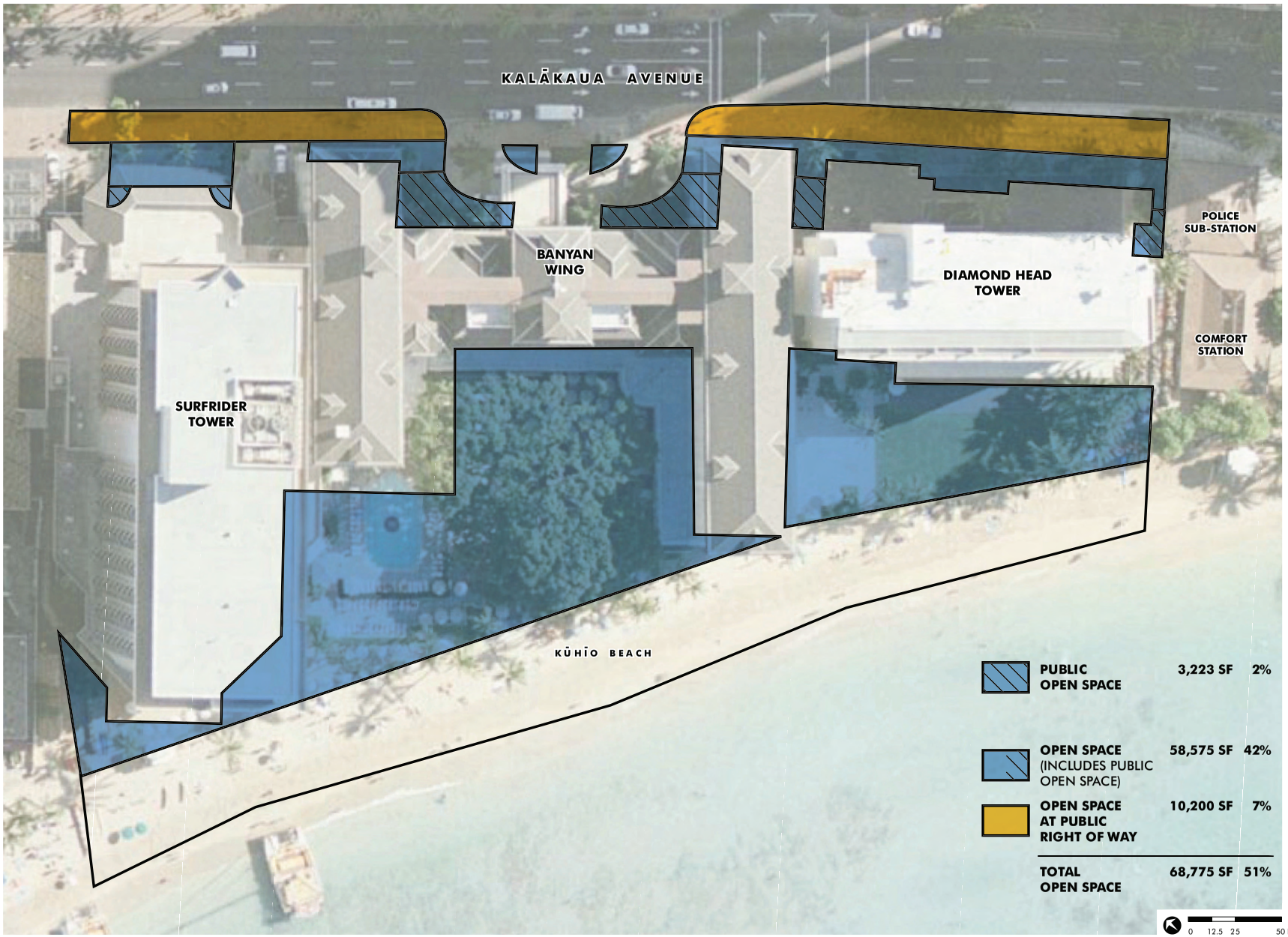
Kyoya

SHADOW STUDIES
05.11.09

SHADOW STUDIES

APPENDIX 1-123

WCIT ARCHITECTURE



Diamond Head Tower

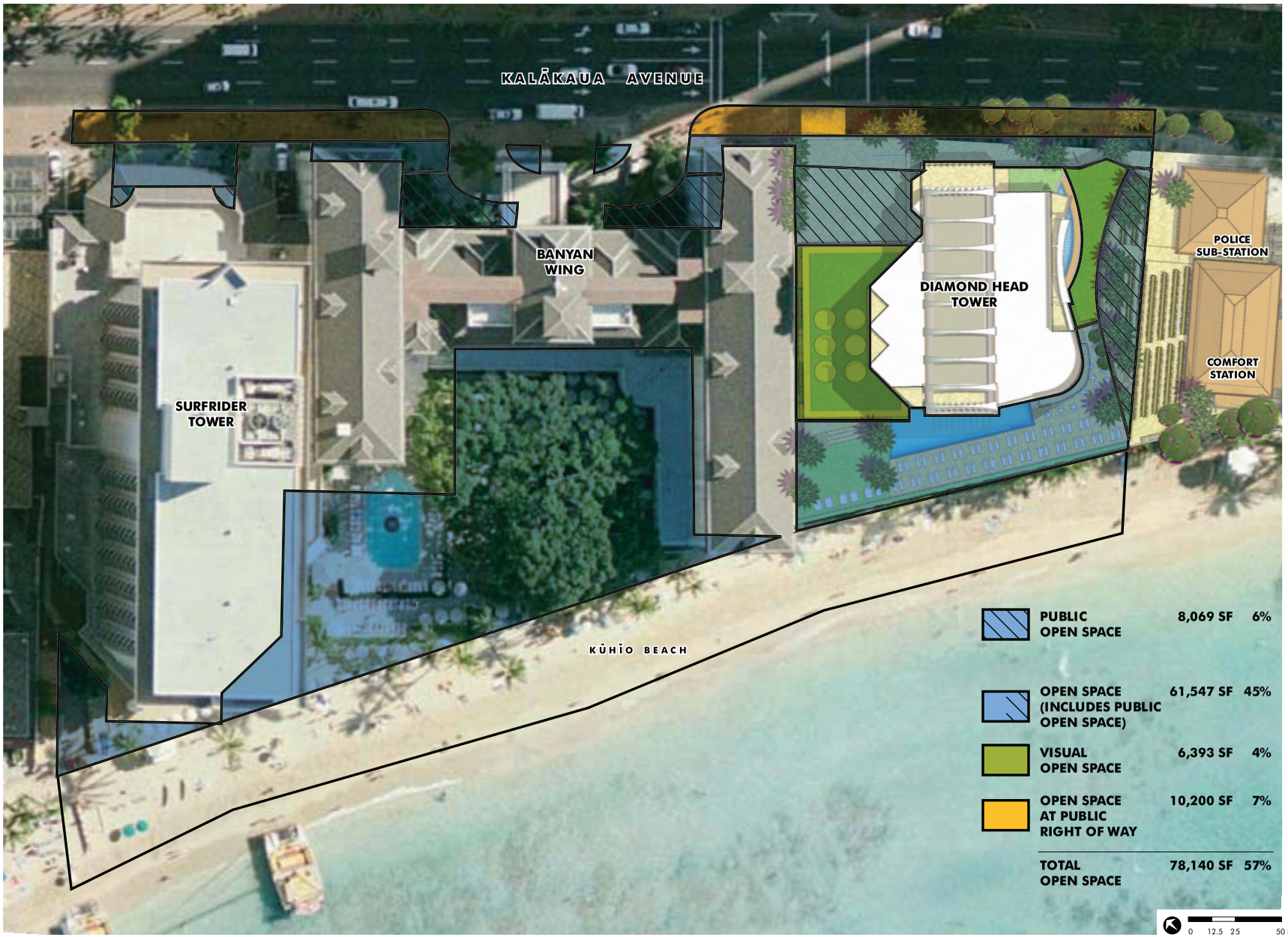
Kyoya

CONCEPT DESIGN
07.02.09

EXISTING OPEN SPACE

APPENDIX 1-124

WCIT ARCHITECTURE



Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

PROPOSED OPEN SPACE

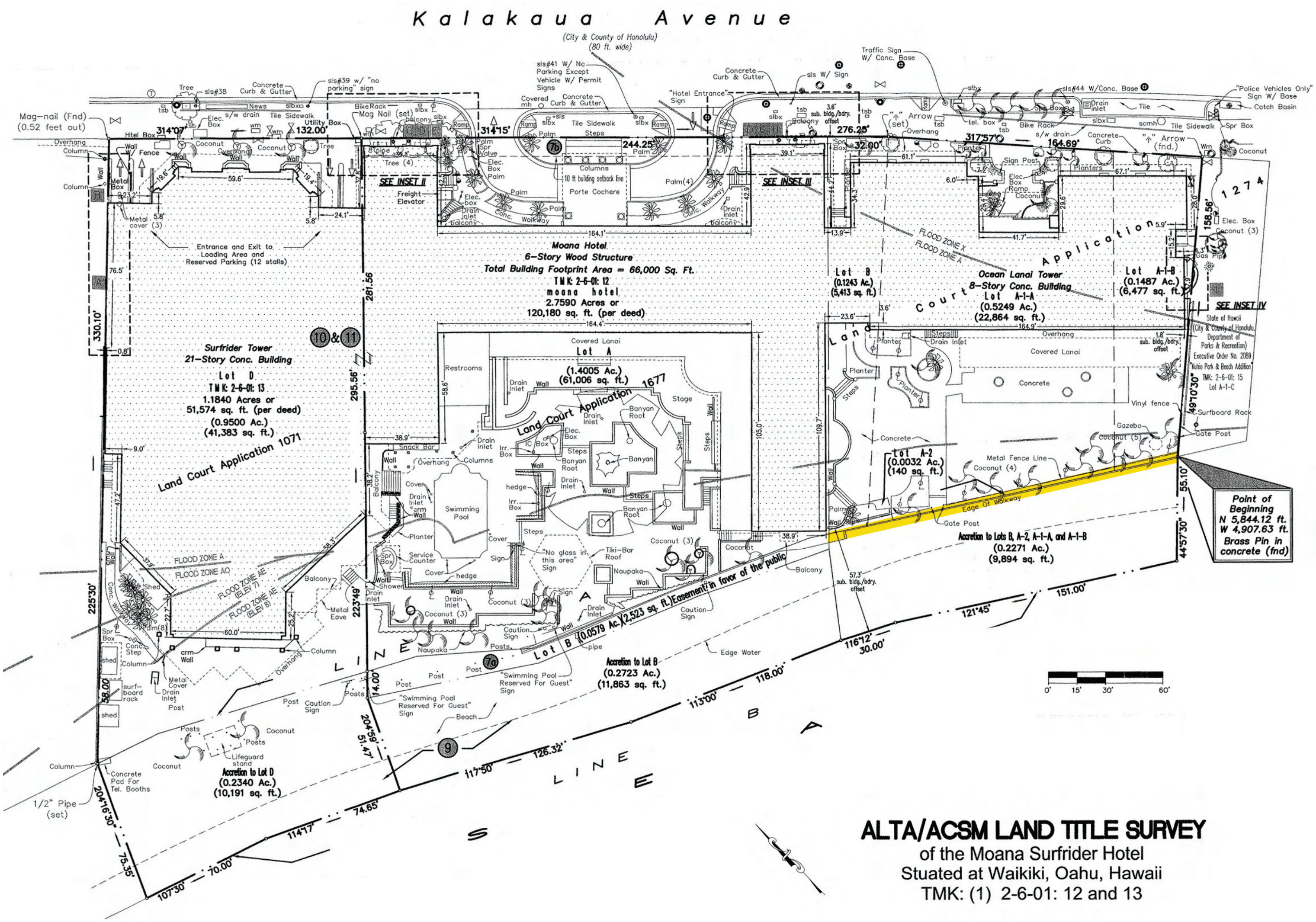
WCIT ARCHITECTURE

Diamond Head Tower

Kyoya

CONCEPT DESIGN
07.02.09

ALTA LAND TITLE SURVEY



APPENDIX 1-126

WCITARCHITECTURE

APPENDIX 2

Assessment of the Historic Architectural Resources within the Proposed
Diamond Head Tower of the Moana Surfrider Hotel and
Princess Ka'iulani Hotel Master Plan dated April 2009
prepared by Minatoshi Architects Inc.

2009

ASSESSMENT OF THE HISTORICAL ARCHITECTURAL RESOURCES WITHIN THE PROPOSED

DIAMOND HEAD TOWER OF THE MOANA SURFRIDER HOTEL & PRINCESS KAI'ULANI HOTEL MASTER PLAN

Prepared by: **MINATOISHI ARCHITECTS, INC.**

Prepared for: WCITARCHITECTURE

Assessment of the Historic Architectural Resources within the Proposed Diamond Head Tower of the Moana Surfrider Hotel and Princess Kaiulani Hotel Master Plan Improvements

Prepared for:
WCITARCHITECTURE

Prepared by:
Minatoishi Architects, Inc.
1429 Makiki Street, #211
Honolulu, HI 96814
(808) 942-7474

April 2009

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Section 3 Description……..33

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EXECUTIVE SUMMARY

Kyo-ya Company Ltd. is proposing to redevelop the existing Diamond Head Tower of the Moana Surfrider Hotel and Princess Kaiulani hotels into a Planned Project Development which calls for the removal of several older structures on these properties including: the Diamond Head Tower of the Moana Surfrider Hotel (1952), the Princess Wing (original main tower of the Princess Kaiulani Hotel) (1955), Kaiulani Wing (originally called the Diamond Head Tower) (1960), the retail shops (1958), and the parking structure (1961).

The following report presents the Diamond Head Tower of the Moana Surfrider Hotel and Princess Kaiulani hotels' historical background and their architectural description. The report will review the historic context of the hotel development, the architectural characteristics, character defining features, changes and removal of historic material over the years. Significance and determination of effects are not addressed in this report.

In order to reduce the impact of the proposed changes to the hotels, the report recommends specific mitigation measures to be implemented should the project obtain all necessary permits and approvals. These recommendations are stated in Chapter Four of this report.

The Diamond Head Tower of the Moana Surfrider Hotel opened in January 1952, and the Princess Kaiulani Hotel opened on June 11, 1955, and as such both are over fifty years old and meet the

definition of a historic property as enumerated in Section 6E-2, Hawaii Revised Statutes. As both towers and their associated elements only recently reached the fifty year plateau, they are not included within the Hawaii State Historic Preservation Office's inventory of historic places, and are also not identified in the City and County of Honolulu's "Waikiki Special District Guidelines" among "structures, sites and landmarks" identified by the Department of Land and Natural Resources (DLNR) as "having scenic, cultural, historic or architectural significance" and "may possess qualities which make them eligible for listing on the register of historic places."

The 1952 Diamond Head Tower of the Moana Surfrider Hotel has lost some of its integrity, as its guest rooms have been remodeled and the first floor, which once functioned as a lobby, now serves as a corridor and seating area, with the ocean side of the space open to the beach. Originally the building was an autonomous hotel but in 1969, it became a wing of the Moana Surfrider Hotel. Its "SurfRider" name was appropriated and applied to the hotel Kenji Osano constructed on the Ewa side of the Moana in 1969. The more recent SurfRider Tower also has been incorporated into the Moana Surfrider Hotel as the Tower Wing, and the entire complex is now named the Moana Surfrider Hotel- a Westin Resort.

The 1955 Princess Wing of the Princess Kaiulani Hotel has also gone through a number of changes over the last fifty three years. Major changes include the construction of the Kaiulani Tower in 1960, designed by Wimberley & Cook, the construction of the Ainahau Tower in 1971, designed by Roehrig, Onodera & Kinder, and a major remodeling of the lobby and grounds in 1987. The additions to the hotel retained the design spirit of the original building, and the footprint of the 1955 lobby and grounds is still discernable.

Both hotels were built by Matson Navigation Company, which was a leader in the development of Hawaii's visitor industry during the period 1925-1959. Matson started business as a shipping company, transporting goods between California and Hawaii and the Pacific. However, almost from the inception of the company in 1882, the carriage of passengers played a role almost equal to that of carrying cargo, and this in turn led the company to enter into the hotel business in the mid-1920s. Their first ventures involved the Moana and Royal Hawaiian Hotels, the largest and most luxurious hotels in Waikiki during the late 1920s and 1930s. After World War II, Matson recognized that travel to Hawaii was on the increase, and the company was among the first to expand Waikiki's capacity with the construction of the Diamond Head Tower of the Moana Surfrider Hotel, which was soon followed by the Princess Kaiulani

Hotel. The latter was built during a moment of great expansion in hotel rooms in Waikiki. The opening of the Waikiki Biltmore, Roy Kelley's Reef Hotel, and Princess Wing of the Princess Kaiulani Hotel in 1955, changed the face of Waikiki, as they all rose over one hundred feet in the air. To some eyes, the area had been transformed from, "a languid garden spot to a modern tourist resort," as the completion of these three buildings accentuated the dramatic growth of Waikiki, which during the period 1945-1955 had boomed from a beach catering to only 15,000 visitors a year to a resort welcoming over 100,000 a year. During that time, the number of hotel rooms rose from under 1,000 to over 4,000, as 28 hotels or apartment-hotels were built in Waikiki. When the Princess Wing (original main tower of the Princess Kaiulani) opened in 1955, it was the tallest building in Waikiki, with only Aloha Tower and Tripler Hospital standing taller in the Territory of Hawaii.

During the 1950s air travel increasingly supplanted ocean cruises as the primary means of traveling to Hawaii, and people such as Henry Kaiser and Roy Kelley entered the visitor accommodation field and soon became major players in that arena. As a result Matson decided to concentrate on the shipment of goods to and from Hawaii, and divested itself of its Waikiki hotel inventory, selling them to Sheraton in 1959. This sale marked the entry of national hotel chains into the Hawaii market, leading to a new chapter in the history of Hawaii's travel industry.

Both the Princess Wing (original main tower of the Princess Kaiulani) and the Diamond Head Tower of the Moana Surfrider Hotel were designed by San Francisco architect Gardner Dailey, FAIA (1895-1967). Prior to designing these hotels Dailey had previously worked with Matson on the refurbishment of the Royal Hawaiian, at the conclusion of World War II, and was also involved with the 1954 changes made to the Moana Surfrider Hotel. Dailey and William Wurster are credited with introducing modern architecture to northern California, and are recognized as the prime progenitors of the "Second Bay Tradition," which melded the International Style with local vernacular traditions during the mid-to-late 1930s.

The character-defining features of the Diamond Head Tower of the Moana Surfrider Hotel that remain intact include:

- 8-story, reinforced concrete structure with its integrated ornament;
- *makai* facing guest room lanai and their railings;
- First story façade facing Kalakaua Avenue
- Guest room configuration

The character-defining features of the Princess Wing (original main tower of the Princess Kaiulani) that remain intact include:

- 11-story, reinforced concrete structure;
- upper story fenestration;
- "Sky Level" lanai and roof and structural walls of the Robert Louis Stevenson Suite;
- *makai* facing guest room lanai and their railings;
- swimming pool;
- terrazzo floor in the entryway and lobby, which is now covered with clay tile and carpet. This includes the compass in the floor of the entry terrace, now covered by carpet, which uses *mauka*, *makai*, Ewa, and Diamond Head as directionals.
- Mural depicting the Polynesian voyages executed by Esther Bruton Gilman which graces the rear stairway leading from the Ainahau Wing's first and second floors. This was relocated from the no longer extant Kahili Bar.
- Two buildings along Kalakaua Avenue housing shops;
- Portrait of Princess Kaiulani by Lloyd Sexton in the lobby
- Stone bench on which Princess Kaiulani sat, and sacred stone, both in the garden area adjoining the swimming pool.
- Paintings by Island artists which originally hung in guest rooms, but now are in storage or gracing executive office wing's hallway.

Several modern additions have been built on to the Princess Kaiulani's 1955 hotel structure, which are not fifty years old and do not contribute to the historical significance of the hotel. Any alteration to the character of these additions would be considered to have no effect upon the historic character of the building. These are:

- The Diamond Head Tower, now named the Kaiulani Wing, which was completed in 1960;
- Parking Structure, which was completed in 1961;
- 'Ainahau Wing, which was completed in 1971;
- Porte cochere, which was remodeled in the 1980s;
- The guest room interiors which have been remodeled several times over the years; and,
- Lobby's fabric, the result of a 1987 remodeling.

The proposed Planned Development Project includes the demolition of the Diamond Head Tower of the Moana Surfrider Hotel and the Princess Wing of the Princess Kaiulani Hotel as well as its swimming pool and shops, which will be an adverse effect to these historic properties. To mitigate effects the proposed demolition, the following mitigation measures shall be explored:

1) Photographic documentation according to Historic American Building Survey standards is to be undertaken of the hotel buildings, its shops, and swimming pool area.
2) Placing a copy of the floor plans for the Diamond Head Tower of the Moana Surfrider Hotel and the Princess Wing of the Princess Kaiulani Hotel at an appropriate repository, perhaps the University of California at Berkeley's Environmental Design Archives, which houses the Gardner Dailey collection. Plans selected for archiving should be those that are the oldest and best condition available, preferably the work of the original architect.
3) Digitizing select pages of the aforementioned plans for the Diamond Head Tower of the Moana Surfrider Hotel and the Princess Wing of the Princess Kaiulani Hotel. These digital files should be made accessible to the public and researchers, by the Owner.
4) Retention and/or reuse of the following elements in the new development: Lloyd Sexton's portrait of Princess Kaiulani; terrazzo compass in the floor of the entry terrace; Polynesian migration mural by Esther Bruton Gilman, and paintings that initially hung in guest rooms.
5) A sacred stone and a stone bench in the garden came from `Ainahau. Princess Kaiulani sat upon the bench. Both these features still remain and should be preserved and sensitively incorporated into the new project.
6) Development of interpretive displays and/or programs communicating the history of the property, Princess Kaiulani, and tourism in Waikiki during the 1950s, and cultural programs perpetuating traditional Hawaiian activities and values.

Portrait of Princess Kaiulani

SECTION 1

INTRODUCTION

Project Background

Kyo-ya is proposing to consolidate the existing SurfRider and Princess Kaiulani hotels into a Planned Project Development. As part of the Planned Project Development, the following structures are being proposed for demolition: the original Diamond Head Tower of the Moana Surfrider Hotel (1952), the original main tower of the Princess Kaiulani (now the Princess Wing) (1955), the Diamond Head Tower (now the Kaiulani Wing) (1960), the retail shops (1958), and the parking structure (1961). The Ainahau Tower will be incorporated into the new development.

The project site encompasses approximately five acres of land area and is identified by TMK's 2-6-022: 001 and 041. Within the project area are the Diamond Head Tower of the Moana Surfrider Hotel and Princess Kaiulani hotels, both of which are over fifty years old, and as such are considered historic properties, as defined by Section 6E-2, Hawaii Revised Statutes. Neither are included within the Hawaii State Historic Preservation Office's inventory of historic places, nor identified in the City and County of Honolulu's "Waikiki Special District Guidelines" among "structures, sites and landmarks" identified by the Department of Land and Natural Resources (DLNR) as "having scenic, cultural, historic or architectural significance" and "may possess qualities which make them eligible for listing on the register of historic places."

The proposed special development project was submitted to the Hawaii State Historic Preservation Division (SHPD) for their review and comments. In a letter dated April 11, 2008, from Laura Thielen to Ardis Shaw-Kim (Doc. Number 0804KK27), the SHPD found the original Princess Wing of the Princess Kaiulani Hotel building appeared to meet the criteria for listing in the National Register of Historic Places, but found the hotel's Kaiulani Wing and Ainahau Tower did not. The letter further indicated, that should the original hotel building be demolished, such an undertaking would have an "effect with agreed upon mitigation commitments," to the historic property. The letter went on to note that appropriate mitigation commitments would include architectural recordation following the Historic American Building Survey (HABS) standards. The original drawings for the building still exist. A copy will be provided to SHPD and the originals will be placed in an appropriate repository. Photographic documentation of the hotel as it stands

today will be undertaken using a 4 x 5 camera and following HABS standards. In addition other mitigation has been proposed in Chapter Five of this report. HABS documentation on the buildings and their historic context are included in the appendix. In addition, the report provides supporting documentation to substantiate the conclusions presented in the Draft Environmental Impact Statement.

SECTION 2

HISTORICAL BACKGROUND

Matson Navigation Company started business as a shipping company, transporting goods between California and Hawaii and the Pacific. However, almost from the inception of the company in 1882, the carriage of passengers played a role almost equal to that of carrying cargo, and this in turn led the company to enter into the hotel business. As tourism increased during the 1920s, the company desired to build a hotel in Hawaii comparable to those on the mainland. Their first venture in this realm was the acquisition of the Territorial Hotel Company, which included the Moana Surfrider Hotel. This was followed by the construction of the Royal Hawaiian Hotel, which opened in Waikiki on February 1, 1927. The Great Depression and then World War II held further expansion plans at bay. After the war, Matson recognized that "travel to Hawaii is on the increase. Everything points to even greater travel in the years ahead," [*Star Bulletin*, July 18, 1950, p. 6] and they contemplated constructing an annex to the Moana Surfrider Hotel on its Diamond Head side, but by 1949 had decided to instead construct a hotel. However, before construction could commence, a long standing land controversy with the city had to be resolved. As the City claimed ownership of a 5,000 square foot public right of way adjoining the Moana Surfrider Hotel. Matson eventually traded land with the city, relocating the right of way to the Diamond Head end of their property. By 1950, Gardner Dailey of San Francisco had prepared plans for a new 1.25 million dollar hotel, with assistance from Honolulu architects Wimberly & Cook. In preparation for designing the new buildings, the architects studied such modern hotels as the Hotel Del Lago in Venezuela, the Hotel Stuyvesant in Curacao, and the Caribe Hilton in San Juan, Puerto Rico.

In April 1950, while the Diamond Head Tower of the Moana Surfrider Hotel was in its final planning stages, Fred W. Eckert, a founding member and executive partner of Harris Kerr Forster of Chicago, came to Hawaii. His company was one of the foremost hotel accounting firms in the nation, offering clients across the United States, as well as in Mexico, the Caribbean, and South America a broad range of services, from undertaking audits to performing financial and marketing studies. In an address before the Hawaii Hotel Association's board of directors, he urged Hawaii's hotel owners to adopt a "Mass rather than Class" policy for the future development of the Islands' tourist industry. The *Star-Bulletin* applauded this approach and noted,

> It has been apparent for years that the tourist business of Hawaii needs another big hotel---of the "mass," not the "class" type, in

> the Waikiki area. Such a hotel should be truly of the "tropics" type, spacious in grounds, ample in interior accommodations, and reasonably close to if not bordering on the famed waters of Waikiki.
>
> Until this is realized---until the need for one or possibly two large "mass type" hotels is fulfilled---Honolulu will lack an important pulling-factor in building our present thriving tourist industry to much greater proportions. [SB, April 29, 1950, p. 8]

At this pivotal moment Hawaii's travel industry leaders nodded in the direction of the "Mass, not Class" approach, at a time when United Airlines' and Pan American's Stratocruisers had reduced the travel time to Hawaii to just over nine hours making the arrival of more tourists to Hawaii more promising. That industry nod guided Hawaii's tourism development for the next fifty years.

The SurfRider Hotel construction signboard showing the contractor: Hawaiian Dredging Company, Limited, and the architect: Gardner Dailey F.A.I.A- Wimberly & Cook, A.I.A.

In September 1950 Hawaiian Dredging was awarded the contract to build Matson's new seven story, 144 room hotel. A month later the former Hustace residence, which the Moana had owned since 1910, was demolished and on November 4, 1950 ground was broken on the new hotel. The ground breaking ceremony was preceded by surfing and canoeing exhibitions, and the ceremony included a program of music and dance by Iolani Luahine. Matson

optimistically looked upon their new project as not only a means to address current visitor needs, but as a presence which would encourage further expansion of the still infant visitor industry: "The new SurfRider [Diamond Head Tower of the Moana Surfrider Hotel] will do much to care for the growing needs of Hawaii's booming tourist industry, as well as offer further incentive for mainland tourists to visit the islands." [*Star Bulletin*, July 18, 1950, p. 6]

The SurfRider Hotel – site blessing and commemoration.

Diamond Head Tower of the Moana Surfrider Hotel Construction Photos, 1950 -1951

November 15, 1950. Site preparation.

November 30, 1950. Rebar placement and formwark for basement walls.

November 30, 1950. Overview of foundation formwork.

December 7, 1950. Foundation formwork and rebar set. Ready for first concrete pour.

Diamond Head Tower of the Moana Surfrider Hotel Construction Photos, 1950 -1951

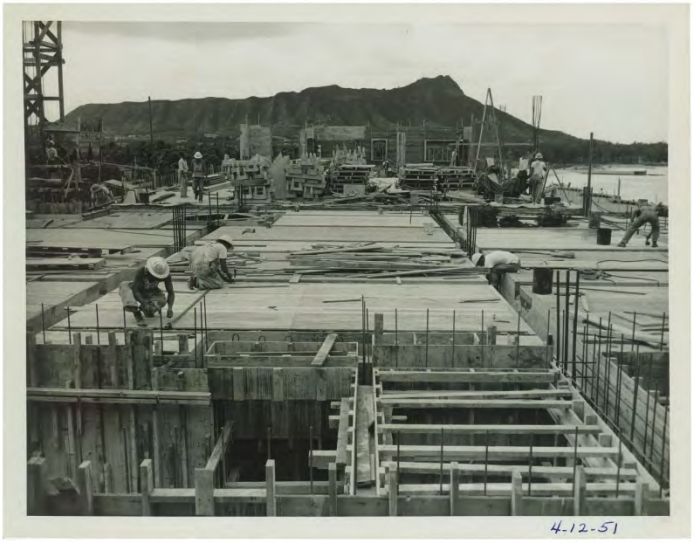
December 7, 1950. Basement completed- first floor under construction.

Feb. 1, 1951 Second floor coming up.

Feb. 22, 1951. View from the second floor.

March 22, 1951. Fourth floor being formed- still lower than the palm trees.

Diamond Head Tower of the Moana Surfrider Hotel Construction Photos, 1950 -1951



April 12, 1951. Concrete floor structure under construction.

April 21, 1951. Ocean side view.

April 26, 1951. Concrete form using wood planks.

May 24, 1951. Top Floor being framed.

Diamond Head Tower of the Moana Surfrider Hotel Construction Photos, 1950 -1951

August 17, 1951. Concrete tower structure complete, windows being installed.

October, 11, 1951. Shops along Kalaukaua Aveunue under construction.

October 18, 1951. Curved balconies with balustrades on Makai side.

December 27, 1951. Completed structure complete with palm trees.

The new hotel was constructed of poured in place reinforced concrete and was defined by framed, inset, guest room lanai facing the ocean. The building's Kalakaua façade was more austere as the *mauka* facing guest rooms presented unarticulated picture windows to the street. Following modern lines, the *Star Bulletin* found the building to be, "futuristic and cosmopolitan in appearance," [*SB* January 4, 1952, p. 14], and "modern Hawaiian" in style [SB January 3, 1952, p. 3]. The lobby was described as having a Polynesian design with modern effects, with an "oriental touch." [*SB* January 4, 1952, p. 14] Four large, wooden tiki, each weighing one ton, carved by Cecelia Graham to represent ancient Hawaiian deities, adorned the lobby, where guests were greeted by the sound of a Chinese gong, and incense wafted in the air. Asian lamps, bamboo railings, and paintings by local artists further contributed to the exotic atmosphere. In addition the first floor contained six shops facing on Kalakaua Avenue, and its lobby opened on the beach. The hotel's Captain Cook bar, finished in dark local hardwoods, provided refreshments for guests on the "bathers' lanai." In addition to the standard guestrooms, two penthouse suites sat atop the seven story structure, and were named the Diamond Head suite and the Princess Kaiulani Suite. They each had their own ocean facing lanai. The Diamond Head Tower of the Moana Surfrider Hotel was connected to the Moana by a passageway, and Lyle "Gus" Guslander, the manager of the Moana Surfrider Hotel also managed the new hotel. However, the Diamond Head Tower of the Moana Surfrider Hotel was a separate operation with its own front desk and contained the normal array of guest service facilities, with the exception of its own public dining room.

Randolph Sevier, the president of Matson Lines, came to Honolulu for the opening of the hotel and in a luncheon speech noted, "There is probably no more important factor in the favorable development of a community than for that community to have good hotels. . . . The hotel is usually the visitor's first impression of a town or city. The first person he usually meets generally is the doorman or desk clerk. If the greeting is friendly and cordial, he is off to a good start." [SB, "Sevier Proud of SurfRider, Traces Tourist Trade Growth," January 4, 1952, page 14]

Following its opening, the Diamond Head Tower of the Moana Surfrider Hotel as well as the Royal Hawaiian and the Moana were filled to near capacity for the first five months of 1952. Such success led Matson, as well as others, to develop other modern high-rise hotels. In August 1952 Roy Kelley commenced construction on a second tower for the Edgewater Hotel, which would add another one hundred rooms to Waikiki, and a little over a year later in September 1953, the Hawaii Visitors Bureau (HVB) was predicting a record-breaking 80,000 visitors would arrive for the year. Their projections proved accurate, as 81,400 travelers enjoyed Hawaii's shores that year, an increase of over 20,000 from the year before. The organization further anticipated that by 1954 visitor numbers would top 90,000 and in 1955 the Islands would break the 100,000 mark in terms of arrivals. To accommodate such numbers, more hotel rooms were clearly needed, and three developers started projects that they hoped would be ready to meet the anticipated 1955 market demand. Californian Joseph Greenbach, who owned eight mainland hotels, commenced construction on the 275 room Waikiki Biltmore in October, 1953, and work on Matson's 300-room Princess Kaiulani also got underway that month. Roy Kelleys' 308-room, beachfront Reef Hotel broke ground before the end of the year.

Matson hired San Francisco architect Gardner Dailey, FAIA (1895-1967) to design its new hotel. Dailey had an established relationship with Matson having previously worked on the remodeling of the Royal Hawaiian Hotel, at the conclusion of World War II, and the designing of the Diamond Head Tower of the Moana Surfrider Hotel. He also would be involved with the 1954 changes made to the Moana Surfrider Hotel. This talented and amiable architect was born in St. Paul Minnesota, and moved to San Francisco in 1915. He began his career in design with Donald McLaren's landscape architecture firm, where he worked on projects involving various parks and playgrounds in Central America. During World War I Dailey served as a pilot in the Army Air Corps. Injuries

incurred when his plane was hit on a mission north of Verdun left him blind in the right eye. After the war he attended the University of California at Berkeley, Stanford University, and then Heald Business School. He studied engineering and drafting at the latter. He married the daughter of a well connected San Francisco lawyer, and in 1927 he obtained an architectural license and opened his own office; within a year he was designing a country estate for Julian Thorne. He quickly became known for the immense Spanish and English Cottage mansions he designed on the Peninsula and for Neoclassic town houses in Presidio Heights. In 1935 he shifted to a modern vocabulary and he and William Wurster are credited with introducing modern architecture to northern California. These two architects are recognized as the prime progenitors of the "Second Bay Tradition," which melded the International Style with local vernacular traditions. Dailey's residential and commercial works were known for their fine attention to detail and strong sense of place. At the time of the construction of the Princess Wing of the Princess Kaiulani Hotel, Dailey's reputation was solidly based on such projects as the Coral Casino Beach and Cabana Club (1937), Red Cross Building in San Francisco (1948, no longer extant), the Brazil Building at the Golden Gate International Exposition of 1939 which some considered among the finest modern buildings in San Francisco, the Manila American Cemetery and World War II Memorial in the Philippines (1947-1956), and the Music Building at the University of California at Berkeley (1952), as well as numerous residences.

As no beachfront property was now available, Matson decided to construct the Princess Kaiulani Hotel on land already owned by the company on the *mauka* side of Kalakaua Avenue, across from the Moana Surfrider Hotel, where the Seaside Moana cottages and apartments stood. To square off this parcel, the company purchased from Fred Patterson an additional parcel along Kaiulani Avenue in November 1953, and in the same month signed a construction contract with Pacific Construction Company Ltd.

Moana Cottages- used as staff housing for the Moana Surfrider Hotel until they were moved in 1954 to make way for the Princess Kaiulani Hotel.

Overview of the Moana Cottages, looking Mauka

Moana cottages as seen from porte cochere of Moana Surfrider Hotel c.1950.

Pacific Construction Company had been in business in Hawaii for nearly twenty years, and was managed by its president George E. Freitas, a University of Dayton graduate (1929), who held a degree in civil engineering. Upon his graduation Freitas went to work with his father Henry Freitas, who was also a general contractor, having built both the Honolulu Advertiser Building and St. Louis College. In 1935 George started his own company under his own name, and in 1938 organized Pacific Construction Company. At the time of the Princess Kaiulani contract the company was working on, or recently had completed the Rosalei Apartment in Waikiki , the Central Y.M.C.A., the Territorial Archives Building on the grounds of `Iolani Palace, and Bachman and Bilger Halls at the University of Hawaii. Other post-World War II jobs which they undertook included: Castle High School, Mary Knoll High School, Kailua Secondary School, Radford Terrace, Moanalua Shopping Center, Moanalua Terrace, and Moanalua Manor. Prior to the war they had built the Mabel Smyth Building at Queens Hospital, Sacred Hearts Convent, Baldwin High School on Maui, and several Big Island bridges.

The Pacific Construction Company contract was only for the hotel, as Matson let separate contracts for the landscaping, elevators, interior decorating and furnishing, and the construction of "fashionable shops along Kalakaua" (SB, Nov. 17, 1953, p. 1), which

also followed designs provided by Gardner Dailey. However, the contract did include a new water and boiler system which tapped into Matson's own private well and upon completion served all four of Matson's Waikiki hotels. These expenses, plus the price of the land brought the total project cost to over $4.5 million.

In January 1954, the City and County Building Department issued a $1,660,000 building permit for the company's new hotel, and on January 25, 1954 ground was broken. With Pacific Construction starting work on the new hotel, the City and County entered the planning stage on several projects to accommodate the increased traffic projected for Waikiki. It was decided to extend Kuhio Avenue from Kaiulani Avenue to Kapahulu Avenue, and to widen Kaiulani Avenue between Kuhio and Kalakaua. The two projects were delayed due to litigation involving the lands at Kuhio and Kaiulani Avenues. As it became apparent this legal issue would not be resolved before the Princess Wing of the Princess Kaiulani Hotel was completed, the widening project was reduced in scale and ran only from Kalakaua to Koa Street for the new hotel's porte cochere and parking lot opened on the new street in the area of the widening. The City and County completed the widening only two days before the formal opening of the hotel, and it was one of the quickest road improvement projects undertaken by the government. The contract was let May 9th, and final inspection was undertaken on June 9. Pacific Construction had completed the hotel a month ahead of time.

Sequence of Events that lead to construction and completion of Princess Wing:

November 17, 1953	Construction Contract signed with Pacific Construction Co.
January 15, 1954	Building Permit Issued
January 25, 1954	Groundbreaking
June 11, 1955	Opening day

The new hotel was named after Princess Kaiulani, the heir apparent to the throne at the time of the overthrow of the monarchy, whose home, `Ainahau, stood near the location of the hotel. It opened on Kamehameha Day, June 11, 1955, following the Kamehameha Day Parade and canoe races. The opening coincided with the height of summer season, with the *Lurline* due to dock two days after the hotel opened. Over one hundred people were invited to the opening ceremonies, which commenced at noon on the terrace fronting the Orchid swimming pool. The Kamehameha Schools Alumni Choir opened the ceremony singing "Hawaii Pono`i", chants and prayers followed, and then the maile lei draped across the doorway was unwound by Matson president Randolph Sevier, who

called the hotel, "the crowning achievement of its [Matson's] hotel program in Hawaii." [Adv. 6/12/55. A-1] While justly proud of the new hotel, Sevier warned that Hawaii must take "great care" to not turn Waikiki into "another Atlantic City or Miami Beach. We could destroy this beautiful place just as Atlantic City was destroyed by the desire to get the cash register ringing too merrily." [Adv. 6/12/55, A-1] Lloyd Sexton's near life size portrait of Princess Kaiulani was next unveiled in the lobby, and then the party ascended elevators to the top floor for lunch in the Robert Louis Stevenson penthouse suite. Later in the afternoon, over 1,000 invited guests witnessed a colorful pageant depicting the King and Queen and the royal court arriving to honor Princess Kaiulani, who was portrayed by Mary Flanders. Six different Hawaiian societies presented songs and dances from Kaiulani's era. On Sunday, June 12, the hotel was opened to the public, with guided tours given from noon to four in the afternoon.

The original logo and font of the Princess Kaiulani Hotel

Opening day ceremony with dragon dance and other cultural events.

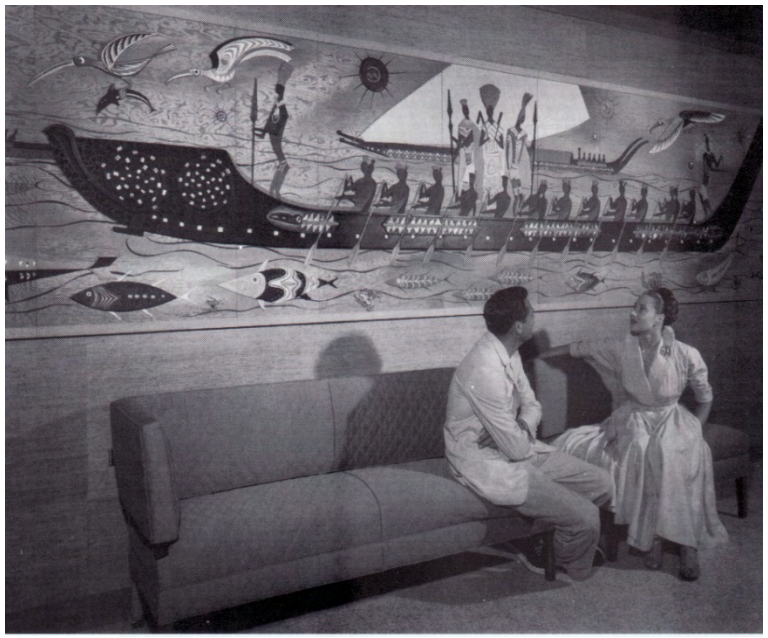
The hotel's opening day ceremonies matched the tone of the new hotel. Although modern in construction and comforts, it strove to retain a sense of Hawaii and its past. The public spaces' applied ornament drew its inspiration from both ancient Hawaii and Asia, and island scenes painted by such local artists as Juliette May Frazer; Lee Eskridge, J. Halley Cox, Baron S. Katayama, and former architect, turned water colorist, Tom Litaker, adorned the guest rooms' walls. The impressionistic and abstract work of local painters Bob Ochikubo and John Kjargaard also decorated the rooms. Tom Harai made custom furniture of native woods, using a minimum of materials and structural detail to blend an Asian influence with modern décor, and University of Hawaii art professor Claude Horan and his assistant Harue Oyama McVay provided ceramic Polynesian style lamp bases, which were inspired by kukui nut lamps.

The ground level public spaces also featured reminders of the hotel's Pacific character. A compass embedded in the entry terrace's terrazzo floor used *mauka*, *makai*, Ewa, and Diamond Head for its directionals. The terrace also featured two wall-size decorative masonry screens with tiki gods interspersed in its openings, and the high ceilinged lobby's beige terrazzo floor was decorated with kapa designs rendered in a modern manner. The lobby's pillars and walls duplicated the floor design.

In addition to its applied ornament the lobby and its adjoining public rooms included numerous other reminders of Hawaii's heritage. Lloyd Sexton's three quarter size portrait of Princess Kaiulani hung in a niche on the *makai* side of the lobby, flanked by a pair of yellow and black *kahili*. Below the portrait, was a framed poem written by Robert Louis Stevenson to Kaiulani on the occasion of her departure for England. In front of the portrait stood a long, low bench of native wood. Another niche contained a display of Hawaiian artifacts from the Bishop Museum. It was flanked on either side by renderings of Hawaiian women by Honolulu artist Madge Tennant. Also in the lobby were torchiers with stylized frigate birds supporting calabashes, and a large oblong planter, designed to resemble a Hawaiian war drum. Tiki supported the latter which held floral arrangements featuring heliconia, ferns and flowering ginger. Two 3' by 4' birch panels depicting the bird of paradise were carved by Beverly Willis and further celebrated the lush flora of Hawaii.

Lloyd Sexton's portrait of Princess Kaiulani flanked by a pair of yellow and black kahili.

Adjoining the spacious lobby was a cocktail lounge, the Kahili Room, which included a *koa* bar and two murals by Esther Bruton Gilman, one depicting the migration of the Polynesians to Hawaii, and the other the development of the *kahili*. A wall of lattice-like sliding panels made in the Philippines with opalescent shell glazing opened the Kahili Room's *makai* wall to the gardens and swimming pool area. Beyond the Kahili Room the hotel's main dining room, the Pikake Room, was located. Named after Princess Kaiulani's favorite flower, it had an Asian atmosphere engendered by five feet wide screens hand painted by Tsen Yu-ho (Mrs. Gustave Ecke) depicting pikake in an Asian style. The room held 100 people, and was open for all three meals. It featured a special pikake flavored tea.



Migration of Polynesians to Hawaii mural by Esthur Bruton Gilman has been relocated to the stairway between the first and second floors of the Ainahau Tower

Kahili mural by Esthur Bruton Gilman
Depicting the development of Kahili in the islands- No longer extant

In addition to the hotel's applied ornament and art, its architecture also bespoke its Pacific location. The lobby's entire ocean facing wall was made of glass sliding doors, which opened to allow the lobby to flow out onto the Pikake Terrace and beyond to the pool and gardens. Also, the building's *makai* façade's distinctive, blue, curving lanai railings sought to emulate ocean waves as well as serve to accent the horizontality of Waikiki's tallest building.

The building's poured in place, reinforced concrete structure rested on concrete pilings driven sixty to seventy feet beneath the surface. Clusters of six to ten piles were driven under each column footing for a total of approximately 372 piles. Standing eleven stories (131 feet) high, the hotel featured on its roof, or "Sky Level," the Mauna Kea Cocktail Lounge and the Robert Louis Stevenson Suite, both of which fronted on an 8' wide lanai, which swept across the length of the roof. From this level guests enjoyed an unobstructed panoramic view of the Leeward coast from Diamond Head to Kalaeloa. The Mauna Kea cocktail lounge stood at the Diamond Head end of the roof and had a capacity for 250 patrons. Aptly named after the Big Island's towering mountain, it was envisioned as Hawaii's counterpart to San Francisco's famed "Top of the Mark" atop the Mark Hopkins Hotel. The Robert Louis Stevenson suite was designed to accommodate meetings and private dining. Comprised of three, 65' x 48' rooms, it was flanked by 8' wide lanai on both sides. These could all be opened to make one large space for meetings, banquets, or large private parties, with a maximum capacity for five hundred people. It included a bronze bust of Stevenson and many mementoes of the famous British poet who was a confidant of Princess Kaiulani during his stay in the islands.

The hotel was designed as a moderately priced establishment offering 264 rooms for two person occupancy, and 28 singles. Opening day rates ranged from: $6 single, $7.50 double; $8, $10, $14, $16, and $18. The most luxurious room, the Kilohana (translates best, highly esteemed) Suite was on the 10th floor at the Diamond Head corner and had two main rooms, one larger than the other. The suite could connect with other rooms to provide a section of five rooms. The guest rooms were, "handsomely furnished in modern Hawaiian décor and accessories with a variety of color contrasts being utilized in the rooms." [SB. Magazine section, p. 14] Furnishings were of bamboo and Philippine mahogany, and the 162 *makai* facing rooms had lanai, while broad picture windows provided guests in the 128 *mauka* facing rooms with mountain views. The lanai had connecting doors, and featured sun vanes finished in graduated shades of green with the darkest color nearest the lower edge, and lightening to a lime shade at the top, reflecting the color gradients of Hawaii's forests. The rooms were organized along a double stacked, laterally running central hallway, and the laundry chutes had hot air circulating through them, so anything wet that dropped to the basement laundry would dry enough to prohibit mildew.

The *Honolulu Advertiser* found the new hotel to be, "an outstanding addition to the development of Waikiki and the growth of the tourist trade," [*Honolulu Advertiser*, June 11, 1955, Special Kaiulani Section, 1] and the *Honolulu Star Bulletin* noted its construction represented, "faith in Hawaii, not only in its future, but its present role in the world of tourism." [*Star Bulletin*, June 11, 1955, magazine section, p 14.]. *Paradise of the Pacific* informed its readership that the "magnificent modern edifice . . . marks a new era in the development of Hawaiian hospitality," and declared it to be an, "Exclamation point on Waikiki's fast-changing skyline." [PP, p. 27] Indeed, the opening of the Princess Wing of the Kaiulani Hotel, along with the Waikiki Biltmore, and the Reef hotels dramatically changed the face of Waikiki with their over one hundred foot high rooflines rising above the palms. To some eyes, the area had been transformed from, "a languid garden spot to a modern tourist resort." The completion of these three buildings accentuated the spectacular growth of Waikiki, which during the decade between 1945-1955 had boomed from a beach catering to only 15,000 visitors a year to a resort welcoming over 100,000 a year. During that time, the number of hotel rooms had risen from under 1,000 to over 4,000, as 28 hotels or apartment-hotels had been built in the district. When the Princess Wing opened in 1955, it was the tallest building in Waikiki, with only Aloha Tower and Tripler Hospital standing taller in the Territory of Hawaii.

Within two years of the opening of the Princess Wing of the Kaiulani Hotel, Matson saw a need to accommodate larger meetings than allowed by the Robert Louis Stevenson Suite. In August 1957 ground was broken for a Convention Hall and Banquet Hall, named the "Meeting House" (no longer extant), which opened on Lei Day, May 1, 1958, with the opening day festivities including an appearance by Aloha Week Royal Court. Located in the gardens, immediately Ewa of the hotel, the two, single-story structures sat above the gardens on a raised podium. Designed by Vladimir Ossipoff it presented a modern Japanese look, which was in keeping with the Princess Kaiulani shops and the pool's concession stand. Built by Hawaiian Dredging and Construction, the two buildings were characterized by textured masonry block walls, large sliding glass panels, and a prominent, high pitched, hip-gablet roof with broad overhanging eaves. A pergola sheltered the main building's entry. The buildings doubled the capacity of the Robert Louis Stevenson suite, being able to accommodate 1,000 for meetings and 800 for banquets. Offering five meeting rooms, folding panels allowed the buildings to open into single large open spaces.

Ossipoff Meeting Room Opening Day Photos, 1958

Meeting Room taken from Pikake Terrace.

Meeting room overview.

Meeting Room taken from road looking mauka.

Meeting Room with stick fence in foreground.

Ossipoff Meeting Room Opening Day Photos, 1958

Meeting Room taken from pool side.

Meeting Room taken from mauka parking area.

Meeting Roomo taken from side road.

Meeting Room taken from back service road.

Ossipoff Meeting Room Opening Day Photos, 1958

Meeting Room opening day reception.

Meeting Room staff on opening day.

Opening day display of appliances.

Opening day display of boat. Note coffered ceilings.

The completion of the Princess Wing of the Princess Kaiulani Hotel and the Meeting Hall allowed Matson to remain in the forefront of the hotel industry in Hawaii. Its four hotels, the Royal Hawaiian, the Moana, SurfRider (presently the Diamond Head Tower of the Moana Surfrider Hotel), and Princess Kaiulani accounted for more than 1,000 rooms, making the company the largest hotel operators in the Territory, and in turn the largest employers in Hawaii's hotel industry with over 1,050 employees. However, the times were changing, and the Princess Kaiulani culminated Matson's foray into the visitor lodging industry. In December 1958, Matson announced it had sold its four Waikiki hotel properties and the Waialae Country Club to Sheraton for $18 million. This included 14.8 acres of fee simple land and another 26.3 acres of leasehold land, as well as all buildings, shops and other structures. Matson indicated that it had entered the hotel business in the 1920s in order to assure suitable accommodations for its passengers. The enormous expansion of hotel facilities in Waikiki during the course of the 1950s no longer required their presence in this field. The sale would now allow the company to concentrate more fully on its freight and passenger operations. Unmentioned in the media announcement was the fact that by this time airlines had assumed a leadership position in the transporting of people to Hawaii and within nine months jet airliners would reduce travel time to the islands to approximately five hours from California. On the eve of World War II, over 99 percent of Hawaii's visitors had traveled to the islands by ship, with the vast majority of them arriving on a Matson owned vessel. However, when the Princess Kaiulani opened in 1955, less than 33 percent arrived by sea, and in 1970 Matson sold its luxury liner fleet. By divesting itself of its Waikiki holdings and passenger fleet, Matson came full circle, concentrating once again upon the shipment of goods between California and Hawaii. The profits realized by the sale of its hotels went to help finance the company's new "containerization" program, as well as the upgrading of its freighter fleet. Matson was the first to use containers for the shipment of goods in the Pacific region, starting in June 1958.

The purchase represented Sheraton's first venture outside the realm of North America. At the time the nationwide chain included 52 hotels from Boston to California, with four in Canada and another in Puerto Rico. Hawaii's travel industry experts welcomed the chain's presence in the islands with its national sales and promotional organization, and its extensive experience in attracting and serving the convention trade.

Sheraton undertook a program to expand the Princess Kaiulani Hotel and awarded a contract to Haas & Haynie to build a new wing along Kaiulani Avenue. Honolulu architects Wimberly & Cook designed the addition, while Sheraton Hotels' in-house staff

handled the interior decoration for the 210 new guest rooms. Its first floor included four function and banquet rooms, and corporate offices were on the second floor. Like the original building, the new *mauka-makai* running wing rose 11 stories, and included the distinctive design of the original hotel's lanai. The new Kaiulani Wing opened in September 1960, and a 275 car parking garage, also the work of Wimberly & Cook and Haas & Haynie, opened in 1961. Also during this 1960-61 period the outdoors Orchid Bar was added, another Wimberly & Cook design.

Diamond Head Tower built in 1960

To further expand their room count in Waikiki, in 1963 Sheraton aggressively pursued the acquisition of the former Outrigger Canoe Club site situated between the Moana and Royal Hawaiian hotels, and announced it intended to construct a ten million dollar, 17 story luxury hotel on the parcel. Ultimately Sheraton did not obtain this prized property, losing out to Roy Kelley, who constructed the Outrigger Hotel on that land. However, anticipating the need for cash to develop the sought-after beachfront property, Sheraton sold the Princess Kaiulani to Japanese businessman Kenji Osano for $8.7 million, in August 1963, with the stipulation that Sheraton would continue to manage the hotel, and four months later sold the Moana-SurfRider to Osano in December 1963 for $10.7 million, with Sheraton again receiving a management contract. Osano acquired the two Sheraton hotels, expecting between 30,000 to 50,000 Japanese visitors to start visiting Hawaii, when Japan lifted travel restrictions on its citizens in April 1964. In a separate negotiation, Sheraton successfully bid to operate Osano's twenty story Otani Hotel in Tokyo, which was scheduled for completion in July 1964.

The visitors from Japan did start arriving in increasing numbers, as did visitors from the mainland. In 1968 Osano announced he would construct a new 28 story, 660 room wing onto the Princess Kaiulani Hotel in the area then occupied by the Meeting House. The contract for the new wing was let in September 1968,

and it opened in 1971. The poured concrete structure's lanai design followed that of the original building, making for a coherent design statement. Designed by Roehrig, Onodera & Kinder, with the assistance of Obayashi-Gumi Co. of Tokyo, the new building featured a second floor banquet facility which seated 800. On the ground floor three restaurants, Japanese, Chinese, and a steak house were installed. At the time this project began, Osano also had under construction the new Surfrider Tower of the Moana Hotel on the Ewa side of the Moana. With the completion of this project the original Surfrider Hotel (the present Diamond Head Tower of the Moana Surfrider Hotel) was incorporated into the Moana as the Ocean Lanai. Thanks to his new 424-room new Surfrider Tower and the new Ainahou Tower of the Princess Kaiulani Hotel, by 1971 Osano controlled almost 2,000 rooms in Waikiki, worth over $40 million, making him the largest Japanese investor in the United States. In turn, Sheraton managed well over 4,000 Waikiki hotel rooms, including Osano's properties, the Royal Hawaiian with its new wing, the Royal Manor, and the 1,904 room Sheraton Waikiki (completed in 1971). Three years later, in 1974, Sheraton sold its Waikiki hotels and Sheraton-Maui to Kenji Osano's company Kyo-ya Company, Ltd. By 1980 visitors from Japan accounted for approximately two thirds of the Princess Kaiulani Hotel's clientele.

In 1987-1988 a major remodeling of the Princess Kaiulani's lobby occurred, and the space was remodeled to join the 1971 wing in a more flowing manner. The pool and grounds also were relandscaped at this time.

View of the large 28-story Ainahau Wing built in 1971

SECTION 3

DESCRIPTION
ORIGINAL CONSTRUCTION AND CHARACTER DEFINING FEATURES

Diamond Head Tower of the Moana Surfrider Hotel

The Diamond Head Tower of the Moana Surfrider Hotel stands on a one-acre oceanfront lot in Waikiki, adjoining the Moana Surfrider Hotel, on lands formerly occupied by the Hustace Residence. It was originally constructed as an autonomous hotel operation and was called the SurfRider Hotel, but in 1970 was incorporated into the Moana Surfrider Hotel, eventually becoming the Diamond Head Wing.

In 1952, the Diamond Head Tower of the Moana Surfrider Hotel presented a modern image that was the work of San Francisco architect Gardner Dailey. The eight story, 89' high, poured-in-place, reinforced concrete structure is supported by approximately 32 footings, laid out in rectangular 24' x 15' grids. The tower footprint measures 174'-4" x 55'-11". The guest rooms follow the structural grid, with two rooms per bay. On the second through seventh floors, there were 150 rooms in total with 78 *makai* facing rooms with an attached lanai and 66 *mauka* facing rooms with mountain views through a broad-picture window. Two large penthouse suites originally shared the eighth floor; each had an entry foyer, sitting area, living area, dining room, its own kitchen, two bedrooms, and bathroom.

The penthouse suite shortly after completion

The structure is oriented to face the ocean, running laterally along the beach. On the *makai* side, it is distinguished by the outset, undulating railings of the guest room lanai. These wrought iron railing were designed to evoke the sense of the ocean. The top of each guest

room lanai opening was protected by an angled wood- awning measuring 2'-5" in height and spanning the entire lanai.

The building is 7 bays wide and its principal façade faces onto Kalakaua Avenue. On the ground floor, a recessed centered entry is flanked on either side by three shops on either side. The single-story shops are outset from the main tower and have a projecting flat roof. Each shop has plate-glass windows and double-door entries. The entry bay is characterized by an open courtyard, formed by the space between the shops. A decorative concrete block wall enframes the street front edge of the entry court and defines a centered opening to the courtyard. The blocks have tiki-like figures randomly placed in the wall.

The second through seventh floors of the *mauka* elevation of the tower have regularly spaced picture windows that overlook Kalakaua Avenue. Over the windows, a thin continuous flat-roofed hood adds a horizontal flow to the overall form of the tower. This is reinforced by the horizontal concrete formwork that was purposely designed into the walls. An articulated 97-foot elevator shaft breaks the horizontality of the form and its ornament incorporates the tiki-like motifs of the front screen. At the Diamond Head-*mauka* end of the building the horizontality is further broken by an enclosed, outset fire stairway, whose end wall repeats the tiki-like motifs of the front screen and elevator tower.

The building is entered from the entry court. Four wide steps lead up to a gracious open entry. The lobby's entire ocean facing wall was made of glass sliding doors, which were kept in the open position, flowing out to the bathers' lanai, with a breathtaking view of the green landscaped area, sandy beach, and the blue Pacific Ocean beyond. The lobby was described as having a Polynesian design with modern effects, with an "oriental touch." (January 4, 1952, 14) Four large, wooden *tiki*, each weighing one ton, carved by Cecelia Graham to represent ancient Hawaiian deities, adorned the lobby, where guests were greeted by the sound of a Chinese gong, and incense wafted in the air. Asian lamps, bamboo railings, and paintings by local artists further contributed to the exotic atmosphere. The hotel's Captain Cook bar, finished in dark local hardwoods, provided refreshments for guests on the "bathers' lanai." The tower was connected to Matson's other hotel, the Moana by a passageway, and Lyle "Gus" Guslander, who would later go on to become a successful hotel owner, was the manager of the Moana Hotel and also managed the new hotel. However, the tower was a separate operation with its own front desk and contained the normal array of guest service facilities, with the exception of its own public dining room.

The second through seventh floors contain the standard guest rooms, with all *makai* rooms identical and all *mauka* rooms

identical. The rooms were organized along a double stacked, laterally running central hallway. Originally there was no air conditioning and the guest rooms featured slatted transoms above their doors to allow the trade winds to flow through the building. The 78 *makai* facing rooms had lanai, while broad picture windows provided guests in the 66 *mauka* facing rooms with mountain views. The rooms facing the ocean open onto the lanai through a four-panel floor-to-ceiling sliding glass doorway with operable center two panels. The lanai featured wood awnings to protect against the afternoon sun. On the seventh floor the lanai had interconnecting doors at each partition. The central hallway terminates on the Diamond Head side with a corner guest room, larger than the others. This corner guest room's end wall is a structural shear wall with minimal openings and no large lanai doors.

The basic exterior form of the Diamond Head Tower of the Moana Surfrider Hotel remains intact. However, its interior has undergone considerable alterations. The following delineates these alterations:

Original lanai was large enough for furnishings and entertaining.

- The original lobby space was complete reconfiguration. The lobby function was removed in 1970, when the hotel was incorporated into the Moana Surfrider Hotel. With the rehabilitation of the Moana Surfrider Hotel in the late 1980s, the lobby area was remodeled and the present seating area was constructed. Also, as part of this project, a new restaurant, W.C. Peacock, was built in the former lobby space and the connection to the Moana Surfrider Hotel was upgraded.

- Also at that time, the *makai* side lanai of the ground floor was enlarged slightly and an eave canopy added for protection from the elements.
- New entry doors off Kalakaua Avenue were installed and an ADA ramp was built. Since then, the restaurant has been removed and it is now an open lobby seating area.
- Air conditioning was introduced into the building in 1969, which resulted in the elimination of the wood louver transoms over the guest room doors. Over the years, due to leaking ductwork and piping, the plastered ceilings of the 2, 3, 5, and 7th floors were removed and replaced with suspended acoustic ceiling panels.
- The guest rooms have all been redone several times over the years so that little of the historic fabric of the interior guest rooms remains, although the concrete formwork is evident in the ceilings.
- The *makai* guest rooms were extended eight feet, much to the detriment of their lanai, in the late 1980s, and in the 1990s the *mauka* facing rooms' windows were replaced with sound-proof glazing.
- The bathrooms and plumbing were refurbished in 1993 and 2007. The 1993 renovation also included the removal and replacement of wall coverings, drapery, carpet, and furnishings.

Character Defining Features

The character-defining features of the Diamond Head Tower of the Moana Surfrider Hotel that remain intact include:

- 8-story, reinforced concrete structure with its integrated ornament;
- *makai* facing guest room lanai and their railings;
- First story façade facing Kalakaua Avenue
- Guest room configuration

Street-front view in 1952

Diamond Head Tower of the Moana Surfrider Hotel, Present-day photos showing alterations over time

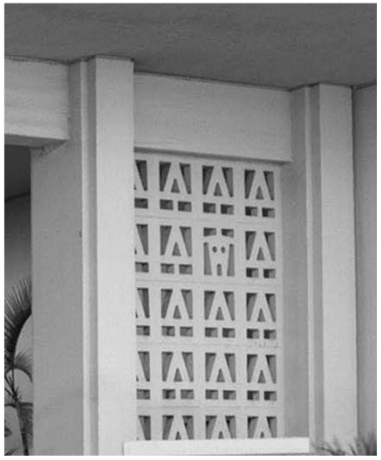
Hotel view from Kalaukaua Avenue, facing west. The hotel room windows have been replaced, but, in general, very little has been modified over time.

Front Facade with shops on ground floor facing Kalaukaua Avenue.

View from makai side of the hotel. The first floor lobby has been modified substantially with the addition of the awning, walls, planters, and glazing along the ocean side face of the lobby. Curved lanais which face toward the ocean are intact; however, the lanai depth has been shortened by over 6 feet and the fenestration has been changed.

Diamond Head Tower of the Moana Surfrider Hotel, Present-day photos showing alterations over time

Lobby view, looking toward ocean. The lobby's entire ocean facing wall was made of glass sliding doors, which was kept in the open position, flowing out to the bathers' lanai, with a view of the green landscaped area, sandy beach, and the blue Pacific Ocean beyond. The lobby was described as having a Polynesian design with modern effects, with an "oriental touch." With the rehabilitation of the Moana Hotel in the late 1980s, the lobby area was remodeled and the present seating area was constructed.



Tiki-like motifs of the front screen add to the Polynesian feel of the lobby and the elevator tower.

The building is entered from the entry court. Wide steps lead up to a gracious open entry. Much of the entry lobby is intact; however, the planting areas and ramps are not original.

Diamond Head Tower of the Moana Surfrider Hotel, Present-day photos showing alterations over time

Typical hotel room floor corridor. Originally there was no air conditioning and the guest rooms featured slatted transoms above their doors to allow the trade winds to flow through the building. Air conditioning was introduced into the building in 1969, which resulted in the elimination of the wood louver transoms over the guest room doors. Over the years, due to leaking ductwork and piping, the plastered ceilings of the 2, 3, 5, and 7th floors were removed and replaced with suspended acoustic ceiling panels.

Photos below.
The second through seventh floors contain standard guest rooms, with all makai rooms identical and all mauka rooms identical.

Below are photos of a makai facing guest room. The guest rooms have all been redone several times over the years so that little of the historic fabric of the interior guest rooms remains, although the concrete formwork is evident in the ceilings. The makai guest rooms were extended eight feet, much to the detriment of their lanai, in the late 1980s.

Curved lanais with beautiful view of the ocean.

Princess Wing of the Princess Kaiulani Hotel

From its inception until today, the Princess Wing (original main tower of the Princess Kaiulani Hotel) has stood as a distinctive element of Waikiki's streetscape. Sufficient fabric remains to allow its 1950s period of construction to be readily recognizable. Although numerous changes have occurred over the years, it retains its original character. This section will describe the original appearance of the hotel and enumerate its character defining features which remain intact.

Gardner Dailey provided a modern style building that well addressed its site and Hawaii situation. The *Star Bulletin* found it blended, "the beauty of modern design with the charm of a lovely Polynesian setting," and newspaper columnist Ray Coll Jr. described it as, "the ultra of ultras in Hawaii's new hotels. It will be swanky, but not with the 'heavy' look of the Royal [Hawaiian] because it will be thoroughly modern throughout." [Adv. May 20, 1955, B-1]

The opening of the approximately 300-room, $4,500,000 Princess Wing of the Princess Kaiulani Hotel was well documented in publications such as the *Honolulu Advertiser*, *Honolulu Star Bulletin*, and *Paradise of the Pacific*. Information garnered from these sources, as well as staff recollections of the hotel, period photographs, and the original construction drawings enable us to obtain some sense of the original appearance of the hotel.

The decorative masonry screen in the terrace area of the lobby. Photo taken in 1958- this panel is no longer extant.

The tallest building in Waikiki in this era, the building dominated the skyline. There were 290 original rooms in total with 162 *makai* facing rooms with an attached lanai and 128 *mauka* facing rooms with mountain views through a broad-picture window. The

11-story, 131' high, poured-in-place, reinforced concrete structure sits on concrete pilings that were driven sixty to seventy feet beneath the surface. Clusters of six to ten piles were driven under each column footing for a total of approximately 372 piles. The structure is oriented to face the ocean, and is distinguished by the outset, undulating railings of the *makai*–facing guest room lanai. These wrought iron railing were designed to evoke the sense of the ocean. The top of each guest room lanai opening was protected by sun vanes finished in graduated shades of green with the darkest color nearest the lower edge, and lightening to a lime shade at the top, reflecting the color gradients of Hawaii's forests. The *mauka* elevation of the building is comprised of regularly spaced picture windows.

The building is entered from an off-street porte cochere on the Kaiulani Avenue side of the property. The porte cochere was remodeled at the time the Ainahau Wing was added in 1971, and was raised to accommodate tour buses in the late 1980s. Four steps above the porte cochere, a terrace serves as a transitional space between the indoors and out. Here a terrazzo compass point depicting *mauka*, *makai*, Ewa and Diamond Head adorned the terrazzo floor. The floor has been covered with clay tiles; however, the compass was retained and is today covered by carpet. Its preservation or replication and reuse in the new development should be considered. The terrace also originally featured two masonry decorative grille walls decorated with small tiki, which served as screens to obscure views of the gardens from the terrace. These were removed in the 1980s remodeling. The high ceilinged lobby featured a beige terrazzo floor decorated with kapa designs rendered in a modern manner. The lobby's pillars and walls duplicated the floor design. None of this fabric remains visible, having been covered or removed in the 1987 remodeling. In addition the layout of the lobby was changed at that time. The front desk remains in the same location, although it no longer retains its original design. Almost every other element in the lobby has changed. A concierge desk now is located on the left as one enters the lobby, in an area previously occupied by a jewelry shop. Lloyd Sexton's portrait of Princess Kaiulani, flanked by a pair of yellow and black *kahili*, originally was in a niche on the *makai* side of lobby, but now hangs on the lobby's *mauka* wall. The lobby's ocean facing wall of glass panels remains intact and has been expanded to run the length of the building, eliminating a passageway and the Kahili room's Philippine opalescent shell sliding panels. Both the Kahili Lounge and Pikake Dining Room, which stood in the present lobby area Ewa of the elevator alcove, have been removed, and the lobby allowed to continue in an unobstructed manner to the Ainahau Tower. The original doors for the three guest elevators with their geometric designs, a modern

interpretation of traditional motifs copied from a ceremonial shield, finished in "flashing bronze, browns and oranges" (p. 6), have been replaced by mundane contemporary, nondescript doors. As for the two intricate murals rendered by Esther Bruton Gilman which adorned the Kahili Lounge, the one depicting the migration of the Polynesians to Hawaii has been relocated to the stairway between the first and second floors of the Ainahau Tower, and should be retained. The other, smaller mural showing the development of the *kahili* from the *kapu* stick to a symbolization of royalty during the monarchy period has been lost. Similarly the light, golden-hued *koa* tables in the Kahili Lounge room no longer exist; nor does the curved *koa* bar, which was heavily inlaid with mother of pearl. Deftly worked into the wood was a geometric weaving of simplified versions of *kapa* cloth designs.

The Pikake Dining Room had ocean blue-green walls, with off-white as a secondary color, trimmed in gold. Hand painted screens by Honolulu artist Tsen Yu-ho, accented both the Diamond Head and *mauka* walls. Five feet wide, they depicted the growth of the pikake flower in an Asian style. Nothing from this room remains.

At the sky level, the Mauna Kea cocktail lounge was converted prior to 1961 to penthouse suites, which housed hotel management. The lounge was finished in *koa* wood and had blue green walls adorned by sprays of live orchids. Glass doors opened the lounge on three sides and the outside seating featured sky blue glass mosaic tables with constellations observed in the Hawaiian skies set into their surfaces. The Robert Louis Stevenson suite which was designed to accommodate meetings and private dining, still remains and today houses a comedy club. All its original finishes have been altered, although its three, 65' x 48' rooms, flanked by 8' wide lanai on both sides remain. Originally the suite featured an Asian décor with heavily veined, blond *koa* wood paneling that swept along the walls and blended with the light bamboo sunshades on the *makai* lanai.

The guest rooms have all been altered, although they remain organized along the lateral running, double loaded centered hallway. The guest rooms were decorated in one of three pastel color schemes, either beige, yellow or green. Fabrics play on tropical themes to balance the light colored wood furniture. Hallways on each floor utilized different colors so guests could immediately recognize they were on the correct floor. Originally the no longer extant Kilohana Suite (translates best, highly esteemed) on the 10th floor was the premier room in the hotel. It had two main rooms, one larger than the other, and was at the Diamond Head end of the hotel. It had a light sea blue décor. The larger, front room faced the ocean, while the other room, a conventional double room, faced *mauka*. Most all the rooms featured paintings by local artists. Some of these

paintings may be found in the hallway serving the executive offices, and others may be in storage. These paintings should be retained and used in the new project.

Shops

Two free standing buildings run along Kalakaua Avenue and a portion of Kaiulani Avenue and define the street facing periphery of the Princess Kaiulani Hotel's grounds. These were part of the original 1955 design of the hotel, and served to buffer the grounds from the street, as well as provide retail space for a number of enterprises. At the time of the opening of the hotel, they were described as, "An important adjunct to the hotel and an impressive addition to the Kalakaua Avenue scene." ["Handsome New Shops Front Kalakaua Avenue," SB, June 11, 1955, magazine section, page 15.] and as having an "authentic Polynesian design, finished with gray stone facing and crowned by sharply peaked roofs." [Adv Special p. 7]

They held a total of fifteen separate shops which included:

1. United Airlines, whose interior was designed by nationally renown Raymond Loewy Associates and featured a spectacular Tiki carved from *koa* by Honolulu artist, Beverly Willis.
2. Ross Sutherland, a men's clothing store whose interior was designed by Honolulu architect Philip Fisk, and featured finely grained, custom built Monkeypod display cases.
3. Northwest Airlines, designed by Lockwood Frost
4. Quantas Airlines, which featured aborigine art of Australia, and was designed by Wimberly & Cook.
5. Pan American Airways, whose interior was designed by Philip Fisk and had a Hawaiian atmosphere with terrazzo flooring and a wall of monkeypod curving behind the counter.
6. The Bishop Trust's branch was designed by Merrill, Sims and Roehrig and featured a hapu`u wall filled with orchids.
7. The retail store of Sorenson, a wood carver, was designed by Oahu Interiors and included a desk of lava rock and glass.
8. The Pocket Book Man had an ultra modern styling which was designed by Willson Y. Stamper with Ossipoff drafting the plans.
9. Tiana Pittelle, a women's wear store, had a ship's wheel as one of its décor highlights.

10. K. Suchiro jewelry which specialized in Mikimoto pearls, was designed by Honolulu architect Ernest Hara.
11. Yamasaki's of Waikiki with its variety of Japanese goods was designed by Honolulu architect Kenji Onodera.
12. John Roberts Ivories
13. Pacific Arts and Crafts followed the designs of Lloyd Short and Homer Pearce and had thatched alcoves and tokonoma.
14. Kaiulani Camera Shop

Landscaping.

Very little of the Princess Kaiulani Hotel's original landscaping remains in place. Standing on four acres, "a tropical paradise" (A-special, p. 13] the original design was said to not only delight the eye but also perfumed the air. It reflected the décor of the hotel by drawing upon western, Hawaiian, Polynesian, and Asian plants and ideas. Like the Biltmore, the hotel had a swimming pool in its front area, between the shops and the hotel. The entire breadth of the hotel focused on the oval, 34' x 60' fresh water pool surrounded by a tile apron. This feature, named the Orchid Pool, still remains intact. It was surrounded by comfortable lounging chairs and colorful umbrellas.

The Orchid Pool and Tea House- constructed in 1952. The tea house is no longer extant and much of the landscaping has been changed.

A no longer extant Tea House sat adjacent to the Orchid Pool and functioned as a snack bar for the guests. It was constructed of wood imported from Japan, and the newspapers claimed it to be, "an almost exact duplicate" of a summer house at the royal Katsura Palace in Kyoto. It featured shoji and fusuma doors, and had a thick cedar bark roof. A Japanese rock garden, designed by S. Takano Nakamura, adjoined the tea house. A willow mat fence of willow branches imported from Japan surrounded the tea house and the swimming pool patio, and like the snack bar was inspired by a similar fence at the Katsura Palace. The fence was pre-fabricated in Japan

and shipped to Honolulu in crates. It included three hand made layers of closely tied straight willow branches approximately five feet long. The succeeding layers of the branches were laid at right angles to the preceding layer to give absolute privacy from the street.

Over one hundred fifty coconut palms were brought in to grace the grounds and plumeria dotted the landscape. The remainder of the grounds was lushly planted with one section being all green, white and yellow with eldorado, yellow hibiscus, Tahitian gardenia, and hapu'u. Another area featured crimson lake and purple bougainvillea, red ti, caladiums, Ape, snow bush, Singapore Holly, kamani, Chinese privet, and yellow flowered Ligulania. Ewa of the snack bar area were pikake and hibiscus. A hanging jade vine in the Japanese garden was, at that time, one of only three known outside of China.

A sacred stone and a stone bench in the garden came from `Ainahau. Princess Kaiulani sat upon the bench. Both these features still remain and should be preserved and sensitively incorporated into the new project.

Character Defining Features

The character-defining features of the Princess Wing of the Princess Kaiulani Hotel that remain intact include:

- 11-story, reinforced concrete structure;
- upper story fenestration;
- "Sky Level" lanai and roof and structural walls of the Robert Louis Stevenson Suite;
- *makai* facing guest room lanai and their railings;
- swimming pool;
- terrazzo floor in the entryway and lobby, which is now covered with clay tile and carpet. This includes the compass in the floor of the entry terrace, now covered by carpet, which uses *mauka*, *makai*, Ewa, and Diamond Head as directionals.
- Mural depicting the Polynesian voyages executed by which graces the rear stairway leading from the Ainahau Wing's first and second floors. This was relocated from the no longer extant Kahili Bar.
- Two buildings along Kalakaua Avenue housing shops;
- Portrait of Princess Kaiulani by Lloyd Sexton in the lobby
- Stone bench on which Princess Kaiulani sat, and sacred stone, both in the garden area adjoining the swimming pool. These should be preserved and incorporated in the design of the proposed planned development project.

Several modern additions have been built on to the 1955 hotel structure, which do not contribute to the historical significance of the hotel and as such any alteration to the character of these additions would be considered to have no effect upon the historic character of the building. These are:

- The Kaiulani Wing, which was completed in 1960;
- Parking Structure, which was completed in 1961;
- ʻAinahau Wing, which was completed in 1971;
- Porte cochere, which was remodeled in 1988;
- The guest room interiors which have been remodeled several times over the years;
- Lobby's fabric, the result of a 1980s remodeling;
- First floor retail areas which have been reconfigured and remodeled several times over the years

Princess Kaiulani Hotel, Present-day photos showing alterations over time

Overview of the Princess Kaiulani Hotel taken from the Diamond Head Wing of the Moana Surfrider Hotel across the street.
All three towers in view: the Princess Tower in the center, the Kaiulani Wing built in 1961 to the right and the tallest Ainahou Wing built in 1971 to the left (not a contributing resource.)

Rear view of the Princess Kaiulani site. the parking structure built in 1961 is to the right of the photo.

Princess Kaiulani Hotel, Present-day photos showing alterations over time

View of pool and landscape area from Ainahau Tower. Pool is original but landscaping has been redone several times. The Meeting Room once stood where the Ainahau Tower is presently located.

Pool view from stage area. The lobby area in background that once opened onto the pool area is now much more enclosed and the landscaping and paving are not original.

Lobby interior- significanly altered during the 1988 renovation.

Princess Kaiulani Hotel, Present-day photos showing alterations over time

Porte Cochere entry off Kaiulani Avenue. The porte cochere was enlargede and the roof structure was heightened to allow buses to pass under in the 1987 renovation. When this happend many original elements were lost. including the orignal terrazo floor, the tiki patterned wall, and landscaping features.

Kaiulani wing along Kaiulani Avenue. Built in 1961, not originally part of the hotel, it lacks in historic value and would have no effect on the historic character of the hotel if it is demolished.

The porte cochere view with original tower in background.

Princess Kaiulani Hotel, Present-day photos showing alterations over time

Princess Kaiulani shop front along Kalaukaua Avenue. These shops are original and except for interior modifications, are largely intact.

Close-up view of shop front. Cement brink detail with undulating pattern and decorative rafters at eave are reminiscent of the architecture of the 1950s era.

Princess Kaiulani Hotel, Present-day photos showing alterations over time

Standard ocean-facing interior room view. Original lanai depth has been shortened. Door on left side of photo was originally operable and lead to adjacent lanai.

Standard hotel room facing mauka. Window glazing has been replaced. Original trim, furnishings, and colors have all been redone over time.

Wave formed lanai still intact; however, the lanai depth was shortened by over six feet in order to give more interior space to the hotel room.

Professionals Involved in Project:

Gardner Dailey, FAIA	Architect of Record
Pacific Construction Co. Ltd., T. Kawamura job superintendent	Contractor
Wilbur Choy, Makiki Nursery	Landscape designer
S. Takano Nakamura	Japanese Rock Garden designer
Nat Whiton	Foundation Borings

Subcontractors and Suppliers of Materials:

K.J. Lillie and Company	Ornamental iron in railings on lanai, plus other iron and structural steel
P. Grassi American Terrazzo Company	Terrazzo Floor
Mario Valdastri & Son	Paving and cut stone
Corbaley's Cabinet Shop	Koa and Philippine Mahogany Cabinets
Sawai Brothers	Painting
Honolulu Sign Company	Title and Directional Signs
T. Sasaki	Plastering
Aruda Electric Company	Electrical wiring
C.K. Buckert-Peterson Ltd.	Swimming Pool excavation and granite work
Hawaiian Marble & Granite Company	Roman travertine for front lobby counter

Chapter Four
Proposed Mitigation Measures

The proposed Planned Development Project includes the demolition of the Diamond Head Tower of the Moana Surfrider Hotel and the Princess Wing of the Princess Kaiulani Hotel as well as the Princess Kaiulani's swimming pool and shops, which will be an adverse effect to these properties. To mitigate effects the proposed demolition, the following mitigation measures are to be explored:

1) Photographic documentation according to Historic American Building Survey standards is to be undertaken of the hotel buildings, the shops, and swimming pool area.
2) Placing a copy of the original floor plans for the Diamond Head Tower of the Moana Surfrider Hotel and the Princess Wing at an appropriate repository, perhaps the University of California at Berkeley's Environmental Design Archives, which houses the Gardner Dailey collection.
3) Digitizing select pages of the original plans for the Diamond Head Tower of the Moana Surfrider Hotel and Princess Kaiulani Hotels and developing an on-line site, where they will be accessible to the public and researchers.
4) Retention and/or reuse of the following elements in the new development: Lloyd Sexton portrait of Princess Kaiulani; Princess Kaiulani's stone bench and the sacred stone on the property; terrazzo compass in the floor of the entry terrace; Polynesian migration mural by Esther Bruton Gilman, and paintings that initially hung in guest rooms.
5) A sacred stone and a stone bench in the garden came from `Ainahau. Princess Kaiulani sat upon the bench. Both these features still remain and should be preserved and sensitively incorporated into the new project.
6) Development of interpretive displays and/or programs communicating the history of the property, Princess Kaiulani, and tourism in Waikiki during the 1950.

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BIBLIOGRAPHY

Sources: ARCHITECTURAL DRAWINGS OF THE ORIGINAL DIAMOND HEAD TOWER OF THE MOANA SURFRIDER HOTEL

The Moana Engineering Department holds an extensive collection of original drawings relating to the hotel and the various building episodes associated with its development. The following provided information used in the preparation of this report.

Date	Title	Architect	Sheet
August 15, 1950	Typical Floor Plan	Gardner Dailey and Wimberley & Cook	4
August 15, 1950	Mauka Elevation	Gardner Dailey and Wimberley & Cook	7
August 15, 1950	Diamond Head-Ewa Elevation	Gardner Dailey and Wimberley & Cook	8
August 15, 1950	Makai Elevation	Gardner Dailey and Wimberley & Cook	9
August 15, 1950	Typical Sections	Gardner Dailey and Wimberley & Cook	10
August 15, 1950	1 thru 6 Floor, Ceiling and Plumbing	Gardner Dailey and Wimberley & Cook	M3
August 15, 1950	Penthouse Plan and Interior Elev.	Gardner Dailey and Wimberley & Cook	P1
August 15, 1950	Alternate Basement and Foundation and 1st and 2nd Floor Plans	Gardner Dailey and Wimberley & Cook, Structural Design: Walter Steilberg	S1A
August 15, 1950	Structural 1st Floor Plan	Gardner Dailey and Wimberley & Cook Structural Design: Walter Steilberg	S2
August 15, 1950	Structural Floor Plan 3 thru 7	Gardner Dailey and Wimberley & Cook Structural Design: Walter Steilberg	S4

August 15, 1950	Plumbing, Plot Plan, and Drains	Gardner Dailey and Wimberley & Cook	N.A.
September 15, 1990	W.C Peacock Restaurant	Park Associates, Inc.	A3, A4
N.D.	Diamond Head Tower Plumbing Renovations	Lincoln, Scott, Kohloss, Inc.	M2
December 1993	Guestroom Refurbishing	W.S.D Design	A1

Sources: ARCHITECTURAL DRAWINGS OF THE PRINCESS WING OF THE PRINCESS KAIULANI HOTEL

The Princess Wing of the Princess Kaiulani Hotel Engineering Department holds an extensive collection of original drawings relating to the hotel and the various building episodes associated with its development. The following provided information used in the preparation of this report.

Date	**Title**	**Architect**	**Sheet**
Feb. 6, 1941	Well Line Plan	Wright, Harvey & Wright, Surveyors and Engineers	Sheet 1
September 17, 1953	Basement Plan	Gardner Dailey	Sheet 1
September 17, 1953	First Floor plan	Gardner Dailey	Sheet 2
September 17, 1953	10th Floor Plan	Gardner Dailey	Sheet 5
September 17, 1953	Skyroom Floor Plan	Gardner Dailey	Sheet 6
September 17, 1953	Makai Elevations	Gardner Dailey	Sheet 9
September 17, 1953	Ewa and Diamond Head Elevations	Gardner Dailey	Sheet 10
September 17, 1953	Mauka Elevations	Gardner Dailey	Sheet 11
September 17, 1953	Exterior Sliding Doors	Gardner Dailey	Sheet 12
September 17, 1953	Window Details	Gardner Dailey	Sheet 13
September 17, 1953	Cross Sections	Gardner Dailey	Sheet 15
September 17, 1953	Entrance Porch	Gardner Dailey	Sheet 18
September 17, 1953	Basement Locker Rooms	Gardner Dailey	Sheet 19

September 17, 1953	First Floor Ceiling Details	Gardner Dailey	Sheet 23
September 17, 1953	Typical Floor Plan- Ewa End	Gardner Dailey	Sheet 25
October 1, 1953	Swimming Pool	Gardner Dailey, structural design by Walter T. Steilberg	Sheet S-15
February 3, 1954	Ewa and Diamond Head Elevations	Gardner Dailey	Sheet 10
February 3, 1954	Cross Section A	Gardner Dailey	Sheet 14
No date	Robert Louis Stevenson Room		Floor Plan, Section, Details
June 20, 1955	Shop for Kaiulani, Matson	Ossipoff	Floor Plan, Elevation
November 1, 1956	As Built: Mauka Elevation, Ewa and Diamond Head Elevations, 11th Floor Plan	Gardner Dailey	
November 8, 1957	Plot Plan	Matson Hotels Engineering Department	
October 14, 1959	Pikake Terrace Bar (Orchid Bar)	Wimberly & Cook	Sheets A-1, M-1
February 23, 1960	Addition to Princess Kaiulani Hotel	Wimberly & Cook	Sheets A-2, A-4 thru A-10, and S-4
April 5, 1960	Parking Garage	Wimberly & Cook	Elevation, Floor Plan
May 11, 1964	Wax Museum	Wimberly, Whisenand, Allison & Tong	E-1
January 30, 1968	Ainahau Wing	Roehrig, Onodera & Kinder and Gumi Ltd.	Floor Plans, Sheets 0 thru 11
September 1968	Ainahau Wing	Roehrig, Onodera & Kinder and Gumi Ltd.	Floor Plans
October 8, 1969	Robert Louis Stevenson Room	Frederick H. Kohloss & Associates	Air Conditioning Plan
November 24, 1969	Coffee Shop/Lounge	Sheraton Design & Development Inc.	Sheets 1 thru 13,
January 16, 1970	Addition and Alterations to Princess Kaiulani	Roehrig, Onodera & Kinder	Sheets A-93 & A-94
September 1, 1970	Site Plan	Roehrig Onodera & Kinder	S-1

1970	Coffee Shop	Sheraton Engineering Department	Section
September 19, 1974	Da Sting Cabaret	No architect	Floor Plan
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August 1992	Refurbish Princess Wing Corridors	WSD	Sheets A-1 thru A-9
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APPENDIX 3

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Traffic Impact Report

Princess Ka'iulani Renovation & Diamond Head Tower Development

Prepared for:
Kyo-ya Company LLC

Prepared by:
Wilson Okamoto Corporation

April 2009

TRAFFIC IMPACT REPORT

FOR THE

PRINCESS KAIULANI RENOVATION

AND

DIAMOND HEAD TOWER DEVELOPMENT

Prepared for:

Kyoya Company LLC
Sheraton Waikiki Hotel, 2nd Floor
2255 Kalakaua Avenue
Honolulu, HI 96815

Prepared by:

Wilson Okamoto Corporation
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
WOC Ref: 7757-01

April 2009

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EXECUTIVE SUMMARY

The proposed Princess Kaiulani Hotel renovation entails the renovation of the Ainahau Tower (666 hotel rooms), as well as, the construction of a new parking structure, tower (210 condo hotel rooms and 61 condominiums), and commercial podium (~82,808 square feet). The proposed renovation is expected to be completed and occupied by the Year 2012 with primary access provided via two driveways off Kaiulani Avenue, one serving the new motor court and one serving the new parking garage. In addition, an internal connection between the motor court and the parking garage will be provided to eliminate circulation along the adjacent roadway between these two areas and a bus pullout will be provided along Kaiulani Avenue between the two project driveways so that passenger loading/unloading and bus staging activities can occur on-site without impeding the through traffic along Kaiulani Avenue. The proposed renovation is expected to result in an overall decrease in site-generated trips and traffic operations under with project conditions are expected to remain similar to without project conditions during the weekday and Saturday PM peak periods.

In addition, there are plans currently under consideration to demolish the diamond head wing of the Moana Surfrider Hotel and replace it with a new condominium/hotel (referred to as the Diamond Head Tower) which includes 185 hotel rooms, 40 condominiums, and retail areas (~2,949 square feet). A new two-way driveway connection for the porte cochere is currently planned on the south side of the intersection of Kalakaua Avenue and Kaiulani Avenue. Although this new connection will require modifications to the existing traffic signal operation at the intersection, valets will have a more direct route to the parking garage at the Princess Kaiulani Hotel than the existing valets at the Moana Surfrider Hotel. Due to the anticipated reduction in hotel rooms at the Princess Kaiulani and Moana Surfrider hotels, traffic operations with the proposed renovation of the Princess Kaiulani Hotel and development of the Diamond Head Tower are expected to remain similar to without project conditions during both peak periods despite the addition of vehicles from the Diamond Head Tower.

Although traffic operations with the proposed Princess Kaiulani renovation and Diamond Head Tower development are expected to remain similar to without project conditions, several recommendations are identified that would minimize the impact of the proposed projects on the surrounding roadways. The following are the recommendations associated with the Princess Kaiulani renovation:

- Maintain sufficient sight distance for motorists to safely enter and exit all driveways for the Princess Kaiulani Hotel.
- Provide adequate on-site loading and off-loading service areas at the Princess Kaiulani Hotel and prohibit off-site loading operations.
- Provide adequate turn-around area for service, delivery, and refuse collection vehicles at the Princess Kaiulani Hotel to maneuver on the project site to avoid vehicle-reversing maneuvers onto City and County of Honolulu roadways.

- Provide sufficient turning radii at all driveways for the Princess Kaiulani Hotel to avoid or minimize vehicle encroachments to oncoming traffic lanes.
- Align the southern project driveway for the Princess Kaiulani Hotel along Kaiulani Avenue with Koa Avenue to minimize conflicts between turning vehicles.
- Align the northern project driveway along for the Princess Kaiulani Hotel along Kaiulani Avenue with Prince Edward Street to minimize conflicts between turning vehicles.
- If access to the parking structure for the Princess Kaiulani Hotel via the northern driveway connection is controlled (i.e., automatic gate, etc.), provide sufficient storage for entering vehicles.
- Prepare a Traffic Management Plan (TMP) for the Princess Kaiulani Hotel that is coordinated or combined with the management plans associated with other hotels in the vicinity (i.e., Moana Surfrider Hotel). The TMP should include traffic circulation, parking, loading, and traffic demand management strategies.
- Prepare a Construction Management Plan (CMP) for the Princess Kaiulani Hotel which includes discussions regarding the anticipated construction schedule and phasing, as well as, traffic circulation, traffic control, and parking during the construction period.

The following are the recommendations associated with the development of the Diamond Head Tower:

- Provide sufficient sight distance for motorists to safely enter and exit the driveway for the Diamond Head Tower.
- Maintain adequate on-site loading and off-loading service areas at the Moana Surfrider Hotel for the Diamond Head Tower and prohibit off-site loading operations.
- Maintain adequate turn-around area for service, delivery, and refuse collection vehicles to maneuver at the Moana Surfrider Hotel for the Diamond Head Tower to avoid vehicle-reversing maneuvers onto City and County of Honolulu roadways.
- Provide sufficient turning radii at the driveway for the Diamond Head Tower to avoid or minimize vehicle encroachments to oncoming traffic lanes.
- Align the driveway for the Diamond Head Tower along Kalakaua Avenue with Kaiulani Avenue to allow direct access to the Princess Kaiulani Hotel's garage for valet functions.
- Prepare a Traffic Management Plan (TMP) for the Diamond Head Tower that is coordinated or combined with the management plans associated with other hotels in the vicinity (i.e., Moana Surfrider Hotel and Princess Kaiulani Hotel). The TMP should include traffic circulation, parking, loading, and traffic demand management strategies.
- Prepare a Construction Management Plan (CMP) for the Diamond Head Tower which includes discussions regarding the anticipated construction schedule and phasing, as well as, traffic circulation, traffic control, and parking during the construction period.

With the implementation of the identified recommendations, the proposed renovation of the Princess Kaiulani Hotel and the development of the Diamond Head Tower are not expected to have a significant impact on traffic operations in the project vicinity.

I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the traffic impacts resulting from the proposed renovation of the existing Princess Kaiulani Hotel located adjacent to Kalakaua Avenue in Waikiki on the island of Oahu. The proposed project entails the renovation of one of the existing hotel towers and the construction of a new tower. In addition, there are plans currently under consideration to demolish the diamond head wing of the Moana Surfrider Hotel and replace it with a new condominium/hotel currently referred to as the Diamond Head Tower. An additional assessment is included to identify the traffic impact resulting from the development of both projects.

B. Scope of Study

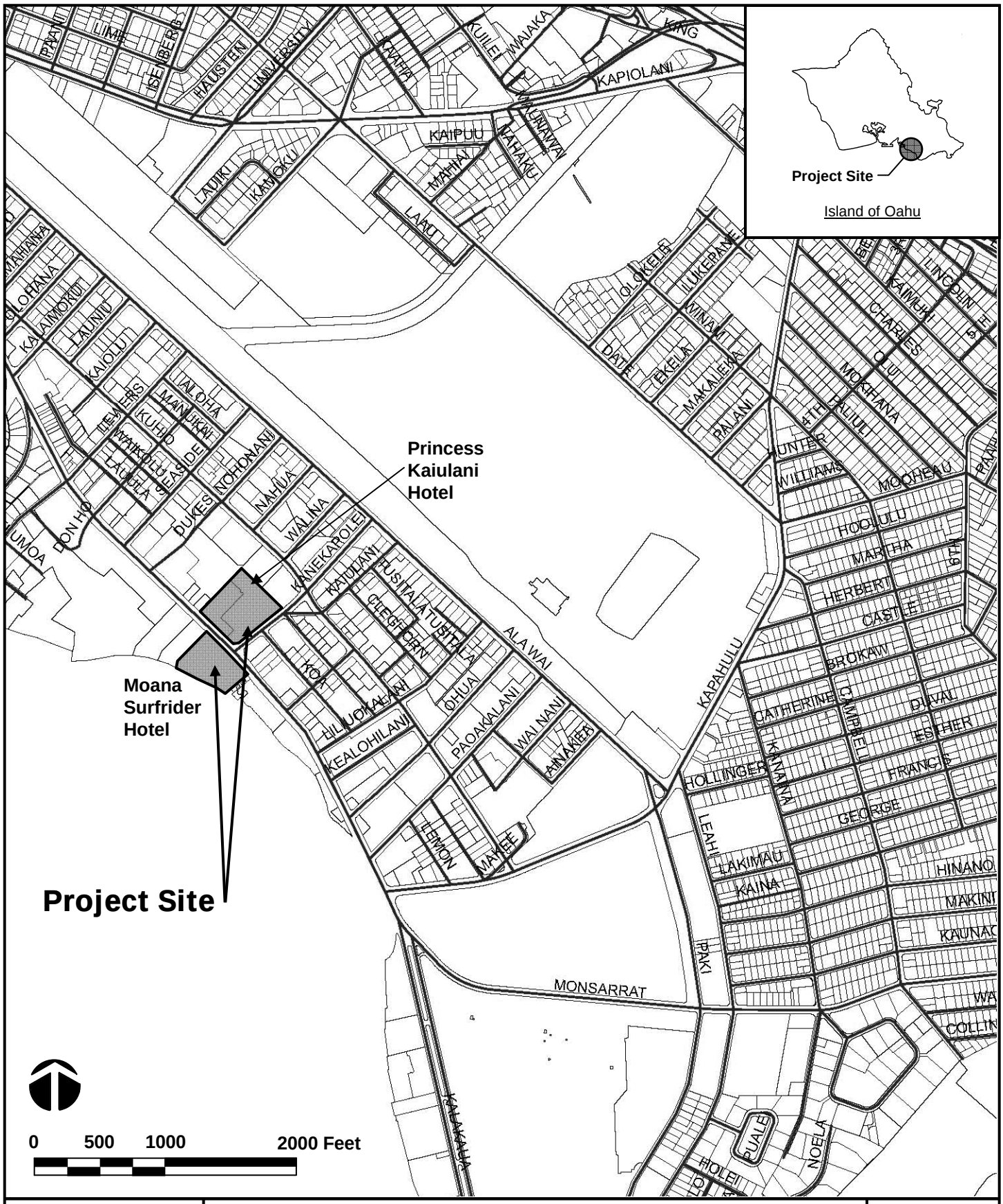
This report presents the findings and conclusions of the traffic study, the scope of which includes:

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

II. PROJECT DESCRIPTION

A. Location

The existing Princess Kaiulani Hotel is located on the northwest corner of the intersection of Kalakaua Avenue and Kaiulani Avenue in Waikiki on the island of Oahu (See Figure 1). The project site is further identified as Tax Map Keys: 2-6-022:



WILSON OKAMOTO CORPORATION ENGINEERS - PLANNERS	PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT	FIGURE 1
	LOCATION AND VICINITY MAP	

001 and 041. Primary vehicular access to the existing hotel is currently provided via three driveways off Kaiulani Avenue, two for the porte cochere and one for the parking garage.

B. Project Characteristics

The existing Princess Kaiulani Hotel is located adjacent to Kalakaua Avenue and currently has 1,140 hotel rooms housed in three towers along with meeting and dining areas, retail areas (~21,872 square feet), a medical clinic (~5,340 square feet), and a parking garage. The proposed renovation of the hotel will include the following:

- Demolition of two of the hotel towers, retail areas, medical clinic, and the parking garage
- Renovation of the remaining tower (Ainahau Tower) and adjacent areas to include the following:
  - Approximately 666 hotel rooms
  - Meeting facilities
  - Restaurant and bar
  - Fitness Center (without a spa) and recreation/pool areas
- Construction of a new parking structure to include the following:
  - Parking spaces (~649 spaces)
  - Meeting facilities (~12,000 square feet)
  - Recreation/pool areas
- Construction of a new tower to include the following:
  - 210 condo hotel rooms
  - 61 residential condominium units
- Construction of a new commercial podium
  - Specialty retail space (~82,808 square feet)
  - New motor court
  - Lobby areas for both towers
  - Fitness center and recreation/pool areas for the new tower
  - Below grade parking (~100 spaces)

The proposed renovation is expected to be completed and occupied by the Year 2012 with primary access provided via two driveways off Kaiulani Avenue. The hotel's existing porte cochere off Kaiulani Avenue will be replaced by a new motor court further inside the property. Access to the motor court will be provided via a new driveway connection off Kaiulani Avenue at the intersection with Koa Avenue.

There is another existing driveway connection further north along Kaiulani Avenue that currently serves the parking garage for the hotel. This driveway will remain and continue to provide access to the hotel's new parking garage. An internal connection between the motor court and the parking garage will also be provided to eliminate circulation along the adjacent roadway between these two areas. In addition, a bus pullout will be provided along Kaiulani Avenue between the two project driveways so that passenger loading/unloading and bus staging activities can occur on-site without impeding the through traffic along Kaiulani Avenue. Figure 2 shows the proposed site plan.

III. EXISTING TRAFFIC CONDITIONS

A. General

The proposed project will be located adjacent to Kalakaua Avenue, a predominantly four-lane, one-way (eastbound) City and County of Honolulu roadway generally oriented in the east-west direction that with Ala Wai Boulevard forms a couplet system that provides access through Waikiki. Kuhio Avenue runs parallel to this couplet and also serves as an access roadway through Waikiki.

B. Area Roadway System

At the southeast corner of the project site, Kalakaua Avenue intersects Kaiulani Avenue. At this signalized T-intersection, the Kalakaua Avenue approach has three through lanes and one left turn lane. Kaiulani Avenue originates at Kalakaua Avenue as a two-lane, one-way (northbound) roadway that transitions to a four-lane, two-way roadway at Koa Avenue until Prince Edwards Street. At the intersection with Prince Edwards Street, Kaiulani Avenue transitions back to a one-way (northbound) roadway with two lanes between Prince Edwards Street and Kuhio Avenue, and one lane between Kuhio Avenue and its terminus at Ala Wai Boulevard.

North of the intersection with Kalakaua Avenue, Kaiulani Avenue intersects Koa Avenue. At this unsignalized intersection, both approaches of Kaiulani Avenue have two lanes that serve all traffic movements. The east leg of the intersection is comprised of Koa Avenue which is a one-lane, one-way (eastbound) roadway that

WILSON OKAMOTO CORPORATION ENGINEERS - PLANNERS	PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT PROJECT SITE PLAN	FIGURE 2

serves as a connector roadway between Kaiulani Avenue and Liliuokalani Avenue. The west leg of the intersection is comprised of the entrance to the existing porte cochere for the Princess Kaiulani Hotel.

Further north, Kaiulani Avenue intersects Prince Edward Street and Kanekapolei Street. At this unsignalized intersection, the Kaiulani Avenue approach has two northbound lanes that serve all traffic movements. Prince Edward Street is a one-lane, one-way (westbound) roadway that serves as a connector roadway between Kaiulani Avenue and Liliuokalani Avenue. At the intersection with Kaiulani Avenue and Kanekapolei Street, the Prince Edward Street approach has one westbound lane that serves all traffic movements. Kanekapolei Street originates at this intersection as a four-lane, two-way roadway, transitions to a three-lane roadway north of Kuhio Avenue, and terminates at Ala Wai Boulevard. At the intersection with Kaiulani Avenue and Prince Edward Street, the Kanekapolei Street approach has two southbound lanes that serve all traffic movements. The eastbound approach of the intersection is comprised of the existing driveways for the Princess Kaiulani Hotel and the adjacent Mirimar Hotel. The driveway for the Princess Kaiulani Hotel is a two-lane, two-way driveway that leads to the parking structure while the driveway for the Mirimar Hotel is a one-lane, one-way (exiting) driveway.

Northeast of the intersection with Prince Edwards Street and Kanekapolei Street, Kaiulani Avenue intersects Kuhio Avenue. At this signalized intersection, the Kaiulani Avenue approach has an exclusive right-turn lane and one through lane. In the vicinity of the project site, Kuhio Avenue is a predominantly four-lane, two-way roadway. At the intersection with Kaiulani Avenue, the eastbound approach of Kuhio Avenue has one through lane and a shared left-turn and through lane while the westbound approach has one through lane and a shared through and right-turn lane.

West of the intersection with Kaiulani Avenue, Kuhio Avenue intersects Kanekapolei Street. At this signalized intersection, the eastbound approach of Kuhio Avenue has an exclusive left-turn lane, one through lane, and a shared through and right-turn lane while the westbound approach has two lanes that serve all traffic

movements. The northbound approach of Kanekapolei Street has one through lane and a shared left-turn and through lane while the southbound approach has two lanes that serve all traffic movements. Right-turn traffic movements are not permitted on the northbound approach of Kanekapolei Street.

North of the intersection with Kuhio Avenue, Kanekapolei Street intersects Ala Wai Boulevard. At this signalized T-intersection, the Kanekapolei Street approach has two exclusive left-turn lanes. In the vicinity of the project site, Ala Wai Boulevard is a three-lane, one-way (westbound) roadway with a 24-hour parking lane located on the north side of the roadway. At the intersection with Kanekapolei Street, the Ala Wai Boulevard has two through lanes and a shared left-turn and through lane.

C. Traffic Volumes and Conditions

1. General

a. Field Investigation

The field investigations were conducted during November 2007 and July-September 2008, and consisted of manual turning movement count surveys and traffic flow assessments during the weekday afternoon peak hours of 3:00 PM and 6:00 PM, and between the Saturday afternoon peak hours of 4:00 PM and 7:00 PM at the following intersections:

- Kalakaua Avenue and Kaiulani Avenue
- Kaiulani Avenue, Koa Avenue, and the Princess Kaiulani Hotel Porte Cochere
- Kaiulani Avenue, Prince Edward Street, and Kanekapolei Street
- Kaiulani Avenue and Kuhio Avenue
- Kanekapolei Street and Kuhio Avenue
- Kanekapolei Street and Ala Wai Boulevard

In addition, surveys were conducted at the porte cochere for the existing Moana Surfrider Hotel to evaluate the use and function of the valet operations at the hotel. These surveys were conducted when

occupancy was high (above 80%) and events were planned at the hotel. Appendix A includes the existing traffic count data.

b. Capacity Analysis Methodology

The highway capacity analysis performed in this study is based upon procedures presented in the "Highway Capacity Manual", Transportation Research Board, 2000, and the "Highway Capacity Software", developed by the Federal Highway Administration. The analysis is based on the concept of Level of Service (LOS).

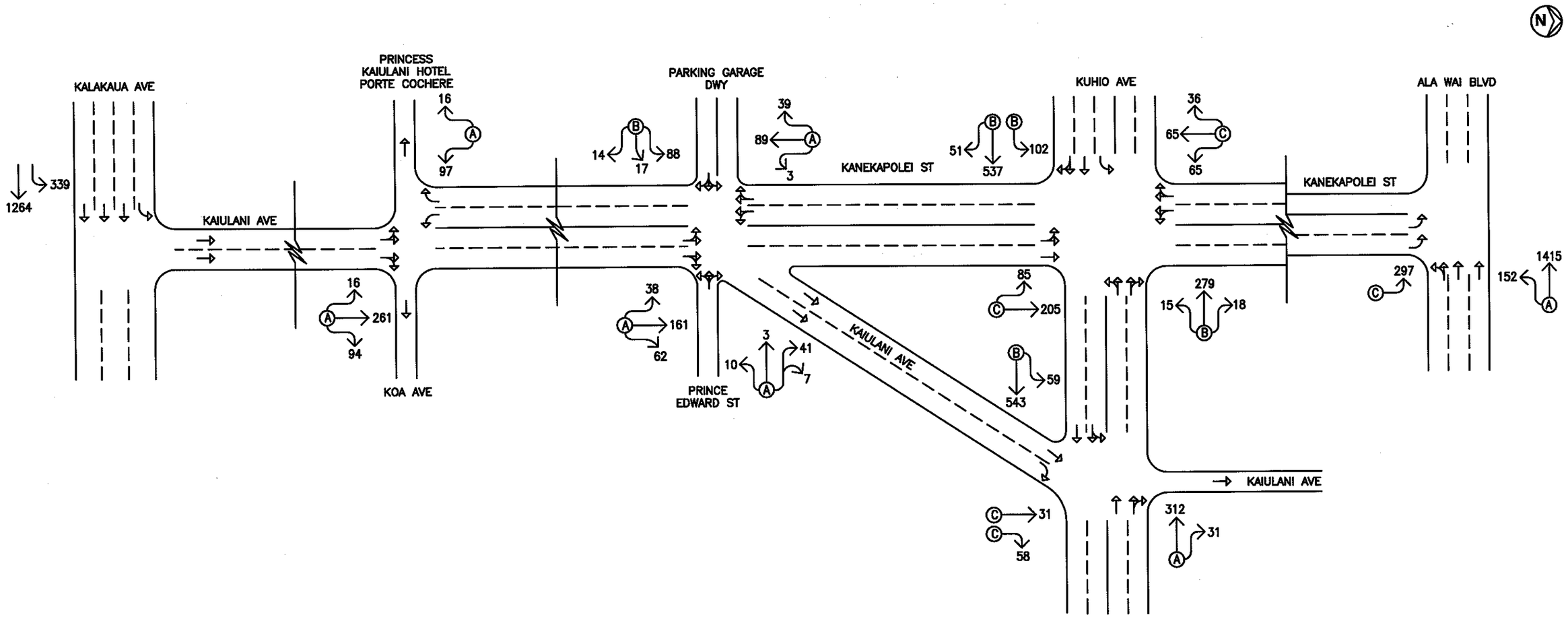
LOS is a quantitative and qualitative assessment of traffic operations. Levels of Service are defined by LOS "A" through "F"; LOS "A" representing ideal or free-flow traffic operating conditions and LOS "F" representing unacceptable or potentially congested traffic operating conditions.

"Volume-to-Capacity" (v/c) ratio is another measure indicating the relative traffic demand to the roadway carrying capacity. A v/c ratio of one (1.00) indicates that the roadway is operating at or near capacity. A v/c ratio of greater than 1.00 generally indicates that the traffic demand exceeds the road's carrying capacity. The LOS definitions are included in Appendix B.

2. Existing Peak Hour Traffic

a. General

Figures 3 and 4 show the existing weekday and Saturday PM peak period traffic volumes and traffic operating conditions. The weekday PM peak hour of traffic generally occurs between the hours of 4:15 PM and 5:15 PM. On Saturday, the PM peak hour of traffic generally occurs between the hours of 4:00 PM and 5:00 PM. The analysis is based on these peak hour time periods for each intersection to identify the traffic impacts resulting from the proposed project. LOS calculations are included in Appendix C.



LEGEND

90 — TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

DATES OF COUNTS: November 6--7 & 10, 2007
July 31, 2008
August 2 & 23, 2008

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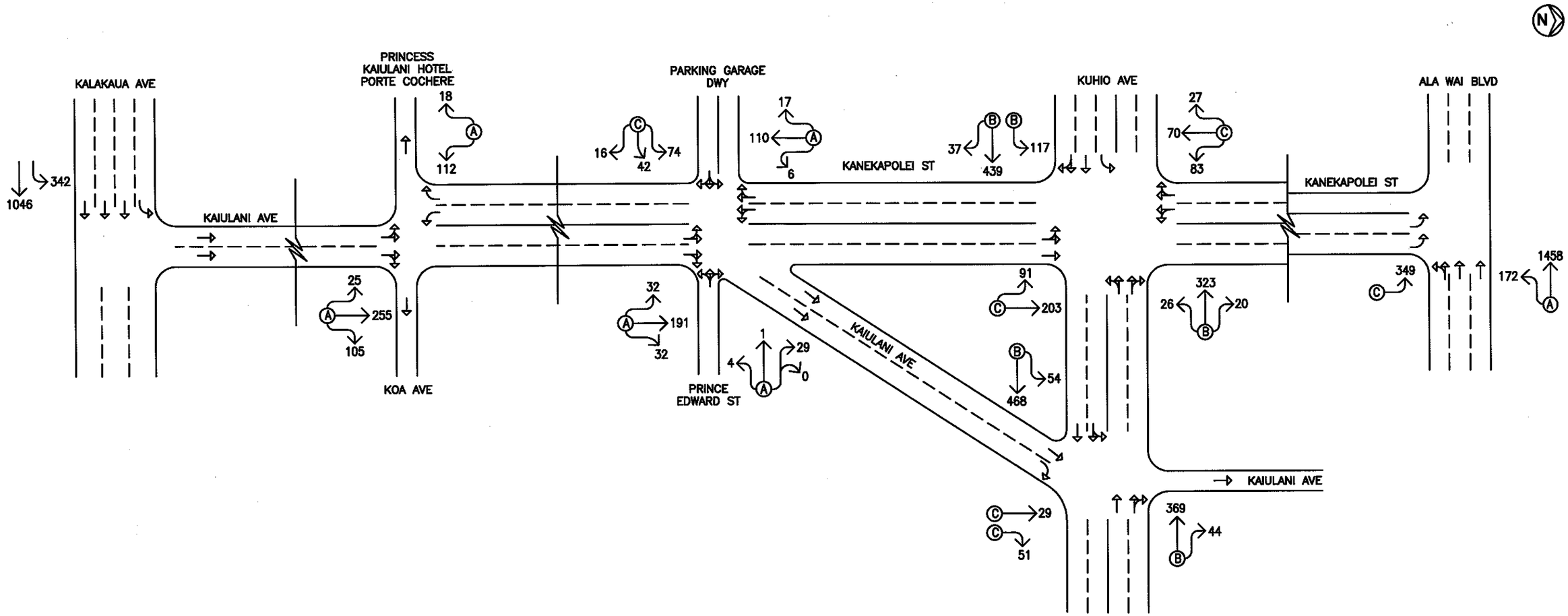
EXISTING WEEKDAY PM PEAK HOUR OF TRAFFIC

FIGURE 3



LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

DATES OF COUNTS: November 6–7 & 10, 2007
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WILSON OKAMOTO CORPORATION
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PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT

EXISTING SATURDAY PM PEAK HOUR OF TRAFFIC

FIGURE 4

b. Kalakaua Avenue and Kaiulani Avenue

At the intersection with Kaiulani Avenue, Kalakaua Avenue carries 1,603 vehicles eastbound. During the Saturday PM peak period, traffic volumes are less with 1,388 vehicles traveling westbound. Vehicular queues formed periodically on the Kalakaua Avenue approach with average queue lengths of 5-7 vehicles observed during both peak periods. However, these queues cleared the intersection after each traffic signal cycle change.

c. Kaiulani Avenue and Koa Avenue

At the intersection with Koa Avenue, Kaiulani Avenue carries 371 vehicles northbound and 113 vehicles southbound during the weekday PM peak period. During the Saturday PM peak period, traffic volumes are approximately the same with 385 vehicles traveling northbound and 130 vehicles traveling southbound. Both approaches of Kaiulani Avenue operate at LOS "A" during both peak periods.

d. Kaiulani Avenue, Prince Edward Street, and Kanekapolei Street

At the intersection with Prince Edward Street, the Kaiulani Avenue approach carries 261 vehicles and 255 vehicles northbound during the weekday and Saturday PM peak periods, respectively, while the Kanekapolei Street approach carries 131 vehicles and 133 vehicles southbound during the weekday and Saturday PM peak periods, respectively. Both approaches operate at LOS "A" during both peak periods.

The Prince Edward Street approach of the intersection carries 61 vehicles and 34 vehicles westbound during the weekday and Saturday PM peak periods, respectively. This approach operates at LOS "A" during both peak periods.

The eastbound approach of the intersection is comprised of the driveways for the Princess Kaiulani Hotel and the Mirimar Hotel. This

approach carries 119 vehicles and 132 vehicles eastbound during the weekday and Saturday PM peak periods, respectively, and operates at LOS "B" and LOS "C" during the weekday and Saturday PM peak periods, respectively. Field observations indicate that the majority of the traffic on this approach (~90-95%) is generated by the Princess Kaiulani Hotel.

e. Kaiulani Avenue and Kuhio Avenue

At the intersection with Kuhio Avenue, the Kaiulani Avenue approach carries 89 vehicles and 80 vehicles northbound during the weekday and Saturday PM peak periods, respectively. Both traffic movements on this approach operate at LOS "C" during both peak periods.

The Kuhio Avenue approaches of the intersection carry 602 vehicles eastbound and 343 vehicles westbound during the weekday PM peak period. During the Saturday PM peak period, the overall traffic volume is approximately the same with 522 vehicles traveling eastbound and 413 vehicles traveling westbound. The eastbound approach Kuhio Avenue operates at LOS "B" during both peak periods while the westbound approach operates at LOS "A" and LOS "B" during the weekday and Saturday PM peak periods, respectively.

Vehicular traffic queues formed periodically on all approaches of the intersection with average queue lengths of 2-3 vehicles observed on the Kuhio Avenue approaches and average queue lengths of 1-2 vehicles observed on the Kaiulani Avenue approach during both peak periods. However, these queues cleared the intersection after each traffic signal cycle change.

f. Kanekapolei Street and Kuhio Avenue

At the intersection with Kuhio Avenue, Kanekapolei Street carries 290 vehicles northbound and 166 vehicles southbound during

the weekday PM peak period. During the Saturday PM peak period, traffic volumes are approximately the same with 294 vehicles traveling northbound and 180 vehicles traveling southbound. Both approaches of Kanekapolei Street operate at LOS "C" during both peak periods.

The Kuhio Avenue approaches of the intersection carry 690 vehicles eastbound and 312 vehicles westbound during the weekday PM peak period. During the Saturday PM peak period, the overall traffic volume is slightly less with 593 vehicles traveling eastbound and 369 vehicles traveling westbound. The traffic movements on both approaches of Kuhio Avenue operate at LOS "B" during both peak periods.

Vehicular traffic queues formed periodically at the intersection with average queue lengths of 3-5 vehicles observed on all approaches of the intersection both peak periods. Occasionally, northbound queues along Kanekapolei Street extended to the intersection with Prince Edward Street. However, most of these queues cleared the intersection after each traffic signal cycle change.

g. Kanekapolei Street and Ala Wai Boulevard

At the intersection with Ala Wai Boulevard, the Kanekapolei Street approach carries 297 vehicles and 349 vehicles northbound during the weekday and Saturday PM peak periods, respectively. The Kanekapolei Street approach operates at LOS "C" during both peak periods.

The Ala Wai Boulevard approach of the intersection carries1,567 vehicles and 1,630 vehicles westbound during the weekday and Saturday PM peak periods, respectively. The Ala Wai Boulevard approach operates at LOS "A" during both peak periods.

Vehicular traffic queues formed periodically on all approaches of the intersection with average queue lengths of 3-5 vehicles observed

on the Kanekapolei Street approach and average queue lengths of 5-7 vehicles observed on the Ala Wai Boulevard approach during both peak periods. However, most of these queues cleared the intersection after each traffic signal cycle change.

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

1. Trip Generation Methodology

The trip generation methodology used in this study is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 8th Edition," 2008. The ITE trip generation rates are developed empirically by correlating the vehicle trip generation data with various land use characteristics such as the number of vehicle trips generated per room, unit, or 1,000 square feet of development. Since the proposed development will be located in a neighborhood with limited parking, high volumes of pedestrian traffic, and a high density of attractive destinations, residents and guests may elect to walk to their destinations rather than drive. However, for the purpose of this report, only a portion of the guests destined for the retail or restaurant areas were assumed to walk to the project site rather than drive while all residents and hotel guests were conservatively assumed to utilize their vehicles for all trips. As such, the total number of trips generated by the retail and restaurant areas was reduced by 50% to more accurately reflect anticipated conditions. In addition, for the purpose of this report, the proposed condo-hotel rooms were assumed to be hotel rooms and the condominiums were assumed to be residential condominiums although most of them are expected to be second or vacation homes. Table 1 summarizes the project site trip generation characteristics applied to the weekday and Saturday PM peak periods of traffic.

Table 1: Princess Kaiulani Peak Hour Trip Generation

HOTEL		
Existing Hotel INDEPENDENT VARIABLE: Rooms = 1,140		
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	357
	EXIT	316
	TOTAL	673
SATURDAY PM PEAK	ENTER	407
	EXIT	361
	TOTAL	768
Proposed Hotel INDEPENDENT VARIABLE: Rooms = 876 Ainahau Tower (666 rooms) and new tower (210 rooms)		
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	274
	EXIT	243
	TOTAL	517
SATURDAY PM PEAK	ENTER	311
	EXIT	275
	TOTAL	586
Net Difference INDEPENDENT VARIABLE: Rooms = 264		
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	-83
	EXIT	-73
	TOTAL	-156
SATURDAY PM PEAK	ENTER	-96
	EXIT	-86
	TOTAL	-182

Table 1: Princess Kaiulani Peak Hour Trip Generation (Cont'd)

RESIDENTIAL CONDOMINIUM/TOWNHOUSE		
New Tower		
INDEPENDENT VARIABLE:	Units = 61	
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	27
	EXIT	13
	TOTAL	40
SATURDAY PM PEAK	ENTER	39
	EXIT	19
	TOTAL	58
SPECIALTY RETAIL CENTER		
Existing Retail Areas (Adjusted for pedestrian traffic)		
INDEPENDENT VARIABLE:	1,000 sf of development = 21.872	
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	16
	EXIT	21
	TOTAL	37
SATURDAY PM PEAK	ENTER	12
	EXIT	16
	TOTAL	28
Proposed Retail Areas (Adjusted for pedestrian traffic)		
INDEPENDENT VARIABLE:	1,000 sf of development = 82.808	
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	48
	EXIT	62
	TOTAL	110
SATURDAY PM PEAK	ENTER	47
	EXIT	59
	TOTAL	106

Table 1: Princess Kaiulani Peak Hour Trip Generation (Cont'd)

SPECIALTY RETAIL CENTER (Cont'd)		
Net Difference INDEPENDENT VARIABLE: 1,000 sf of development = 60.936		
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER EXIT TOTAL	32 41 73
SATURDAY PM PEAK	ENTER EXIT TOTAL	35 43 78
MEDICAL-DENTAL OFFICE BUILDING		
Existing Clinic (To be demolished) INDEPENDENT VARIABLE: 1,000 sf of development = 5.340		
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER EXIT TOTAL	-6 -15 -21
SATURDAY PM PEAK	ENTER EXIT TOTAL	-1 -4 -5
TOTALS		
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER EXIT TOTAL	-30 -34 -64
SATURDAY PM PEAK	ENTER EXIT TOTAL	-23 -28 -51

As shown in the table above, an overall decrease of 64 and 51 site-generated trips is anticipated during the weekday PM and Saturday evening peak periods, respectively. However, for the purpose of this report, the trip generation characteristics for the proposed development were conservatively assumed to remain similar to existing uses.

2. Trip Distribution

Although the trip generation characteristics of the proposed project were assumed to remain similar to existing uses, some redistribution of traffic is anticipated due to the planned modifications to the existing access connections for the Princess Kaiulani Hotel. There are two one-way driveways off Kaiulani Avenue between Koa Avenue and Kalakaua Avenue serving the existing porte cochere for the Princess Kaiulani Hotel. The proposed project is expected to relocate this porte cochere further west towards the center of the project site and consolidate these two driveways into a single two-way driveway at the intersection of Kaiulani Avenue and Koa Avenue. In addition, an on-site connection will be provided between the porte cochere and the parking garage. This connection is expected to result in a slight reduction in traffic along Kaiulani Avenue due to the removal of valet-related traffic. As such, the site-generated traffic at the intersections of Kaiulani Avenue with Koa Avenue and Prince Edward Street/Kanekapolei Street were modified to reflect these anticipated circulation modifications.

B. Through Traffic Forecasting Methodology

There are no State of Hawaii or City and County of Honolulu traffic count station in the immediate vicinity of the project site with sufficient available historical data to obtain a historical trend for the growth of traffic in the project vicinity. However, for the purpose of this report, an average annual growth rate of 2.0% per year was conservatively assumed along Kalakaua Avenue, Kuhio Avenue, and Ala Wai Boulevard to account for ambient growth in traffic. As such, using 2007 as the Base Year, a growth rate factor of 1.10 was applied to the existing through traffic demands along Kalakaua Avenue, Kuhio Avenue, and Ala Wai Boulevard to achieve the projected Year 2012 traffic demands.

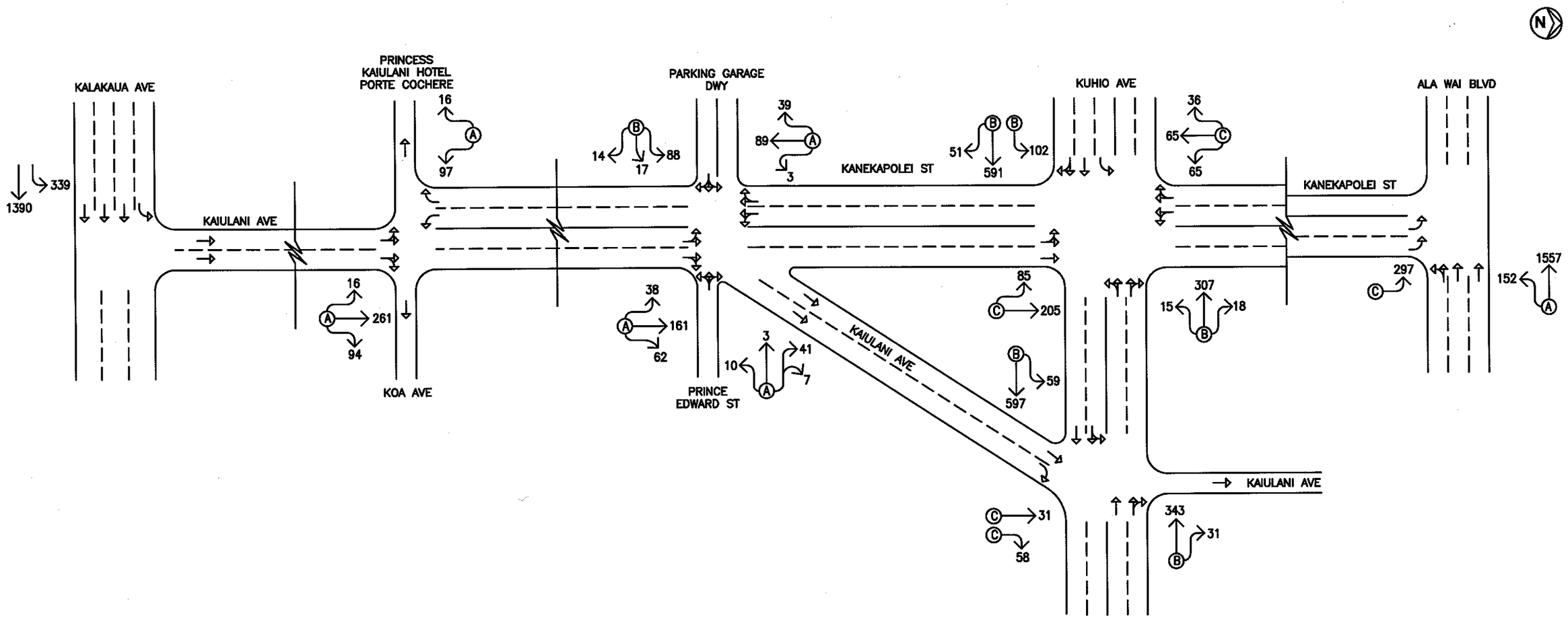
C. Total Traffic Volumes Without Project

The projected year 2012 weekday and Saturday PM peak period traffic volumes and operating conditions without the proposed Princess Kaiulani renovation are shown in Figures 5 and 6, and summarized in Table 2. The existing levels of service are included for comparison purposes. LOS calculations are included in Appendix D.

Table 2: Existing and Projected (Without Project) LOS Traffic Operating Conditions

Intersection	Traffic Movement		Weekday PM		Saturday PM	
			Exist	Year 2012 w/out Proj	Exist	Year 2012 w/out Proj
Kaiulani Ave/ Koa Ave	Northbound	LT-TH-RT	A	A	A	A
	Southbound	LT-RT	A	A	A	A
Kaiulani Ave/ Prince Edward St/ Kanekapolei St	Eastbound	LT-TH-RT	B	B	C	C
	Westbound	LT-TH-RT	A	A	A	A
	Northbound	LT-TH-RT	A	A	A	A
	Southbound	LT-TH-RT	A	A	A	A
Kaiulani Ave/ Kuhio Ave	Eastbound	LT-TH	B	B	B	B
	Westbound	TH-RT	A	B	B	B
	Northbound	TH	C	C	C	C
		RT	C	C	C	C
Kanekapolei St/ Kuhio Ave	Eastbound	LT	B	B	B	B
		TH-RT	B	B	B	B
	Westbound	LT-TH-RT	B	B	B	B
	Northbound	LT-TH	C	C	C	C
	Southbound	LT-TH-RT	C	C	C	C
Kanekapolei St/ Ala Wai Blvd	Westbound	LT-TH	A	A	A	A
	Northbound	LT	C	C	C	C

Under Year 2012 without project conditions, traffic operations are expected, in general, to remain similar to existing conditions. The westbound through and right-turn traffic movement at the intersection of Kaiulani Avenue with Kuhio



LEGEND

90 — TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

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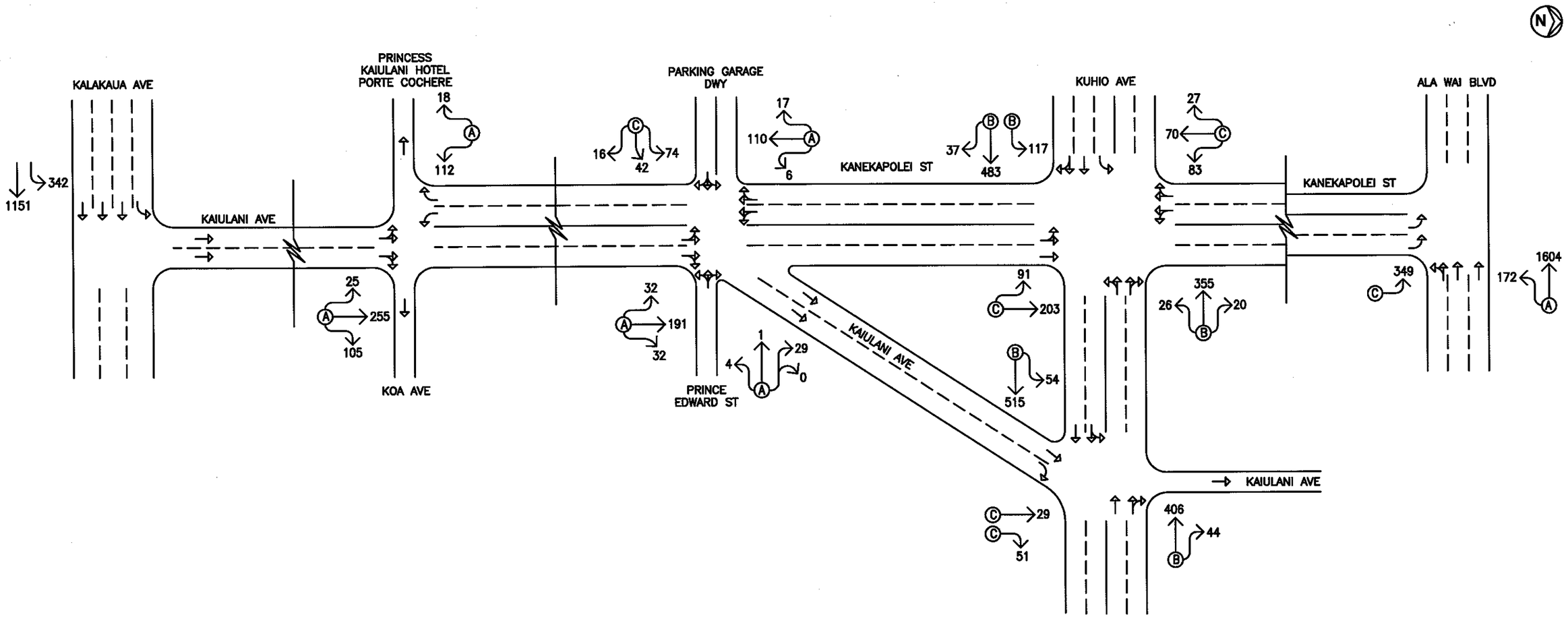
PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT

YEAR 2012 WEEKDAY PM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 5



LEGEND

90 — TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

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YEAR 2012 SATURDAY PM PEAK HOUR OF TRAFFIC WITHOUT PROJECT

FIGURE 6

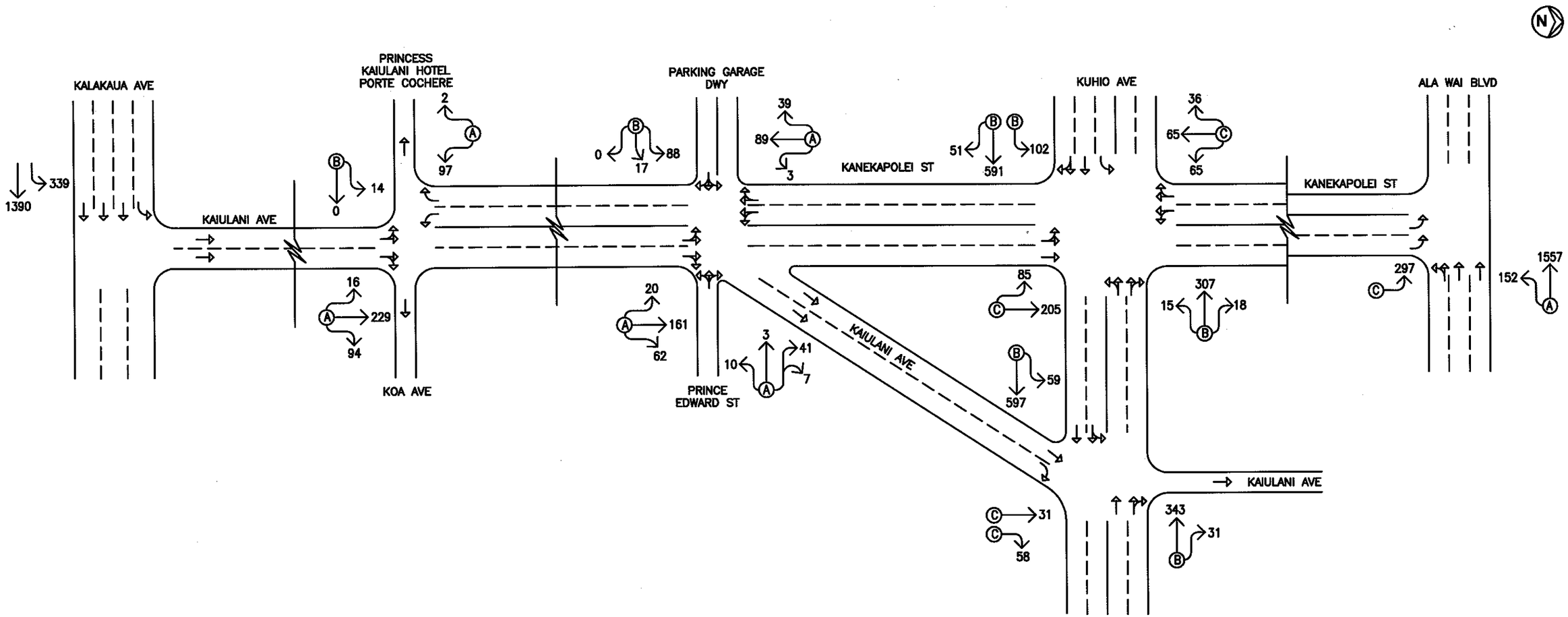
Avenue is expected to operate at a slightly lower LOS "B" during the weekday PM peak period. The remaining traffic movements at this intersection, as well as, the other study intersection are expected to operate at levels of service similar to existing conditions during the weekday and Saturday PM peak periods.

D. Total Traffic Volumes With Project

The Year 2012 cumulative weekday and Saturday PM peak hour traffic conditions with the proposed Princess Kaiulani renovation are shown in Figures 7 and 8, and summarized in Table 3. The projected Year 2012 (Without Project) operating conditions are provided for comparison purposes. LOS calculations are included in Appendix E.

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

Intersection	Traffic Movement		Weekday PM		Saturday PM	
			w/out Proj	w/ Proj	w/out Proj	w/ proj
Kaiulani Ave/ Koa Ave	Eastbound	LT-TH	-	B	-	B
	Northbound	LT-TH-RT	A	A	A	A
	Southbound	LT-RT	A	A	A	A
Kaiulani Ave/ Prince Edward St/ Kanekapolei St	Eastbound	LT-TH-RT	B	B	C	B
	Westbound	LT-TH-RT	A	A	A	A
	Northbound	LT-TH-RT	A	A	A	A
	Southbound	LT-TH-RT	A	A	A	A
Kaiulani Ave/ Kuhio Ave	Eastbound	LT-TH	B	B	B	B
	Westbound	TH-RT	B	B	B	B
	Northbound	TH	C	C	C	C
		RT	C	C	C	C
Kanekapolei St/ Kuhio Ave	Eastbound	LT	B	B	B	B
		TH-RT	B	B	B	B
	Westbound	LT-TH-RT	B	B	B	B
	Northbound	LT-TH	C	C	C	C
	Southbound	LT-TH-RT	C	C	C	C
Kanekapolei St/ Ala Wai Blvd	Westbound	LT-TH	A	A	A	A
	Northbound	LT	C	C	C	C



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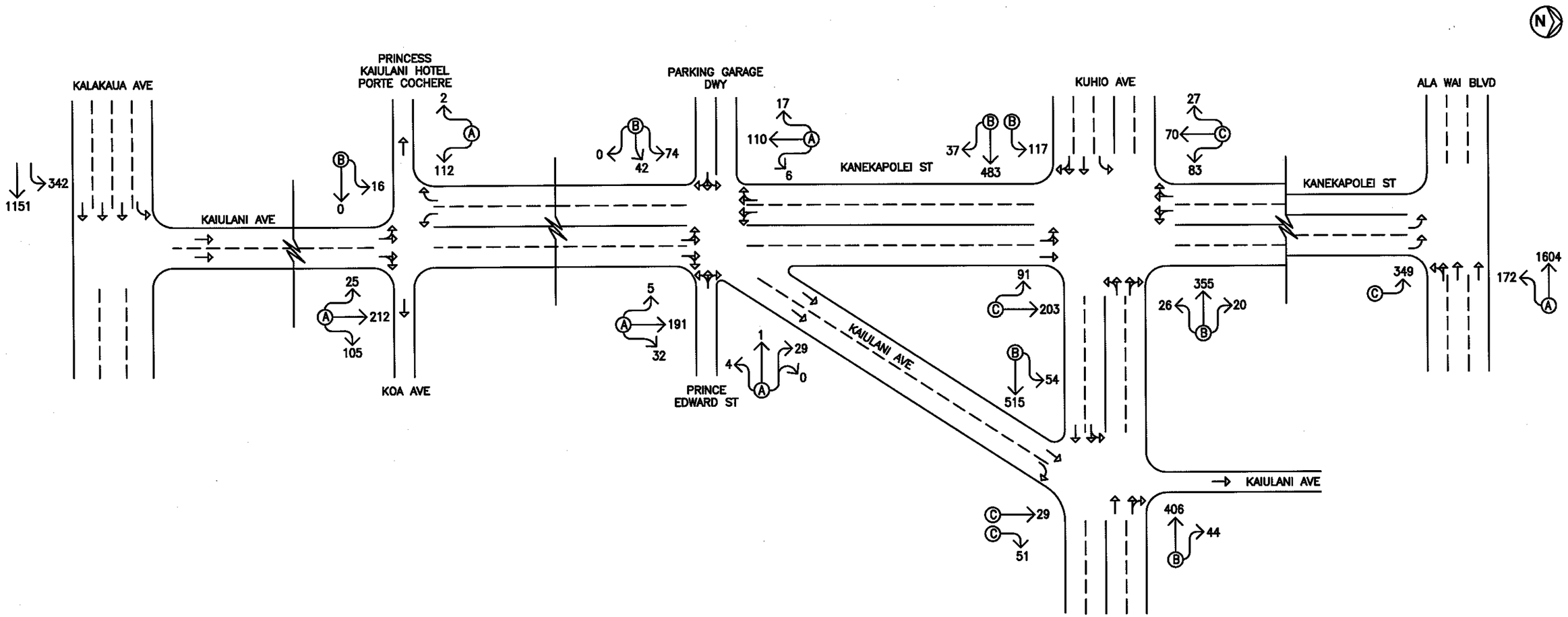
PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT

YEAR 2012 WEEKDAY PM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 7



LEGEND

90 — TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

(A) LANE GROUP LEVEL OF SERVICE

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PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT

YEAR 2012 SATURDAY PM PEAK HOUR OF TRAFFIC WITH PROJECT

FIGURE 8

Traffic operations under Year 2012 with project conditions are expected, in general, to remain similar to Year 2012 without project conditions during both peak periods. The eastbound approach of the intersection of Kaiulani Avenue with Prince Edward Street and Kanekapolei Street is expected to improve slightly to LOS "B" during the Saturday PM peak period resulting from the slight reduction in traffic along Kaiulani Avenue due to the provision of an internal connection between the Princess Kaiulani Hotel's porte cochere and parking garage. The remaining traffic movements at this intersection, as well as, the other study intersections are expected to continue operating at levels of service similar to Year 2012 without project conditions.

Although Year 2012 with project conditions are expected to remain similar to without project conditions, the existing Princess Kaiulani Hotel is located in a densely developed area with a high volume of pedestrian and vehicular traffic. As such, a traffic management plan is recommended for the proposed project to minimize conflicts with traffic associated with the hotel.

V. DIAMOND HEAD TOWER DEVELOPMENT

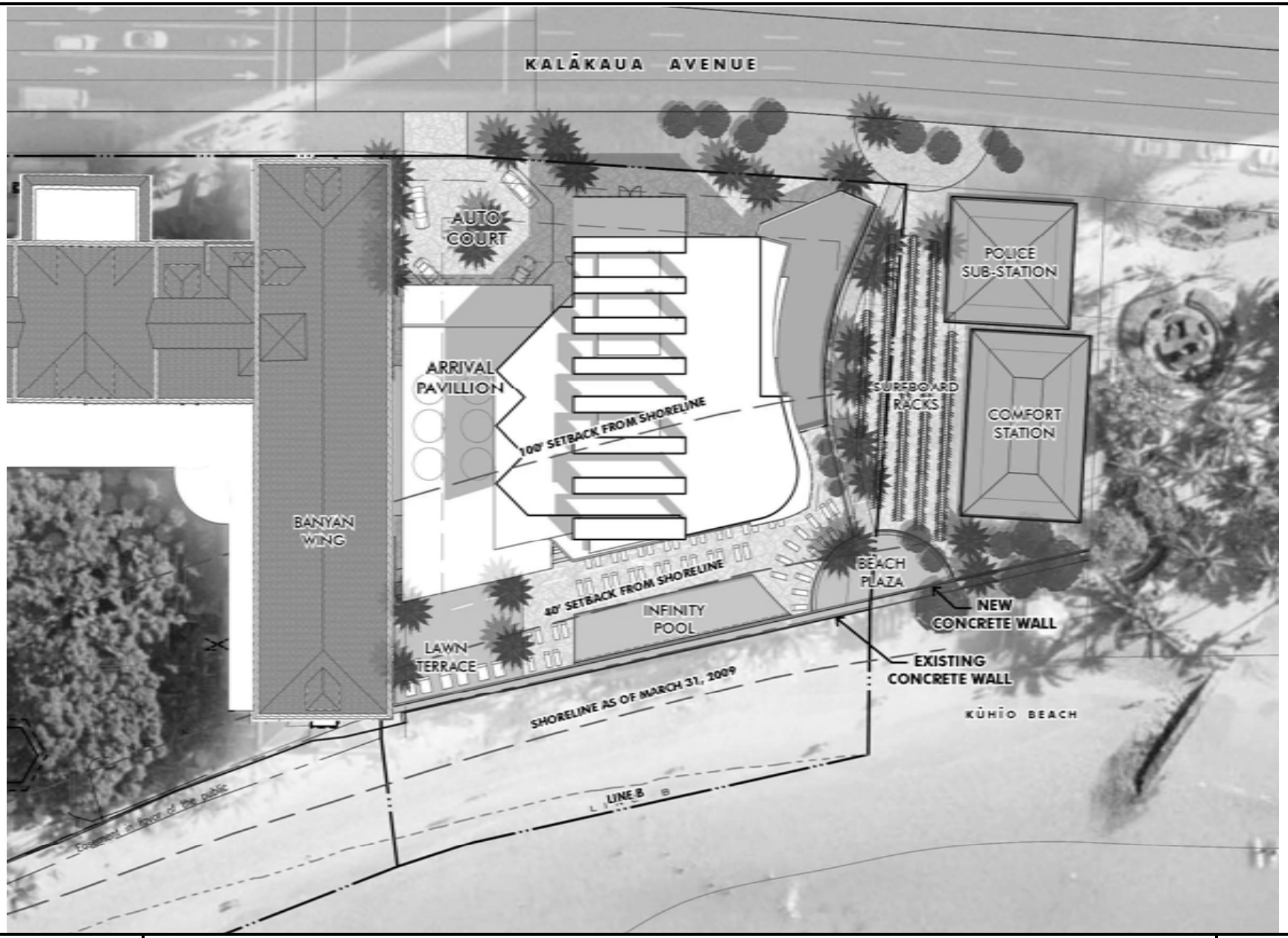
A. General

The existing Moana Surfrider Hotel is located across Kalakaua Avenue from the Princess Kaiulani Hotel. There are plans currently under consideration to demolish the diamond head wing of the hotel and replace it with a new condominium/hotel currently referred to as the Diamond Head Tower. This existing wing of the hotel currently houses approximately 141 hotel room and 4,566 square feet of retail. The new tower would include approximately 185 hotel rooms, 40 residential condominium units, approximately 2,949 square feet of retail, and other hotel amenities including a restaurant, bars, and pool areas. Guests accessing the proposed Diamond Head Tower will have the option to valet park their vehicles via the hotel's porte cochere off Kalakaua Avenue or self-park their vehicles at the Princess Kaiulani Hotel's garage similar to the Moana Surfrider Hotel. A new two-way driveway connection for the porte cochere is currently planned on the south side

of the intersection of Kalakaua Avenue and Kaiulani Avenue. Although this new connection will require modifications to the existing traffic signal operation at the intersection which currently has an all-pedestrian phase, valets will have a more direct route to the parking garage at the Princess Kaiulani Hotel than the existing valets at the Moana Surfrider Hotel. Valets transferring vehicles to the garage can directly access Kaiulani Avenue across Kalakaua Avenue. When returning vehicles, valets would follow the current circulation pattern of the Moana Surfrider Hotel valets which utilizes Kanekapolei Street, Kuhio Avenue, Royal Hawaiian Avenue, and Kalakaua Avenue. Figure 9 shows the proposed site plan.

B. Trip Generation

The trip generation methodology used for the proposed Diamond Head Tower is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 8th Edition," 2008. The ITE trip generation rates are developed empirically by correlating the vehicle trip generation data with various land use characteristics such as the number of vehicle trips generated per room, unit, or 1,000 square feet of development. Since the proposed development will be located in a neighborhood with limited parking, high volumes of pedestrian traffic, and a high density of attractive destinations, residents and guests may elect to walk to their destinations rather than drive. However, for the purpose of this report, only a portion of the guests destined for the retail areas were assumed to walk to the project site rather than drive while all residents and hotel guests were conservatively assumed to utilize their vehicles for all trips. As such, the total number of trips generated by the retail areas was reduced by 50% to more accurately reflect anticipated conditions. In addition, for the purpose of this report, the proposed condominiums were assumed to be residential condominiums although most of them are expected to be second or vacation homes. Tables 4 and 5 summarize the project site trip generation characteristics applied to the weekday and Saturday PM peak periods of traffic for the existing Moana Surfrider Hotel and the new Diamond Head Tower.



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PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT

DIAMOND HEAD TOWER PROJECT SITE PLAN

FIGURE 9

Table 4: Moana Surfrider Hotel Peak Hour Trip Generation

Hotel		
INDEPENDENT VARIABLE:	Rooms = -141 (To be demolished)	
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	-44
	EXIT	-39
	TOTAL	-83
SATURDAY PM PEAK	ENTER	-40
	EXIT	-36
	TOTAL	-76
Specialty Retail Center (Adjusted for pedestrian traffic)		
INDEPENDENT VARIABLE:	1,000 sf of development = 4.566 (To be demolished)	
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	-7
	EXIT	-8
	TOTAL	-15
SATURDAY PM PEAK	ENTER	-3
	EXIT	-3
	TOTAL	-6
TOTALS		
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	-51
	EXIT	-47
	TOTAL	-98
SATURDAY PM PEAK	ENTER	-43
	EXIT	-39
	TOTAL	-82

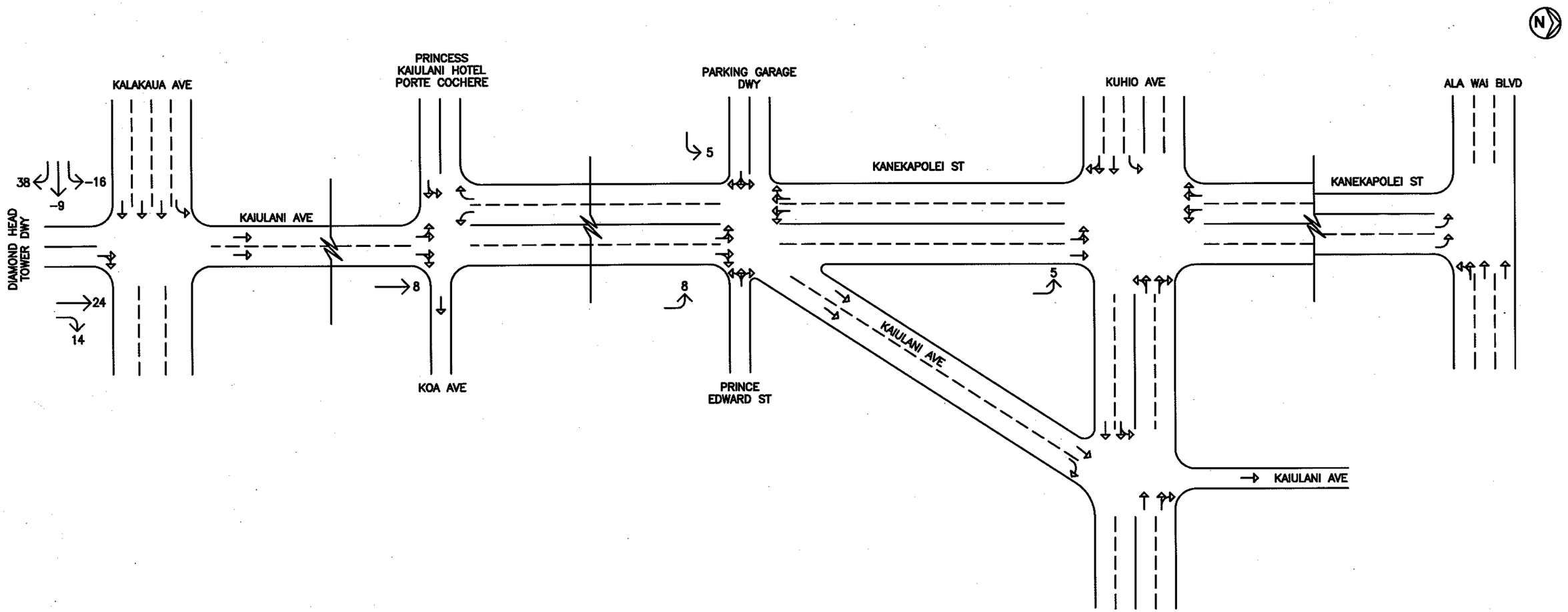
Table 5: Diamond Head Tower Peak Hour Trip Generation

Hotel		
INDEPENDENT VARIABLE:	Rooms = 185	
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	58
	EXIT	51
	TOTAL	109
SATURDAY PM PEAK	ENTER	57
	EXIT	50
	TOTAL	107
Residential Condominium/Townhouse		
INDEPENDENT VARIABLE:	Rooms = 40	
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	19
	EXIT	9
	TOTAL	28
SATURDAY PM PEAK	ENTER	34
	EXIT	17
	TOTAL	51
Specialty Retail Center (Adjusted for pedestrian traffic)		
INDEPENDENT VARIABLE:	1,000 sf of development = 2.949	
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	7
	EXIT	8
	TOTAL	15
SATURDAY PM PEAK	ENTER	2
	EXIT	2
	TOTAL	4
TOTALS		
		PROJECTED TRIP ENDS
WEEKDAY PM PEAK	ENTER	84
	EXIT	68
	TOTAL	152
SATURDAY PM PEAK	ENTER	93
	EXIT	69
	TOTAL	162

Based upon surveys of the existing valet usage at the Moana Surfrider Hotel, the site-generated trips associated with the reduction in hotel room and retail area at the Moana Surfrider Hotel and the new Diamond Head Tower can be distributed between the valet functions at the respective properties and the Princess Kaiulani Hotel's parking garage. Approximately 25% of the trips are assumed to utilize the valet functions at the Moana Surfrider Hotel and the Diamond Head Tower while 75% of the trips are assumed to self-park at the parking garage at the Princess Kaiulani Hotel. With the anticipated reduction of hotel rooms at the Moana Surfrider and Princess Kaiulani hotels, the overall volume of vehicles self-parking at the Princess Kaiulani Hotel's parking garage is expected to be less than or similar to existing conditions despite the addition of vehicles from the Diamond Head Tower. As such, for the purpose of this report, the volume of self-parking vehicles at the Princess Kaiulani Hotel's parking garage is assumed to remain similar to existing conditions. Only trips associated with the valet functions at the existing Moana Surfrider Hotel and the new Diamond Head Tower development were distributed throughout the surrounding roadway network.

C. Trip Distribution

Figures 10 and 11 show the weekday and Saturday PM peak hour distribution of valet-related site-generated traffic for the proposed Diamond Head Tower. Access to the new tower will be provided off Kalakaua Avenue at the intersection with Kaiulani Avenue. The directional distribution of trips at this intersection was based on the existing distribution of eastbound vehicles at the intersection. As such, during the weekday PM peak period, 78.9% of vehicles were assumed to be headed eastbound along Kalakaua Avenue and 21.1% were assumed to be headed northbound along Kaiulani Avenue during the AM peak period. Similarly, during the PM peak period 75.4% were assumed to be headed eastbound along Kalakaua Avenue and 24.6% were assumed to be headed northbound along Kaiulani Avenue. The directional distribution of trips at the other study intersections was based upon their



LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

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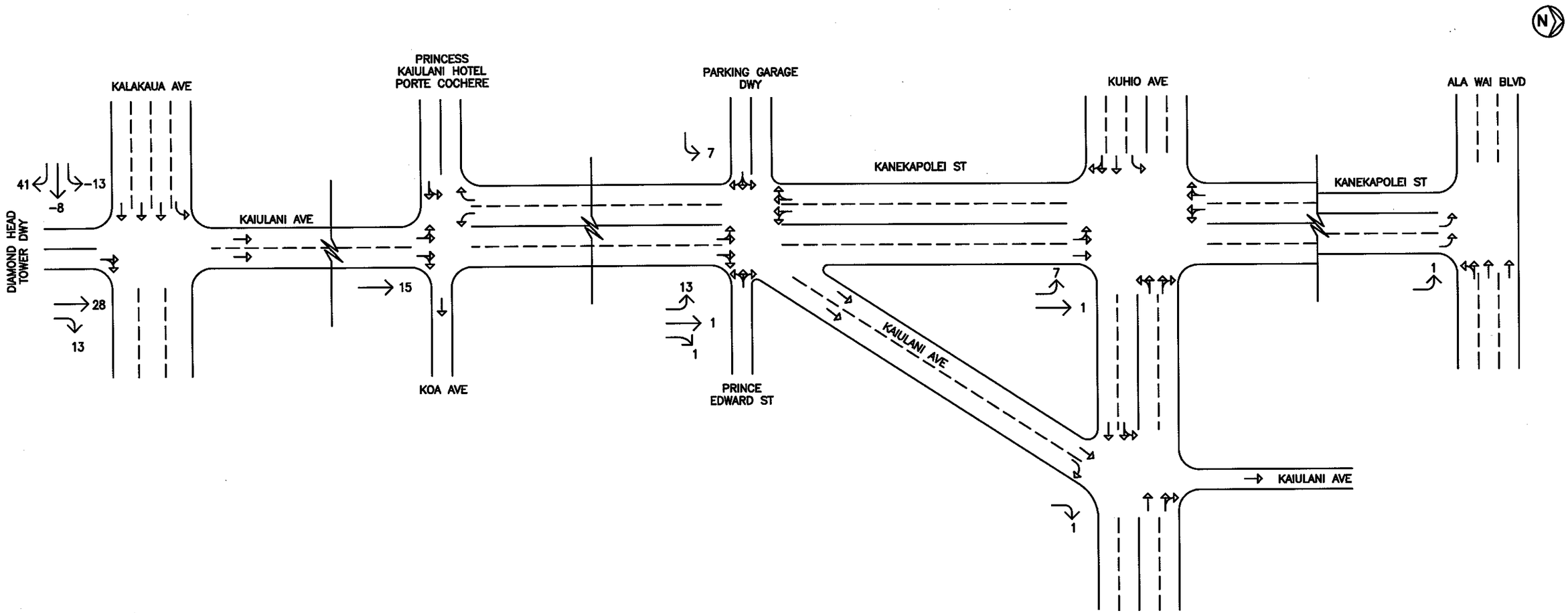
PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT

DISTRIBUTION OF SITE-GENERATED VEHICLES - SATURDAY PM PEAK HOUR OF TRAFFIC
DIAMOND HEAD TOWER

FIGURE 10



LEGEND

90 TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

Ⓐ LANE GROUP LEVEL OF SERVICE

WILSON OKAMOTO CORPORATION
ENGINEERS • PLANNERS

PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT

DISTRIBUTION OF SITE-GENERATED VEHICLES - SATURDAY PM PEAK HOUR OF TRAFFIC
DIAMOND HEAD TOWER

FIGURE 11

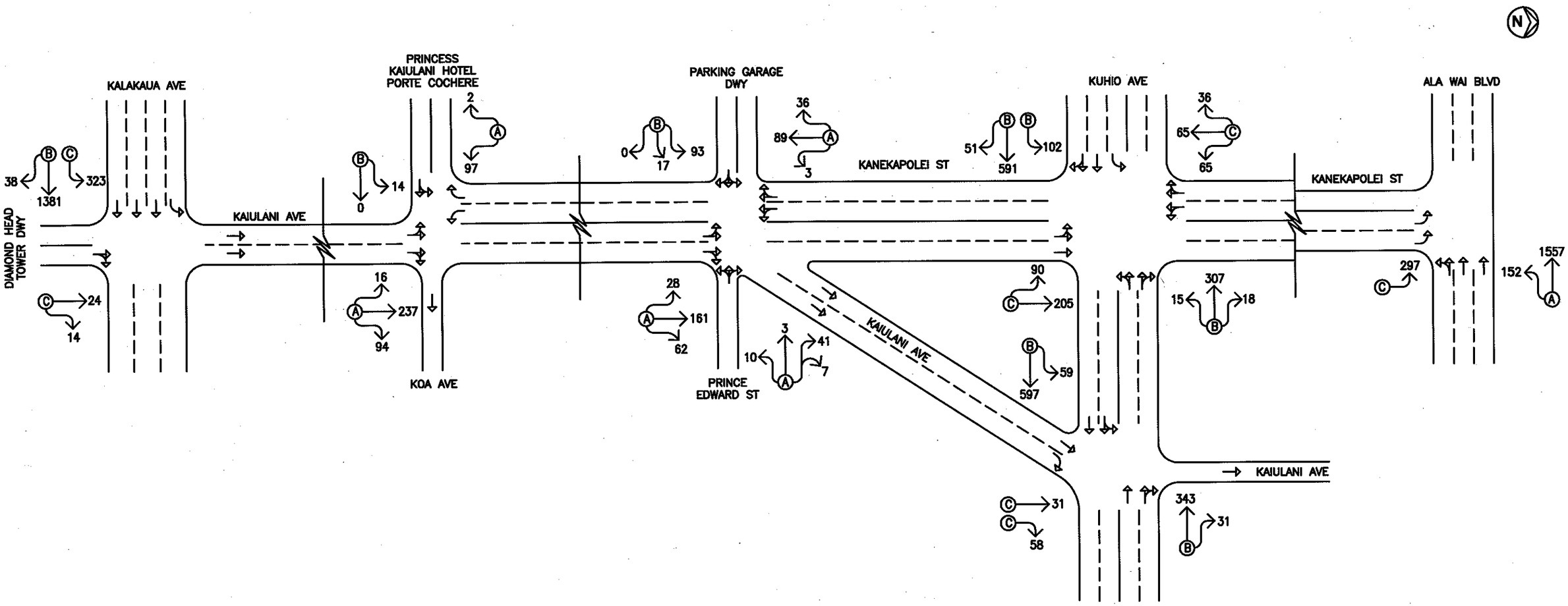
assumed origin/destination and the existing distribution of traffic at those intersections.

D. Other Considerations

Field observations at the Moana Surfrider Hotel indicate that passenger and delivery vehicles destined for the hotel currently block traffic along Kalakaua Avenue periodically. In addition, the heavy conflicting pedestrian traffic flow along Kalakaua Avenue, as well as, overflow from the hotel's valet operations result in periodic queuing along Kalakaua Avenue. The proposed redevelopment of the Diamond Head Wing of the existing Moana Surfrider Hotel is expected to alleviate the existing traffic conditions at the porte cochere for that hotel due to the net reduction of 141 hotel rooms. However, additional traffic management strategies could be implemented at the Moana Surfrider Hotel to further reduce the impact of this hotel on Kalakaua Avenue. As such, a traffic management plan is recommended for the existing hotel that is coordinated or combined with the management plans associated with other hotels in the vicinity.

E. Total Traffic Volumes With Project and Diamond Head Tower Development

The Year 2012 cumulative weekday and Saturday PM peak hour traffic conditions with the proposed Princess Kaiulani renovation and proposed Diamond Head Tower development are shown in Figures 12 and 13, and summarized in Table 7. The projected Year 2012 operating conditions without the Diamond Head Tower are provided for comparison purposes. The intersection of Kalakaua Avenue and Kaiulani Avenue is assumed to be modified to accommodate the proposed driveway connection for the new tower. In addition, the traffic signal at that intersection is assumed to be modified to reallocate the allowed pedestrian movements at the intersection to their respective phases, as well as, provide for a northbound traffic movement through the intersection. LOS calculations are included in Appendix F.



LEGEND

90 — TRAFFIC MOVEMENT VOLUME (VPH)

LANE USAGE

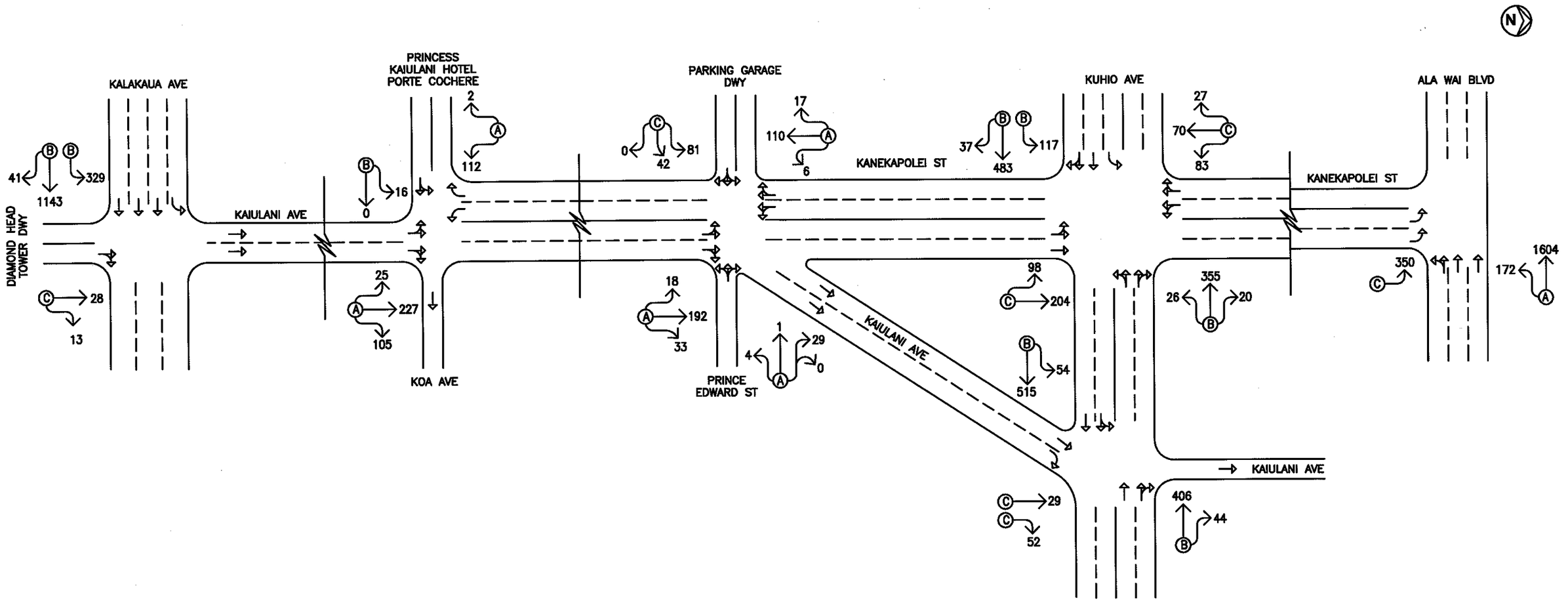
(A) — LANE GROUP LEVEL OF SERVICE

WILSON OKAMOTO CORPORATION
ENGINEERS • PLANNERS

PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT

YEAR 2012 WEEKDAY PM PEAK HOUR OF TRAFFIC WITH PROJECT AND DIAMOND HEAD TOWER

FIGURE 12



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PRINCESS KAIULANI RENOVATION & DIAMOND HEAD TOWER DEVELOPMENT

YEAR 2012 SATURDAY PM PEAK HOUR OF TRAFFIC WITH PROJECT AND DIAMOND HEAD TOWER

FIGURE 13

Table 7: Projected LOS Traffic Operating Conditions Without and With Diamond Head Tower

Intersection	Traffic Movement		Weekday PM			Saturday PM		
			w/out DHT		w/ DHT	w/out DHT		w/ DHT
			w/out Proj	w/ Proj		w/out Proj	w/ Proj	
Kalakaua Ave/ Kaiulani Ave/ DHT Dwy	EB	LT	-	-	C	-	-	C
		TH-RT	-	-	B	-	-	B
	NB	TH-RT	-	-	C	-	-	C
Kaiulani Ave/ Koa Ave	EB	LT-TH	-	B	B	-	B	B
	NB	LT-TH-RT	A	A	A	A	A	A
	SB	LT-RT	A	A	A	A	A	A
Kaiulani Ave/ Prince Edward St/ Kanekapolei St	EB	LT-TH-RT	B	B	B	C	B	C
	WB	LT-TH-RT	A	A	A	A	A	A
	NB	LT-TH-RT	A	A	A	A	A	A
	SB	LT-TH-RT	A	A	A	A	A	A
Kaiulani Ave/ Kuhio Ave	EB	LT-TH	B	B	B	B	B	B
	WB	TH-RT	B	B	B	B	B	B
	NB	TH	C	C	C	C	C	C
		RT	C	C	C	C	C	C
Kanekapolei St/ Kuhio Ave	EB	LT	B	B	B	B	B	B
		TH-RT	B	B	B	B	B	B
	WB	LT-TH-RT	B	B	B	B	B	B
	NB	LT-TH	C	C	C	C	C	C
	SB	LT-TH-RT	C	C	C	C	C	C
Kanekapolei St/ Ala Wai Blvd	WB	LT-TH	A	A	A	A	A	A
	NB	LT	C	C	C	C	C	C

*DHT = Diamond Head Tower

Traffic operations with the proposed Princess Kaiulani renovation and Diamond Head Tower are expected, in general, to remain similar to Year 2012 conditions without the Diamond Head Tower during both peak periods. The eastbound approach of the intersection of Kaiulani Avenue with Prince Edward Street and Kanekapolei Street is expected to operate at LOS "B" and LOS "C" during the AM and PM peak periods, respectively, while the other approaches of the intersection are expected to operate at LOS "A" during both peak periods. At the intersection of

Kalakaua Avenue with Kaiulani Avenue, the eastbound left-turn traffic movement and the northbound approach is expected to operate at LOS "C" during both peak periods while the eastbound through and right-turn traffic movement is expected to operate at LOS "B" during both peak periods. The traffic movements at the other study intersection are expected to continue operating at levels of services similar to Year 2012 conditions without the proposed Diamond Head Tower.

Although Year 2012 conditions with the Princess Kaiulani renovation and Diamond Head Tower are expected to remain similar to conditions without the Diamond Head Tower, the new tower will be located in a densely developed area with a high volume of pedestrian and vehicular traffic. As such, a traffic management plan that is coordinated or combined with the management plans associated with other hotels in the vicinity is recommended for the proposed project to minimize conflicts with traffic associated with the new tower.

VI. RECOMMENDATIONS

A. With Princess Kaiulani Renovation

Based on the analysis of the traffic data, the following are the recommendations of this study associated with the implementation of the proposed renovation at the Princess Kaiulani Hotel:

1. Maintain sufficient sight distance for motorists to safely enter and exit all driveways for the Princess Kaiulani Hotel.

2. Provide adequate on-site loading and off-loading service areas at the Princess Kaiulani Hotel and prohibit off-site loading operations.

3. Provide adequate turn-around area for service, delivery, and refuse collection vehicles at the Princess Kaiulani Hotel to maneuver on the project site to avoid vehicle-reversing maneuvers onto City and County of Honolulu roadways.

4. Provide sufficient turning radii at all driveways for the Princess Kaiulani Hotel to avoid or minimize vehicle encroachments to oncoming traffic lanes.

5. Align the southern project driveway for the Princess Kaiulani Hotel along Kaiulani Avenue with Koa Avenue to minimize conflicts between turning vehicles.

6. Align the northern project driveway along for the Princess Kaiulani Hotel along Kaiulani Avenue with Prince Edward Street to minimize conflicts between turning vehicles.

7. If access to the parking structure for the Princess Kaiulani Hotel via the northern driveway connection is controlled (i.e., automatic gate, etc.), provide sufficient storage for entering vehicles.

8. Prepare a Traffic Management Plan (TMP) for the Princess Kaiulani Hotel that is coordinated or combined with the management plans associated with other hotels in the vicinity (i.e., Moana Surfrider Hotel). The TMP should include traffic circulation, parking, loading, and traffic demand management strategies.

9. Prepare a Construction Management Plan (CMP) for the Princess Kaiulani Hotel which includes discussions regarding the anticipated construction schedule and phasing, as well as, traffic circulation, traffic control, and parking during the construction period.

B. With Princess Kaiulani Renovation and Diamond Head Tower Development

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

1. Provide sufficient sight distance for motorists to safely enter and exit the driveway for the Diamond Head Tower.

2. Maintain adequate on-site loading and off-loading service areas at the Moana Surfrider Hotel for the Diamond Head Tower and prohibit off-site loading operations.

3. Maintain adequate turn-around area for service, delivery, and refuse collection vehicles to maneuver at the Moana Surfrider Hotel for the Diamond Head Tower to avoid vehicle-reversing maneuvers onto City and County of Honolulu roadways.

4. Provide sufficient turning radii at the driveway for the Diamond Head Tower to avoid or minimize vehicle encroachments to oncoming traffic lanes.

5. Align the driveway for the Diamond Head Tower along Kalakaua Avenue with Kaiulani Avenue to allow direct access to the Princess Kaiulani Hotel's garage for valet functions.

6. Prepare a Traffic Management Plan (TMP) for the Diamond Head Tower that is coordinated or combined with the management plans associated with other hotels in the vicinity (i.e., Moana Surfrider Hotel and Princess Kaiulani Hotel). The TMP should include traffic circulation, parking, loading, and traffic demand management strategies.

7. Prepare a Construction Management Plan (CMP) for the Diamond Head Tower which includes discussions regarding the anticipated construction schedule and phasing, as well as, traffic circulation, traffic control, and parking during the construction period.

VII. CONCLUSION

With the implementation of the aforementioned recommendations, the proposed Princess Kaiulani renovation is not expected to have a significant impact on traffic operations in the project vicinity. The trip generation characteristics of the proposed development are expected to be similar to or less than the existing uses despite the addition of a new tower and retail areas due to the reduction in the number of existing hotel rooms and demolition of an existing retail building. Although traffic conditions with the proposed renovation are expected to remain similar to without project conditions, a traffic management plan that is coordinated or combined with the management plans associated with other hotels in the vicinity (i.e., Moana Surfrider Hotel) is recommended to minimize conflicts between traffic associated with the hotel.

In addition to the modifications at the Princess Kaiulani Hotel, there are plans currently under consideration to demolish the diamond head wing of the Moana Surfrider Hotel and replace it with a new condominium/hotel currently referred to as the Diamond Head Tower. The proposed project would result in a reduction in the number of existing hotel rooms at the Moana Surfrider Hotel and construction of a new tower with its own access and amenities. Similar to the renovation at the Princess Kaiulani Hotel, the proposed tower is not expected to have a significant impact on traffic operations in the vicinity. However, a traffic management plan that is coordinated or combined with the management plans associated with other hotels in the vicinity is also recommended for the new tower to minimize conflicts with traffic associated with the hotel.

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96818

Counter:D4-3891
Counted:TO
Weather:Clear

File Name : KalKai PM 11-07
Site Code : 00000004
Start Date : 11/7/2007
Page No : 1

Groups Printed- Unshifted

	Southbound	Westbound	Northbound	Kalakaua Avenue Eastbound				
Start Time	App. Total	App. Total	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	0	0	0	97	270	0	367	367
03:15 PM	0	0	0	90	214	0	304	304
03:30 PM	0	0	0	111	257	0	368	368
03:45 PM	0	0	0	81	263	0	344	344
Total	0	0	0	379	1004	0	1383	1383
04:00 PM	0	0	0	101	270	0	371	371
04:15 PM	0	0	0	113	302	0	415	415
04:30 PM	0	0	0	90	321	0	411	411
04:45 PM	0	0	0	94	306	0	400	400
Total	0	0	0	398	1199	0	1597	1597
05:00 PM	0	0	0	73	335	0	408	408
05:15 PM	0	0	0	87	314	0	401	401
05:30 PM	0	0	0	94	291	0	385	385
05:45 PM	0	0	0	82	260	0	342	342
Total	0	0	0	336	1200	0	1536	1536
Grand Total	0	0	0	1113	3403	0	4516	4516
Apprch %				24.6	75.4	0		
Total %	0	0	0	24.6	75.4	0	100	

	Southbound	Westbound	Northbound	Kalakaua Avenue Eastbound				
Start Time	App. Total	App. Total	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1								
Peak Hour for Entire Intersection Begins at 04:15 PM								
04:15 PM	0	0	0	**113**	302	0	**415**	**415**
04:30 PM	0	0	0	90	321	0	411	411
04:45 PM	0	0	0	94	306	0	400	400
05:00 PM	0	0	0	73	**335**	0	408	408
Total Volume	0	0	0	370	1264	0	1634	1634
% App. Total				22.6	77.4	0		
PHF	.000	.000	.000	.819	.943	.000	.984	.984

Wilson Okamoto Corporation
1907 S. Beretania St., Suite 400
Honolulu, HI 96818

Counter:D4-3888
Counted:ER
Weather:Clear

File Name : KalKai PM
Site Code : 00000001
Start Date : 11/10/2007
Page No : 1

Groups Printed- Unshifted

	Southbound	Kalakaua Avenue Westbound				Kaiulani Avenue Northbound				Kalakaua Avenue Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	0	0	0	0	0	0	0	92	246	0	338	338
04:15 PM	0	0	0	0	0	0	0	0	0	90	254	0	344	344
04:30 PM	0	0	0	0	0	0	0	0	0	77	292	0	369	369
04:45 PM	0	0	0	0	0	0	0	0	0	93	254	0	347	347
Total	0	0	0	0	0	0	0	0	0	352	1046	0	1398	1398
05:00 PM	0	0	0	0	0	0	0	0	0	83	236	0	319	319
05:15 PM	0	0	0	0	0	0	0	0	0	77	255	0	332	332
05:30 PM	0	0	0	0	0	0	0	0	0	77	252	0	329	329
05:45 PM	0	0	0	0	0	0	0	0	0	92	258	0	350	350
Total	0	0	0	0	0	0	0	0	0	329	1001	0	1330	1330
06:00 PM	0	0	0	0	0	0	0	0	0	84	237	0	321	321
06:15 PM	0	0	0	0	0	0	0	0	0	73	221	0	294	294
06:30 PM	0	0	0	0	0	0	0	0	0	74	192	0	266	266
06:45 PM	0	0	0	0	0	0	0	0	0	68	229	0	297	297
Total	0	0	0	0	0	0	0	0	0	299	879	0	1178	1178
Grand Total	0	0	0	0	0	0	0	0	0	980	2926	0	3906	3906
Apprch %		0	0	0		0	0	0		25.1	74.9	0		
Total %	0	0	0	0	0	0	0	0	0	25.1	74.9	0	100	

	Southbound	Kalakaua Avenue Westbound				Kaiulani Avenue Northbound				Kalakaua Avenue Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 04:00 PM														
04:00 PM	0	0	0	0	0	0	0	0	0	92	246	0	338	338
04:15 PM	0	0	0	0	0	0	0	0	0	90	254	0	344	344
04:30 PM	0	0	0	0	0	0	0	0	0	77	**292**	0	**369**	**369**
04:45 PM	0	0	0	0	0	0	0	0	0	**93**	254	0	347	347
Total Volume	0	0	0	0	0	0	0	0	0	352	1046	0	1398	1398
% App. Total		0	0	0		0	0	0		25.2	74.8	0		
PHF	.000	.000	.000	.000	.000	.000	.000	.000	.000	.946	.896	.000	.947	.947

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter:D4-3889
Counted:ZW
Weather:Clear

File Name : KaiKoa PM
Site Code : 00000001
Start Date : 11/6/2007
Page No : 1

Groups Printed- Unshifted

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Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
03:00 PM	19	0	1	20	0	3	45	31	79	0	99
03:15 PM	13	0	2	15	0	2	38	25	65	0	80
03:30 PM	19	0	0	19	0	1	61	32	94	0	113
03:45 PM	36	0	2	38	0	6	78	26	110	0	148
Total	87	0	5	92	0	12	222	114	348	0	440
04:00 PM	34	0	1	35	0	4	57	25	86	0	121
04:15 PM	19	0	0	19	0	5	65	25	95	0	114
04:30 PM	21	0	5	26	0	1	62	24	87	0	113
04:45 PM	16	0	1	17	0	3	55	21	79	0	96
Total	90	0	7	97	0	13	239	95	347	0	444
05:00 PM	30	0	1	31	0	4	76	18	98	0	129
05:15 PM	30	0	2	32	0	3	65	22	90	0	122
05:30 PM	6	0	3	9	0	4	60	19	83	0	92
05:45 PM	20	0	5	25	0	4	48	20	72	0	97
Total	86	0	11	97	0	15	249	79	343	0	440
Grand Total	263	0	23	286	0	40	710	288	1038	0	1324
Apprch %	92	0	8			3.9	68.4	27.7			
Total %	19.9	0	1.7	21.6	0	3	53.6	21.8	78.4	0	

	Kaiulani Avenue Southbound				Westbound	Kaiulani Avenue Northbound				Eastbound	
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 03:30 PM											
03:30 PM	19	0	0	19	0	1	61	**32**	94	0	113
03:45 PM	**36**	0	**2**	**38**	0	**6**	**78**	26	**110**	0	**148**
04:00 PM	34	0	1	35	0	4	57	25	86	0	121
04:15 PM	19	0	0	19	0	5	65	25	95	0	114
Total Volume	108	0	3	111	0	16	261	108	385	0	496
% App. Total	97.3	0	2.7			4.2	67.8	28.1			
PHF	.750	.000	.375	.730	.000	.667	.837	.844	.875	.000	.838

WILSON OKAMOTO CORPORATION
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter:D4-3890
Counted:MK
Weather:Clear

File Name : KaiKoa PM
Site Code : 00000000
Start Date : 11/10/2007
Page No : 1

Groups Printed- Unshifted

	Kaiulani Avenue Southbound				Westbound	Kaiulani Avenue Northbound				Eastbound	
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
04:00 PM	40	0	0	40	0	0	61	28	89	0	129
04:15 PM	24	0	0	24	0	0	69	25	94	0	118
04:30 PM	29	0	0	29	0	0	48	26	74	0	103
04:45 PM	14	0	0	14	0	0	73	23	96	0	110
Total	107	0	0	107	0	0	251	102	353	0	460
05:00 PM	23	0	0	23	0	0	55	29	84	0	107
05:15 PM	22	0	0	22	0	0	63	15	78	0	100
05:30 PM	33	0	0	33	0	0	53	21	74	0	107
05:45 PM	31	0	0	31	0	0	78	21	99	0	130
Total	109	0	0	109	0	0	249	86	335	0	444
06:00 PM	28	0	0	28	0	0	58	24	82	0	110
06:15 PM	24	0	0	24	0	0	64	12	76	0	100
06:30 PM	15	0	0	15	0	0	60	19	79	0	94
06:45 PM	20	0	0	20	0	0	49	22	71	0	91
Total	87	0	0	87	0	0	231	77	308	0	395
Grand Total	303	0	0	303	0	0	731	265	996	0	1299
Apprch %	100	0	0			0	73.4	26.6			
Total %	23.3	0	0	23.3	0	0	56.3	20.4	76.7	0	

	Kaiulani Avenue Southbound				Westbound	Kaiulani Avenue Northbound				Eastbound	
Start Time	Left	Thru	Right	App. Total	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 04:00 PM											
04:00 PM	**40**	0	0	**40**	0	0	61	**28**	89	0	**129**
04:15 PM	24	0	0	24	0	0	69	25	94	0	118
04:30 PM	29	0	0	29	0	0	48	26	74	0	103
04:45 PM	14	0	0	14	0	0	**73**	23	**96**	0	110
Total Volume	107	0	0	107	0	0	251	102	353	0	460
% App. Total	100	0	0			0	71.1	28.9			
PHF	.669	.000	.000	.669	.000	.000	.860	.911	.919	.000	.891

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter:D4-3888
Counted:ER
Weather:Clear

File Name : KaiPri PM
Site Code : 00000002
Start Date : 11/6/2007
Page No : 1

Groups Printed- Unshifted

	Kanekapolei Street Southbound				Prince Edward Street Westbound				Kaiulani Avenue Northbound				Kaiulani Parking Garage Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	1	28	6	35	2	1	11	14	8	36	13	57	38	0	3	41	147
03:15 PM	0	19	7	26	2	0	21	23	4	41	4	49	40	0	4	44	142
03:30 PM	2	25	5	32	0	1	10	11	8	35	16	59	42	0	1	43	145
03:45 PM	1	39	8	48	3	1	12	16	9	39	21	69	46	0	2	48	181
Total	4	111	26	141	7	3	54	64	29	151	54	234	166	0	10	176	615
04:00 PM	4	27	11	42	6	0	14	20	12	37	14	63	45	0	5	50	175
04:15 PM	0	18	13	31	4	2	14	20	8	47	13	68	31	0	1	32	151
04:30 PM	1	26	6	33	4	0	12	16	11	36	12	59	33	0	4	37	145
04:45 PM	0	19	10	29	0	0	14	14	10	33	16	59	15	0	2	17	119
Total	5	90	40	135	14	2	54	70	41	153	55	249	124	0	12	136	590
05:00 PM	1	28	6	35	3	1	9	13	5	37	22	64	27	0	2	29	141
05:15 PM	2	26	5	33	4	0	17	21	17	34	12	63	25	0	1	26	143
05:30 PM	0	14	6	20	3	0	8	11	14	33	18	65	18	0	0	18	114
05:45 PM	1	23	11	35	4	1	7	12	6	35	19	60	21	0	2	23	130
Total	4	91	28	123	14	2	41	57	42	139	71	252	91	0	5	96	528
Grand Total	13	292	94	399	35	7	149	191	112	443	180	735	381	0	27	408	1733
Apprch %	3.3	73.2	23.6		18.3	3.7	78		15.2	60.3	24.5		93.4	0	6.6		
Total %	0.8	16.8	5.4	23	2	0.4	8.6	11	6.5	25.6	10.4	42.4	22	0	1.6	23.5	

	Kanekapolei Street Southbound				Prince Edward Street Westbound				Kaiulani Avenue Northbound				Kaiulani Parking Garage Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 03:30 PM																	
03:30 PM	2	25	5	32	0	1	10	11	8	35	16	59	42	0	1	43	145
03:45 PM	1	**39**	8	**48**	3	1	12	16	9	39	**21**	**69**	**46**	0	2	48	**181**
04:00 PM	**4**	27	11	42	**6**	0	**14**	**20**	**12**	37	14	63	45	0	**5**	**50**	175
04:15 PM	0	18	**13**	31	4	**2**	14	20	8	**47**	13	68	31	0	1	32	151
Total Volume	7	109	37	153	13	4	50	67	37	158	64	259	164	0	9	173	652
% App. Total	4.6	71.2	24.2		19.4	6	74.6		14.3	61	24.7		94.8	0	5.2		
PHF	.438	.699	.712	.797	.542	.500	.893	.838	.771	.840	.762	.938	.891	.000	.450	.865	.901

WILSON OKAMOTO CORPORATION
1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter:T-1841
Counted:EK
Weather:Clear

File Name : KaiPri PM 11-10
Site Code : 00000003
Start Date : 11/10/2007
Page No : 1

Groups Printed- Unshifted

	Kanekapolei Street Southbound				Prince Edward Street Westbound				Kaiulani Avenue Northbound				Kaiulani Parking Garage Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	4	0	1	5	0	0	4	4	7	11	0	18	10	8	3	21	48
04:15 PM	1	0	4	5	0	0	10	10	10	8	0	18	19	6	3	28	61
04:30 PM	1	0	8	9	2	0	5	7	3	8	0	11	11	0	1	12	39
04:45 PM	0	0	4	4	2	1	10	13	8	7	0	15	5	0	2	7	39
Total	6	0	17	23	4	1	29	34	28	34	0	62	45	14	9	68	187
05:00 PM	0	0	1	1	3	0	9	12	7	6	0	13	18	3	4	25	51
05:15 PM	5	0	5	10	0	1	14	15	6	12	0	18	10	1	0	11	54
05:30 PM	2	0	1	3	3	1	10	14	3	3	3	9	14	1	3	18	44
05:45 PM	1	0	1	2	5	0	11	16	13	7	0	20	10	0	1	11	49
Total	8	0	8	16	11	2	44	57	29	28	3	60	52	5	8	65	198
06:00 PM	0	0	7	7	6	0	10	16	4	9	0	13	17	4	2	23	59
06:15 PM	1	0	4	5	4	0	7	11	11	2	0	13	18	3	4	25	54
06:30 PM	1	0	2	3	1	2	6	9	5	11	0	16	11	1	1	13	41
06:45 PM	0	0	1	1	1	1	10	12	3	6	1	10	3	2	1	6	29
Total	2	0	14	16	12	3	33	48	23	28	1	52	49	10	8	67	183
Grand Total	16	0	39	55	27	6	106	139	80	90	4	174	146	29	25	200	568
Apprch %	29.1	0	70.9		19.4	4.3	76.3		46	51.7	2.3		73	14.5	12.5		
Total %	2.8	0	6.9	9.7	4.8	1.1	18.7	24.5	14.1	15.8	0.7	30.6	25.7	5.1	4.4	35.2	

	Kanekapolei Street Southbound				Prince Edward Street Westbound				Kaiulani Avenue Northbound				Kaiulani Parking Garage Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 05:15 PM																	
05:15 PM	**5**	0	5	**10**	0	**1**	**14**	15	6	**12**	0	18	10	1	0	11	54
05:30 PM	2	0	1	3	3	1	10	14	3	3	**3**	9	14	1	**3**	18	44
05:45 PM	**1**	0	1	2	5	0	11	**16**	**13**	7	0	**20**	**10**	0	1	11	49
06:00 PM	0	0	**7**	7	**6**	0	10	16	4	9	0	13	**17**	**4**	2	**23**	**59**
Total Volume	8	0	14	22	14	2	45	61	26	31	3	60	51	6	6	63	206
% App. Total	36.4	0	63.6		23	3.3	73.8		43.3	51.7	5		81	9.5	9.5		
PHF	.400	.000	.500	.550	.583	.500	.804	.953	.500	.646	.250	.750	.750	.375	.500	.685	.873

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter:D4-3890, D4-3891
Counted:TO, RY
Weather:Clear

File Name : KuhKan PM
Site Code : 00000003
Start Date : 11/6/2007
Page No : 1

Groups Printed- Unshifted

	Kanekapolei Street Southbound					Kuhio Avenue Westbound					Kanekapolei Street Northbound					Kuhio Avenue Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	13	23	10	87	133	4	65	5	51	125	21	54	0	118	193	23	126	12	58	219	670
03:15 PM	13	22	9	116	160	4	60	5	50	119	15	65	10	118	208	26	112	6	84	228	715
03:30 PM	18	22	7	72	119	5	65	2	48	120	21	62	0	118	201	22	133	13	66	234	674
03:45 PM	13	28	2	116	159	4	73	3	71	151	26	65	0	86	177	29	119	17	58	223	710
Total	57	95	28	391	571	17	263	15	220	515	83	246	10	440	779	100	490	48	266	904	2769
04:00 PM	13	23	7	104	147	7	77	3	52	139	24	70	0	132	226	35	127	16	59	237	749
04:15 PM	14	15	13	78	120	6	71	3	33	113	23	55	3	141	222	16	121	14	94	245	700
04:30 PM	20	20	5	96	141	1	83	2	70	156	22	56	0	114	192	22	133	16	65	236	725
04:45 PM	17	21	7	111	156	4	46	4	35	89	17	40	0	136	193	28	155	13	76	272	710
Total	64	79	32	389	564	18	277	12	190	497	86	221	3	523	833	101	536	59	294	990	2884
05:00 PM	17	16	11	115	159	6	67	8	64	145	22	51	2	128	203	36	149	13	102	300	807
05:15 PM	30	21	6	129	186	3	64	6	65	138	21	35	0	134	190	27	146	11	77	261	775
05:30 PM	22	10	11	137	180	4	63	5	78	150	15	44	0	133	192	28	126	12	131	297	819
05:45 PM	16	9	32	108	165	3	57	4	59	123	17	43	1	140	201	22	139	15	101	277	766
Total	85	56	60	489	690	16	251	23	266	556	75	173	3	535	786	113	560	51	411	1135	3167
Grand Total	206	230	120	1269	1825	51	791	50	676	1568	244	640	16	1498	2398	314	1586	158	971	3029	8820
Apprch %	11.3	12.6	6.6	69.5		3.3	50.4	3.2	43.1		10.2	26.7	0.7	62.5		10.4	52.4	5.2	32.1		
Total %	2.3	2.6	1.4	14.4	20.7	0.6	9	0.6	7.7	17.8	2.8	7.3	0.2	17	27.2	3.6	18	1.8	11	34.3	

	Kanekapolei Street Southbound					Kuhio Avenue Westbound					Kanekapolei Street Northbound					Kuhio Avenue Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**17**	**16**	**11**	**115**	**159**	6	67	8	64	145	22	**51**	**2**	128	**203**	**36**	**149**	13	102	**300**	807
05:15 PM	**30**	**21**	6	129	**186**	3	64	6	65	138	21	35	0	134	190	27	146	11	77	261	775
05:30 PM	22	10	11	**137**	180	4	63	5	**78**	**150**	15	44	0	133	192	28	126	12	**131**	297	**819**
05:45 PM	16	9	**32**	108	165	3	57	4	59	123	17	43	1	**140**	201	22	139	**15**	101	277	766
Total Volume	85	56	60	489	690	16	251	23	266	556	75	173	3	535	786	113	560	51	411	1135	3167
% App. Total	12.3	8.1	8.7	70.9		2.9	45.1	4.1	47.8		9.5	22	0.4	68.1		10	49.3	4.5	36.2		
PHF	.708	.667	.469	.892	.927	.667	.937	.719	.853	.927	.852	.848	.375	.955	.968	.785	.940	.850	.784	.946	.967

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter:D1-0768, D4-3891
Counted:TO, RY
Weather:Clear

File Name : KuhKan PM
Site Code : 00000004
Start Date : 11/10/2007
Page No : 1

Groups Printed- Unshifted

	Kanekapolei Street Southbound					Kuhio Avenue Westbound					Kanekapolei Street Northbound					Kuhio Avenue Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	26	25	10	98	159	7	80	5	58	150	21	81	0	124	226	25	109	13	59	206	741
04:15 PM	17	18	3	122	160	7	95	2	53	157	25	45	0	87	157	39	121	12	87	259	733
04:30 PM	18	14	9	124	165	6	71	8	51	136	16	34	1	121	172	24	101	6	67	198	671
04:45 PM	26	17	5	102	150	8	81	5	55	149	29	41	0	90	160	29	127	8	73	237	696
Total	87	74	27	446	634	28	327	20	217	592	91	201	1	422	715	117	458	39	286	900	2841
05:00 PM	12	9	10	102	133	6	84	10	76	176	23	42	0	110	175	30	114	5	95	244	728
05:15 PM	16	18	6	155	195	6	91	4	77	178	22	42	2	108	174	28	109	10	92	239	786
05:30 PM	14	21	14	128	177	7	76	11	77	171	26	41	0	114	181	33	138	22	102	295	824
05:45 PM	16	13	21	131	181	6	97	4	66	173	23	60	4	129	216	14	91	14	104	223	793
Total	58	61	51	516	686	25	348	29	296	698	94	185	6	461	746	105	452	51	393	1001	3131
06:00 PM	16	22	17	213	268	1	90	7	64	162	19	51	1	149	220	18	106	16	154	294	944
06:15 PM	12	20	16	149	197	3	85	5	75	168	31	45	1	175	252	33	130	20	112	295	912
06:30 PM	17	9	15	164	205	6	84	4	74	168	21	40	0	190	251	31	108	3	122	264	888
06:45 PM	8	13	14	211	246	2	99	3	100	204	31	27	12	119	189	16	114	19	99	248	887
Total	53	64	62	737	916	12	358	19	313	702	102	163	14	633	912	98	458	58	487	1101	3631
Grand Total	198	199	140	1699	2236	65	1033	68	826	1992	287	549	21	1516	2373	320	1368	148	1166	3002	9603
Apprch %	8.9	8.9	6.3	76		3.3	51.9	3.4	41.5		12.1	23.1	0.9	63.9		10.7	45.6	4.9	38.8		
Total %	2.1	2.1	1.5	17.7	23.3	0.7	10.8	0.7	8.6	20.7	3	5.7	0.2	15.8	24.7	3.3	14.2	1.5	12.1	31.3	

	Kanekapolei Street Southbound					Kuhio Avenue Westbound					Kanekapolei Street Northbound					Kuhio Avenue Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:00 PM																					
06:00 PM	**16**	22	17	213	268	1	90	**7**	64	162	19	**51**	1	149	220	18	106	16	**154**	294	**944**
06:15 PM	12	20	16	149	197	3	85	5	75	168	**31**	45	1	175	**252**	**33**	**130**	**20**	112	**295**	912
06:30 PM	**17**	9	15	164	205	**6**	84	4	74	168	21	40	0	**190**	251	31	108	3	122	264	888
06:45 PM	8	13	14	211	246	2	**99**	3	**100**	**204**	31	27	**12**	119	189	16	114	19	99	248	887
Total Volume	53	64	62	737	916	12	358	19	313	702	102	163	14	633	912	98	458	58	487	1101	3631
% App. Total	5.8	7	6.8	80.5		1.7	51	2.7	44.6		11.2	17.9	1.5	69.4		8.9	41.6	5.3	44.2		
PHF	.779	.727	.912	.865	.854	.500	.904	.679	.783	.860	.823	.799	.292	.833	.905	.742	.881	.725	.791	.933	.962

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter:D4-3889
Counted:ZW
Weather:Clear

File Name : KaiKuh PM
Site Code : 00000002
Start Date : 11/7/2007
Page No : 1

Groups Printed- Unshifted

	Southbound	Kuhio Avenue Westbound				Kaiulani Avenue Northbound				Kuhio Avenue Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
03:00 PM	0	0	86	7	93	0	5	22	27	10	116	0	126	246
03:15 PM	0	0	75	5	80	1	7	18	26	14	121	0	135	241
03:30 PM	0	1	55	9	65	1	12	10	23	9	142	0	151	239
03:45 PM	0	0	79	10	89	0	9	16	25	15	110	0	125	239
Total	0	1	295	31	327	2	33	66	101	48	489	0	537	965
04:00 PM	0	0	55	9	64	1	7	14	22	12	103	0	115	201
04:15 PM	0	0	84	3	87	0	6	16	22	9	148	0	157	266
04:30 PM	0	0	81	14	95	0	11	17	28	21	109	0	130	253
04:45 PM	0	0	84	5	89	0	3	10	13	13	118	0	131	233
Total	0	0	304	31	335	1	27	57	85	55	478	0	533	953
05:00 PM	0	0	79	9	88	0	8	8	16	14	146	0	160	264
05:15 PM	0	0	83	7	90	0	11	17	28	11	135	0	146	264
05:30 PM	0	0	90	13	103	0	14	14	28	15	118	0	133	264
05:45 PM	0	0	66	7	73	0	10	15	25	9	113	0	122	220
Total	0	0	318	36	354	0	43	54	97	49	512	0	561	1012
Grand Total	0	1	917	98	1016	3	103	177	283	152	1479	0	1631	2930
Apprch %		0.1	90.3	9.6		1.1	36.4	62.5		9.3	90.7	0		
Total %	0	0	31.3	3.3	34.7	0.1	3.5	6	9.7	5.2	50.5	0	55.7	

	Southbound	Kuhio Avenue Westbound				Kaiulani Avenue Northbound				Kuhio Avenue Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 04:45 PM														
04:45 PM	0	0	84	5	89	0	3	10	13	13	118	0	131	233
05:00 PM	0	0	79	9	88	0	8	8	16	14	**146**	0	**160**	**264**
05:15 PM	0	0	83	7	90	0	11	**17**	**28**	11	135	0	146	264
05:30 PM	0	0	**90**	**13**	**103**	0	**14**	14	28	**15**	118	0	133	264
Total Volume	0	0	336	34	370	0	36	49	85	53	517	0	570	1025
% App. Total		0	90.8	9.2		0	42.4	57.6		9.3	90.7	0		
PHF	.000	.000	.933	.654	.898	.000	.643	.721	.759	.883	.885	.000	.891	.971

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter:D4-3889
Counted:ZW
Weather:Clear

File Name : KaiKuh PM
Site Code : 00000002
Start Date : 11/10/2007
Page No : 1

Groups Printed- Unshifted

	Southbound	Kuhio Avenue Westbound				Kaiulani Avenue Northbound				Kuhio Avenue Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
04:00 PM	0	0	98	12	110	2	10	20	32	18	143	0	161	303
04:15 PM	0	0	99	12	111	0	6	14	20	14	93	0	107	238
04:30 PM	0	0	77	12	89	0	7	6	13	7	98	0	105	207
04:45 PM	0	0	90	8	98	0	4	7	11	13	113	0	126	235
Total	0	0	364	44	408	2	27	47	76	52	447	0	499	983
05:00 PM	0	0	93	8	101	0	6	8	14	18	104	0	122	237
05:15 PM	0	0	104	10	114	0	9	13	22	21	99	0	120	256
05:30 PM	0	0	95	13	108	0	7	2	9	22	125	0	147	264
05:45 PM	0	0	109	15	124	0	6	11	17	14	86	0	100	241
Total	0	0	401	46	447	0	28	34	62	75	414	0	489	998
06:00 PM	0	0	96	11	107	0	8	17	25	13	88	0	101	233
06:15 PM	0	0	78	13	91	0	3	6	9	20	91	0	111	211
06:30 PM	0	0	78	12	90	0	4	10	14	19	96	0	115	219
06:45 PM	0	0	93	11	104	0	3	4	7	9	84	0	93	204
Total	0	0	345	47	392	0	18	37	55	61	359	0	420	867
Grand Total	0	0	1110	137	1247	2	73	118	193	188	1220	0	1408	2848
Apprch %		0	89	11		1	37.8	61.1		13.4	86.6	0		
Total %	0	0	39	4.8	43.8	0.1	2.6	4.1	6.8	6.6	42.8	0	49.4	

	Southbound	Kuhio Avenue Westbound				Kaiulani Avenue Northbound				Kuhio Avenue Eastbound				
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1														
Peak Hour for Entire Intersection Begins at 05:00 PM														
05:00 PM	0	0	93	8	101	0	6	8	14	18	104	0	122	237
05:15 PM	0	0	104	10	114	0	**9**	**13**	**22**	21	99	0	120	256
05:30 PM	0	0	95	13	108	0	7	2	9	**22**	**125**	0	**147**	**264**
05:45 PM	0	0	**109**	**15**	**124**	0	6	11	17	14	86	0	100	241
Total Volume	0	0	401	46	447	0	28	34	62	75	414	0	489	998
% App. Total		0	89.7	10.3		0	45.2	54.8		15.3	84.7	0		
PHF	.000	.000	.920	.767	.901	.000	.778	.654	.705	.852	.828	.000	.832	.945

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter:D4-3888
Counted:ER
Weather:Clear

File Name : KanWai PM
Site Code : 00000003
Start Date : 11/7/2007
Page No : 1

Groups Printed- Unshifted

	Southbound	Ala Wai Blvd Westbound				Kanekapolei Avenue Northbound				Eastbound	
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
03:00 PM	0	30	344	0	374	80	0	0	80	0	454
03:15 PM	0	36	314	0	350	140	0	0	140	0	490
03:30 PM	0	48	351	0	399	86	0	0	86	0	485
03:45 PM	0	39	364	0	403	104	0	0	104	0	507
Total	0	153	1373	0	1526	410	0	0	410	0	1936
04:00 PM	0	33	419	0	452	125	0	0	125	0	577
04:15 PM	0	42	356	0	398	87	0	0	87	0	485
04:30 PM	0	30	366	0	396	80	0	0	80	0	476
04:45 PM	0	38	349	0	387	63	0	0	63	0	450
Total	0	143	1490	0	1633	355	0	0	355	0	1988
05:00 PM	0	42	344	0	386	67	0	0	67	0	453
05:15 PM	0	37	346	0	383	75	0	0	75	0	458
05:30 PM	0	37	375	0	412	62	0	0	62	0	474
05:45 PM	0	49	346	0	395	79	0	0	79	0	474
Total	0	165	1411	0	1576	283	0	0	283	0	1859
Grand Total	0	461	4274	0	4735	1048	0	0	1048	0	5783
Apprch %		9.7	90.3	0		100	0	0			
Total %	0	8	73.9	0	81.9	18.1	0	0	18.1	0	

	Southbound	Ala Wai Blvd Westbound				Kanekapolei Avenue Northbound				Eastbound	
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 03:15 PM											
03:15 PM	0	36	314	0	350	**140**	0	0	**140**	0	490
03:30 PM	0	**48**	351	0	399	86	0	0	86	0	485
03:45 PM	0	39	364	0	403	104	0	0	104	0	507
04:00 PM	0	33	**419**	0	**452**	125	0	0	125	0	**577**
Total Volume	0	156	1448	0	1604	455	0	0	455	0	2059
% App. Total		9.7	90.3	0		100	0	0			
PHF	.000	.813	.864	.000	.887	.813	.000	.000	.813	.000	.892

WILSON OKAMOTO CORPORATION

1907 S. Beretania Street, Suite 400
Honolulu, HI 96826

Counter:D1-0526
Counted:SD
Weather:Clear

File Name : KanWai PM
Site Code : 00000004
Start Date : 11/10/2007
Page No : 1

Groups Printed- Unshifted

	Southbound	Ala Wai Blvd Westbound				Kanekapolei Street Northbound				Eastbound	
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
04:00 PM	0	52	389	0	441	129	0	0	129	0	570
04:15 PM	0	36	369	0	405	80	0	0	80	0	485
04:30 PM	0	49	356	0	405	66	0	0	66	0	471
04:45 PM	0	35	344	0	379	74	0	0	74	0	453
Total	0	172	1458	0	1630	349	0	0	349	0	1979
05:00 PM	0	30	314	0	344	80	0	0	80	0	424
05:15 PM	0	37	303	0	340	68	0	0	68	0	408
05:30 PM	0	45	307	0	352	78	0	0	78	0	430
05:45 PM	0	41	315	0	356	75	0	0	75	0	431
Total	0	153	1239	0	1392	301	0	0	301	0	1693
06:00 PM	0	45	300	0	345	69	0	0	69	0	414
06:15 PM	0	42	321	0	363	71	0	0	71	0	434
06:30 PM	0	26	286	0	312	62	0	0	62	0	374
06:45 PM	0	30	255	0	285	43	0	0	43	0	328
Total	0	143	1162	0	1305	245	0	0	245	0	1550
Grand Total	0	468	3859	0	4327	895	0	0	895	0	5222
Apprch %		10.8	89.2	0		100	0	0			
Total %	0	9	73.9	0	82.9	17.1	0	0	17.1	0	

	Southbound	Ala Wai Blvd Westbound				Kanekapolei Street Northbound				Eastbound	
Start Time	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1											
Peak Hour for Entire Intersection Begins at 04:00 PM											
04:00 PM	0	**52**	**389**	0	**441**	**129**	0	0	**129**	0	**570**
04:15 PM	0	36	369	0	405	80	0	0	80	0	485
04:30 PM	0	49	356	0	405	66	0	0	66	0	471
04:45 PM	0	35	344	0	379	74	0	0	74	0	453
Total Volume	0	172	1458	0	1630	349	0	0	349	0	1979
% App. Total		10.6	89.4	0		100	0	0			
PHF	.000	.827	.937	.000	.924	.676	.000	.000	.676	.000	.868

WILSON OKAMOTO CORPORATION
1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-5676
Counted:KK
Weather:Clear

File Name : Kai PK Valet PM
Site Code : 00000001
Start Date : 7/31/2008
Page No : 1

Groups Printed- Unshifted

	Kaiulani Avenue Southbound					Koa Avenue Westbound					Kaiulani Avenue Northbound					PK Valet Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:00 PM	22	0	0	0	22	0	0	0	99	99	5	41	19	58	123	6	0	0	118	124	368
03:15 PM	31	0	5	0	36	0	0	0	65	65	4	44	15	76	139	4	0	0	98	102	342
03:30 PM	25	0	8	0	33	0	0	0	53	53	5	53	22	42	122	9	0	0	100	109	317
03:45 PM	23	0	5	0	28	0	0	0	83	83	2	58	25	50	135	8	0	0	80	88	334
Total	101	0	18	0	119	0	0	0	300	300	16	196	81	226	519	27	0	0	396	423	1361
04:00 PM	27	0	9	0	36	0	0	0	74	74	2	57	27	83	169	6	0	0	111	117	396
04:15 PM	21	0	2	0	23	0	0	0	67	67	6	45	33	85	169	10	0	0	82	92	351
04:30 PM	24	0	6	0	30	0	0	0	71	71	5	68	22	47	142	9	0	0	99	108	351
04:45 PM	19	0	4	0	23	0	0	0	109	109	2	59	31	59	151	5	0	0	110	115	398
Total	91	0	21	0	112	0	0	0	321	321	15	229	113	274	631	30	0	0	402	432	1496
05:00 PM	21	0	4	0	25	0	0	0	97	97	3	69	26	88	186	6	0	0	139	145	453
05:15 PM	29	0	5	0	34	0	0	0	98	98	4	76	25	67	172	8	0	0	83	91	395
05:30 PM	35	0	6	0	41	0	0	0	81	81	1	65	28	56	150	6	0	0	155	161	433
05:45 PM	27	0	6	0	33	0	0	0	119	119	4	63	25	63	155	10	0	0	132	142	449
Total	112	0	21	0	133	0	0	0	395	395	12	273	104	274	663	30	0	0	509	539	1730
Grand Total	304	0	60	0	364	0	0	0	1016	1016	43	698	298	774	1813	87	0	0	1307	1394	4587
Apprch %	83.5	0	16.5	0		0	0	0	100		2.4	38.5	16.4	42.7		6.2	0	0	93.8		
Total %	6.6	0	1.3	0	7.9	0	0	0	22.1	22.1	0.9	15.2	6.5	16.9	39.5	1.9	0	0	28.5	30.4	

	Kaiulani Avenue Southbound					Koa Avenue Westbound					Kaiulani Avenue Northbound					PK Valet Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	21	0	4	0	25	0	0	0	97	97	3	69	26	**88**	**186**	6	0	0	139	145	**453**
05:15 PM	29	0	5	0	34	0	0	0	98	98	**4**	**76**	25	67	172	8	0	0	83	91	395
05:30 PM	**35**	0	**6**	0	**41**	0	0	0	81	81	1	65	**28**	56	150	6	0	0	**155**	**161**	433
05:45 PM	27	0	6	0	33	0	0	0	**119**	**119**	4	63	25	63	155	**10**	0	0	132	142	449
Total Volume	112	0	21	0	133	0	0	0	395	395	12	273	104	274	663	30	0	0	509	539	1730
% App. Total	84.2	0	15.8	0		0	0	0	100		1.8	41.2	15.7	41.3		5.6	0	0	94.4		
PHF	.800	.000	.875	.000	.811	.000	.000	.000	.830	.830	.750	.898	.929	.778	.891	.750	.000	.000	.821	.837	.955

Thursday, July 31, 2008
Moana Valet

	Valet	
	Enter	Exit
3:00	3	4
3:05	2	3
3:10	4	5
3:15	5	3
3:20	4	2
3:25	3	3
3:30	3	1
3:35	2	6
3:40	3	1
3:45	1	2
3:50	3	3
3:55	5	0
4:00	0	2
4:05	4	4
4:10	0	2
4:15	7	2
4:20	0	5
4:25	6	3
4:30	2	6
4:35	4	3
4:40	5	2
4:45	2	5
4:50	6	7
4:55	3	3
5:00	3	2
5:05	4	1
5:10	2	2
5:15	0	5
5:20	2	0
5:25	4	3
5:30	6	6
5:35	5	5
5:40	3	3
5:45	2	3
5:50	2	3
5:55	3	2

WILSON OKAMOTO CORPORATION
1907 S. Beretania Street Suite 400
Honolulu, Hi 96826

Counter:D4-5676
Counted:AN
Weather:Clear

File Name : Kai PK Valet PM
Site Code : 00000001
Start Date : 8/2/2008
Page No : 1

Groups Printed- Unshifted

	Kaiulani Avenue Southbound					Koa Avenue Westbound					Kaiulani Avenue Northbound					PK Valet Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
04:00 PM	35	0	3	0	38	0	0	0	166	166	11	77	36	107	231	12	0	0	101	113	548
04:15 PM	34	0	5	0	39	0	0	0	119	119	7	84	27	61	179	14	0	0	81	95	432
04:30 PM	36	0	7	0	43	0	0	0	150	150	2	80	20	94	196	6	0	0	64	70	459
04:45 PM	29	0	3	0	32	0	0	0	160	160	5	63	35	97	200	10	0	0	198	208	600
Total	134	0	18	0	152	0	0	0	595	595	25	304	118	359	806	42	0	0	444	486	2039
05:00 PM	35	0	6	0	41	0	0	0	176	176	7	78	30	75	190	13	0	0	161	174	581
05:15 PM	44	0	8	0	52	0	0	0	154	154	6	58	23	115	202	12	0	0	158	170	578
05:30 PM	29	0	8	0	37	0	0	0	210	210	7	56	27	80	170	17	0	0	117	134	551
05:45 PM	39	0	6	0	45	0	0	0	226	226	7	69	29	108	213	13	0	0	182	195	679
Total	147	0	28	0	175	0	0	0	766	766	27	261	109	378	775	55	0	0	618	673	2389
06:00 PM	30	0	1	0	31	0	0	0	233	233	10	79	25	106	220	9	0	0	161	170	654
06:15 PM	30	0	4	0	34	0	0	0	305	305	4	62	33	156	255	10	0	0	237	247	841
06:30 PM	29	0	4	0	33	0	0	0	228	228	4	67	26	120	217	7	0	0	187	194	672
06:45 PM	27	0	1	0	28	0	0	0	291	291	14	61	22	100	197	13	0	0	191	204	720
Total	116	0	10	0	126	0	0	0	1057	1057	32	269	106	482	889	39	0	0	776	815	2887
Grand Total	397	0	56	0	453	0	0	0	2418	2418	84	834	333	1219	2470	136	0	0	1838	1974	7315
Apprch %	87.6	0	12.4	0		0	0	0	100		3.4	33.8	13.5	49.4		6.9	0	0	93.1		
Total %	5.4	0	0.8	0	6.2	0	0	0	33.1	33.1	1.1	11.4	4.6	16.7	33.8	1.9	0	0	25.1	27	

	Kaiulani Avenue Southbound					Koa Avenue Westbound					Kaiulani Avenue Northbound					PK Valet Eastbound					
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 06:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 06:00 PM																					
06:00 PM	**30**	0	1	0	31	0	0	0	233	233	10	**79**	25	106	220	9	0	0	161	170	654
06:15 PM	30	0	**4**	0	**34**	0	0	0	**305**	**305**	4	62	**33**	**156**	**255**	**10**	0	0	**237**	**247**	**841**
06:30 PM	29	0	4	0	33	0	0	0	228	228	4	67	26	120	217	7	0	0	187	194	672
06:45 PM	27	0	1	0	28	0	0	0	291	291	**14**	61	22	100	197	**13**	0	0	191	204	720
Total Volume	116	0	10	0	126	0	0	0	1057	1057	32	269	106	482	889	39	0	0	776	815	2887
% App. Total	92.1	0	7.9	0		0	0	0	100		3.6	30.3	11.9	54.2		4.8	0	0	95.2		
PHF	.967	.000	.625	.000	.926	.000	.000	.000	.866	.866	.571	.851	.803	.772	.872	.750	.000	.000	.819	.825	.858

Saturday, August 02, 2008
Moana Valet

	Valet	
	Enter	Exit
4:00	5	2
4:05	6	2
4:10	5	10
4:15	5	4
4:20	5	6
4:25	4	4
4:30	5	2
4:35	5	8
4:40	5	4
4:45	6	3
4:50	7	6
4:55	5	2
5:00	1	4
5:05	7	8
5:10	5	2
5:15	2	4
5:20	1	4
5:25	10	5
5:30	3	7
5:35	7	6
5:40	4	5
5:45	3	4
5:50	4	3
5:55	9	5
6:00	2	6
6:05	3	2
6:10	1	3
6:15	8	4
6:20	2	4
6:25	6	6
6:30	2	3
6:35	7	5
6:40	2	4
6:45	2	4
6:50	2	3
6:55	4	3

Saturday, August 23, 2008
Moana Valet

	Valet	
	Enter	Exit
2:00	1	3
2:05	2	2
2:10	4	4
2:15	2	3
2:20	5	4
2:25	3	1
2:30	3	3
2:35	2	3
2:40	3	1
2:45	7	5
2:50	3	5
2:55	6	3
3:00	1	4
3:05	4	6
3:10	4	1
3:15	8	5
3:20	3	4
3:25	3	4
3:30	6	5
3:35	4	2
3:40	4	5
3:45	4	3
3:50	5	2
3:55	2	5
4:00	7	3
4:05	5	3
4:10	5	4
4:15	4	5
4:20	4	6
4:25	2	3
4:30	7	7
4:35	4	5
4:40	5	3
4:45	4	8
4:50	1	3
4:55	3	3
5:00	9	5
5:05	6	5
5:10	7	4
5:15	2	6
5:20	4	5
5:25	5	4
5:30	4	4
5:35	6	3
5:40	2	4
5:45	4	6
5:50	2	2
5:55	2	2

APPENDIX B

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

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

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

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

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

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

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

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

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

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

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

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

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

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

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

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

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

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

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

APPENDIX C

CAPACITY ANALYSIS CALCULATIONS
EXISTING PEAK HOUR TRAFFIC ANALYSIS

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Weekday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: Koa Ave
North/South Street: Kaiulani Ave
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	16	261	94	97		16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.75		0.75
Hourly Flow Rate, HFR	17	283	102	129		21
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						No
Lanes	0	2	0	1		1
Configuration		LT	TR	L		R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume						
Peak Hour Factor, PHF						
Hourly Flow Rate, HFR						
Percent Heavy Vehicles						
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes						
Configuration						

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	L						
v (vph)	17	129						
C(m) (vph)	1595	1173						
v/c	0.01	0.11						
95% queue length	0.03	0.37						
Control Delay	7.3	8.4						
LOS	A	A						
Approach Delay								
Approach LOS								

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Saturday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: Koa Ave
North/South Street: Kaiulani Ave
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	255	105	112		18
Peak-Hour Factor, PHF	0.92	0.92	1.00	0.67		0.67
Hourly Flow Rate, HFR	27	277	105	167		26
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	0	2	0	1		1
Configuration	LT		TR	L		R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume						
Peak Hour Factor, PHF						
Hourly Flow Rate, HFR						
Percent Heavy Vehicles						
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes						
Configuration						

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	L						
v (vph)	27	167						
C(m) (vph)	1588	1176						
v/c	0.02	0.14						
95% queue length	0.05	0.50						
Control Delay	7.3	8.6						
LOS	A	A						
Approach Delay								
Approach LOS								

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Weekday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: Prince Edwards
North/South Street: Kaiulani/Kanekapolei
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	38	161	62	3	89	39
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91
Hourly Flow Rate, HFR	41	174	67	3	97	42
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	2	0	0	2	0
Configuration		LT	TR		LT	TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10	3	48	88	17	14
Peak Hour Factor, PHF	0.79	0.79	0.79	0.78	0.78	0.78
Hourly Flow Rate, HFR	12	3	60	112	21	17
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT		LTR			LTR	
v (vph)	41	3		75			150	
C(m) (vph)	1442	1323		807			591	
v/c	0.03	0.00		0.09			0.25	
95% queue length	0.09	0.01		0.31			1.02	
Control Delay	7.6	7.7		9.9			13.2	
LOS	A	A		A			B	
Approach Delay				9.9			13.2	
Approach LOS				A			B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Saturday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Existing
Project ID:
East/West Street: Prince Edwards
North/South Street: Kaiulani/Kanekapolei
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	32	191	32	6	110	17
Peak-Hour Factor, PHF	0.86	0.86	0.86	0.77	0.77	0.77
Hourly Flow Rate, HFR	37	222	37	7	142	22
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	2	0	0	2	0
Configuration	LT	TR		LT	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	1	29	74	42	16
Peak Hour Factor, PHF	0.65	0.65	0.65	0.61	0.61	0.61
Hourly Flow Rate, HFR	6	1	44	121	68	26
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT		LTR			LTR	
v (vph)	37	7		51			215	
C(m) (vph)	1412	1303		795			535	
v/c	0.03	0.01		0.06			0.40	
95% queue length	0.08	0.02		0.21			1.99	
Control Delay	7.6	7.8		9.8			16.2	
LOS	A	A		A			C	
Approach Delay				9.8			16.2	
Approach LOS				A			C	

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Weekday PM Peak
Project ID:
E/W St: Kuhio Ave

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

N/S St: Kaiulani Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	1	1	0	0	0
LGConfig		LT			TR			T	R			
Volume	59	543			312	31		31	58			
Lane Width		12.0			12.0			12.0	12.0			
RTOR Vol						3			6			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
WB Left					SB Left			
Thru	A				Thru			
Right	A				Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0				30.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1719	3094	0.39	0.56	11.5	B	11.5	B
Westbound								
TR	1946	3503	0.18	0.56	9.9	A	9.9	A
Northbound								
T	621	1863	0.07	0.33	20.5	C	20.9	C
R	528	1583	0.14	0.33	21.1	C		
Southbound								

Intersection Delay = 12.0 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Saturday PM Peak
Project ID:
E/W St: Kuhio Ave

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

N/S St: Kaiulani Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	1	1	0	0	0
LGConfig		LT			TR			T	R			
Volume	54	468			369	44		29	51			
Lane Width		12.0			12.0			12.0	12.0			
RTOR Vol						4			5			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
WB Left					SB Left			
Thru	A				Thru			
Right	A				Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1679	3023	0.40	0.56	11.6	B	11.6	B
Westbound								
TR	1942	3495	0.23	0.56	10.2	B	10.2	B
Northbound								
T	621	1863	0.08	0.33	20.6	C	20.9	C
R	528	1583	0.15	0.33	21.2	C		
Southbound								

Intersection Delay = 12.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Weekday PM Peak
Project ID:
E/W St: Kuhio Ave

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

N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	0	2	0	0	2	0	0	2	0
LGConfig	L	TR			LTR			LT			LTR	
Volume	102	537	51	15	279	18	85	205		65	65	36
Lane Width	12.0	12.0			12.0			12.0			12.0	
RTOR Vol			5			2						4

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right				
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	50.0					30.0			
Yellow	4.0					4.0			
All Red	1.0					1.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	560	1008	0.20	0.56	10.2	B		
TR	1947	3505	0.33	0.56	11.0	B	10.9	B
Westbound								
LTR	1792	3225	0.20	0.56	10.0+	B	10.0+	B
Northbound								
LT	954	2863	0.33	0.33	22.7	C	22.7	C
Southbound								
LTR	854	2563	0.19	0.33	21.5	C	21.5	C

Intersection Delay = 14.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Saturday PM Peak
Project ID:
E/W St: Kuhio Ave

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

N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	0	2	0	0	2	0	0	2	0
LGConfig	L	TR			LTR			LT		DefL	TR	
Volume	117	439	37	26	323	20	91	203		83	70	27
Lane Width	12.0	12.0			12.0			12.0		12.0	12.0	
RTOR Vol			4			2						3

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right			
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0				30.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	527	948	0.25	0.56	10.6	B		
TR	1950	3510	0.27	0.56	10.5	B	10.5	B
Westbound								
LTR	1753	3156	0.23	0.56	10.3	B	10.3	B
Northbound								
LT	961	2882	0.42	0.33	23.6	C	23.6	C
Southbound								
DefL	285	856	0.38	0.33	23.7	C		
TR	597	1792	0.20	0.33	21.6	C	22.6	C

Intersection Delay = 15.2 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Weekday PM Peak
Project ID:
E/W St: Ala Wai Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Existing
N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	3	0	2	0	0	0	0	0
LGConfig					LT		L					
Volume				152	1415		297					
Lane Width					12.0		12.0					
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left					NB Left	A			
Thru					Thru				
Right					Right				
Peds					Peds				
WB Left		A			SB Left				
Thru		A			Thru				
Right					Right				
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green		45.0				15.0			
Yellow		4.0				4.0			
All Red		1.0				1.0			

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LT	3246	5050	0.49	0.64	6.7	A	6.7	A
Northbound								
L	737	3437	0.47	0.21	24.5	C		
							24.5	C
Southbound								

Intersection Delay = 9.9 (sec/veh) Intersection LOS = A

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Saturday PM Peak
Project ID:
E/W St: Ala Wai Blvd

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

N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	3	0	2	0	0	0	0	0
LGConfig					LT		L					
Volume				172	1458		349					
Lane Width					12.0		12.0					
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	A		
Thru					Thru			
Right					Right			
Peds					Peds			
WB Left		A			SB Left			
Thru		A			Thru			
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		45.0				15.0		
Yellow		4.0				4.0		
All Red		1.0				1.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LT	3244	5047	0.55	0.64	7.1	A	7.1	A
Northbound								
L	737	3437	0.70	0.21	28.3	C		
							28.3	C
Southbound								

Intersection Delay = 11.8 (sec/veh) Intersection LOS = B

APPENDIX D

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2012 PEAK HOUR TRAFFIC
ANALYSIS WITHOUT PROJECT

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Weekday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/out project
Project ID:
East/West Street: Koa Ave
North/South Street: Kaiulani Ave
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	16	261	94	97		16
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.75		0.75
Hourly Flow Rate, HFR	17	283	102	129		21
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						No
Lanes	0	2	0	1		1
Configuration		LT	TR	L		R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume						
Peak Hour Factor, PHF						
Hourly Flow Rate, HFR						
Percent Heavy Vehicles						
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes						
Configuration						

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	L						
v (vph)	17	129						
C(m) (vph)	1595	1173						
v/c	0.01	0.11						
95% queue length	0.03	0.37						
Control Delay	7.3	8.4						
LOS	A	A						
Approach Delay								
Approach LOS								

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Saturday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/out project
Project ID:
East/West Street: Koa Ave
North/South Street: Kaiulani Ave
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	255	105	112		18
Peak-Hour Factor, PHF	0.92	0.92	1.00	0.67		0.67
Hourly Flow Rate, HFR	27	277	105	167		26
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						No
Lanes	0	2	0	1		1
Configuration	LT		TR	L		R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume						
Peak Hour Factor, PHF						
Hourly Flow Rate, HFR						
Percent Heavy Vehicles						
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes						
Configuration						

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	L						
v (vph)	27	167						
C(m) (vph)	1588	1176						
v/c	0.02	0.14						
95% queue length	0.05	0.50						
Control Delay	7.3	8.6						
LOS	A	A						
Approach Delay								
Approach LOS								

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Weekday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/out project
Project ID:
East/West Street: Prince Edwards
North/South Street: Kaiulani/Kanekapolei
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	38	161	62	3	89	39
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91
Hourly Flow Rate, HFR	41	174	67	3	97	42
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	2	0	0	2	0
Configuration		LT	TR		LT	TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10	3	48	88	17	14
Peak Hour Factor, PHF	0.79	0.79	0.79	0.78	0.78	0.78
Hourly Flow Rate, HFR	12	3	60	112	21	17
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No	/		No	/
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT		LTR			LTR	
v (vph)	41	3		75			150	
C(m) (vph)	1442	1323		807			591	
v/c	0.03	0.00		0.09			0.25	
95% queue length	0.09	0.01		0.31			1.02	
Control Delay	7.6	7.7		9.9			13.2	
LOS	A	A		A			B	
Approach Delay				9.9			13.2	
Approach LOS				A			B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Saturday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/out project
Project ID:
East/West Street: Prince Edwards
North/South Street: Kaiulani/Kanekapolei
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	32	191	32	6	110	17
Peak-Hour Factor, PHF	0.86	0.86	0.86	0.77	0.77	0.77
Hourly Flow Rate, HFR	37	222	37	7	142	22
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	2	0	0	2	0
Configuration		LT	TR		LT	TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	1	29	74	42	16
Peak Hour Factor, PHF	0.65	0.65	0.65	0.61	0.61	0.61
Hourly Flow Rate, HFR	6	1	44	121	68	26
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT		LTR			LTR	
v (vph)	37	7		51			215	
C(m) (vph)	1412	1303		795			535	
v/c	0.03	0.01		0.06			0.40	
95% queue length	0.08	0.02		0.21			1.99	
Control Delay	7.6	7.8		9.8			16.2	
LOS	A	A		A			C	
Approach Delay				9.8			16.2	
Approach LOS				A			C	

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Weekday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/out project

N/S St: Kaiulani Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	1	1	0	0	0
LGConfig		LT			TR			T	R			
Volume	59	597			343	31		31	58			
Lane Width		12.0			12.0			12.0	12.0			
RTOR Vol						3			6			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
WB Left					SB Left			
Thru	A				Thru			
Right	A				Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1720	3096	0.42	0.56	11.8	B	11.8	B
Westbound								
TR	1948	3507	0.20	0.56	10.1	B	10.1	B
Northbound								
T	621	1863	0.07	0.33	20.5	C	20.9	C
R	528	1583	0.14	0.33	21.1	C		
Southbound								

Intersection Delay = 12.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Saturday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/out project

N/S St: Kaiulani Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	1	1	0	0	0
LGConfig		LT			TR			T	R			
Volume	54	515			406	44		29	51			
Lane Width		12.0			12.0			12.0	12.0			
RTOR Vol						4			5			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
WB Left					SB Left			
Thru	A				Thru			
Right	A				Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1679	3022	0.44	0.56	12.0	B	12.0	B
Westbound								
TR	1944	3499	0.25	0.56	10.4	B	10.4	B
Northbound								
T	621	1863	0.08	0.33	20.6	C	20.9	C
R	528	1583	0.15	0.33	21.2	C		
Southbound								

Intersection Delay = 12.2 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Weekday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/out project

N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	0	2	0	0	2	0	0	2	0
LGConfig	L	TR			LTR			LT			LTR	
Volume	102	591	51	15	307	18	85	205		65	65	36
Lane Width	12.0	12.0			12.0			12.0			12.0	
RTOR Vol			5			2						4

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right			
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	543	977	0.21	0.56	10.2	B		
TR	1949	3508	0.36	0.56	11.3	B	11.1	B
Westbound								
LTR	1792	3225	0.21	0.56	10.2	B	10.2	B
Northbound								
LT	954	2863	0.33	0.33	22.7	C	22.7	C
Southbound								
LTR	854	2563	0.19	0.33	21.5	C	21.5	C

Intersection Delay = 14.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Saturday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/out project

N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	0	2	0	0	2	0	0	2	0
LGConfig	L	TR			LTR			LT		DefL	TR	
Volume	117	483	37	26	355	20	91	203		83	70	27
Lane Width	12.0	12.0			12.0			12.0		12.0	12.0	
RTOR Vol			4			2						3

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left A			
Thru	A				Thru A			
Right	A				Right			
Peds					Peds			
WB Left	A				SB Left A			
Thru	A				Thru A			
Right	A				Right A			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0				30.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	503	906	0.26	0.56	10.7	B		
TR	1952	3513	0.30	0.56	10.7	B	10.7	B
Westbound								
LTR	1753	3155	0.25	0.56	10.4	B	10.4	B
Northbound								
LT	961	2882	0.42	0.33	23.6	C	23.6	C
Southbound								
DefL	285	856	0.38	0.33	23.7	C		
TR	597	1792	0.20	0.33	21.6	C	22.6	C

Intersection Delay = 15.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Weekday PM Peak
Project ID:
E/W St: Ala Wai Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/out project

N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	3	0	2	0	0	0	0	0
LGConfig					LT		L					
Volume				152	1557		297					
Lane Width					12.0		12.0					
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left					NB Left	A			
Thru					Thru				
Right					Right				
Peds					Peds				
WB Left		A			SB Left				
Thru		A			Thru				
Right					Right				
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green		45.0				15.0			
Yellow		4.0				4.0			
All Red		1.0				1.0			

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LT	3248	5052	0.54	0.64	7.0	A	7.0	A
Northbound								
L	737	3437	0.47	0.21	24.5	C		
							24.5	C
Southbound								

Intersection Delay = 9.9 (sec/veh) Intersection LOS = A

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Saturday PM Peak
Project ID:
E/W St: Ala Wai Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/out project

N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	3	0	2	0	0	0	0	0
LGConfig					LT		L					
Volume				172	1604		349					
Lane Width					12.0		12.0					
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left					NB	Left	A			
	Thru						Thru				
	Right						Right				
	Peds						Peds				
WB	Left		A			SB	Left				
	Thru		A				Thru				
	Right						Right				
	Peds						Peds				
NB	Right					EB	Right				
SB	Right					WB	Right				
Green			45.0					15.0			
Yellow			4.0					4.0			
All Red			1.0					1.0			

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LT	3246	5050	0.59	0.64	7.5	A	7.5	A
Northbound								
L	737	3437	0.70	0.21	28.3	C	28.3	C
Southbound								

Intersection Delay = 11.9 (sec/veh) Intersection LOS = B

APPENDIX E

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2012 PEAK HOUR TRAFFIC
ANALYSIS WITH PROJECT

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst:
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Weekday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/ project
Project ID:
East/West Street: Koa Ave
North/South Street: Kaiulani Ave
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	16	229	94	97		2
Peak-Hour Factor, PHF	0.92	0.92	1.00	0.75		0.75
Hourly Flow Rate, HFR	17	248	94	129		2
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	0	2	0	1		1
Configuration		LT	TR	L		R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				14		
Peak Hour Factor, PHF				0.90		
Hourly Flow Rate, HFR				15		
Percent Heavy Vehicles				2		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		
Configuration				L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	L				L		
v (vph)	17	129				15		
C(m) (vph)	1620	1217				525		
v/c	0.01	0.11				0.03		
95% queue length	0.03	0.36				0.09		
Control Delay	7.2	8.3				12.1		
LOS	A	A				B		
Approach Delay							12.1	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Saturday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/ project
Project ID:
East/West Street: Koa Ave
North/South Street: Kaiulani Ave
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	212	105	112		2
Peak-Hour Factor, PHF	0.92	0.92	1.00	0.67		0.67
Hourly Flow Rate, HFR	27	230	105	167		2
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						No
Lanes	0	2	0	1		1
Configuration		LT	TR	L		R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				16		
Peak Hour Factor, PHF				0.90		
Hourly Flow Rate, HFR				17		
Percent Heavy Vehicles				2		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage				/		/
Lanes				1		
Configuration				L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	L				L		
v (vph)	27	167				17		
C(m) (vph)	1620	1224				448		
v/c	0.02	0.14				0.04		
95% queue length	0.05	0.47				0.12		
Control Delay	7.3	8.4				13.4		
LOS	A	A				B		
Approach Delay							13.4	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Weekday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/ project
Project ID:
East/West Street: Prince Edwards
North/South Street: Kaiulani/Kanekapolei
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	20	161	62	3	89	39
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91
Hourly Flow Rate, HFR	21	174	67	3	97	42
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	2	0	0	2	0
Configuration	LT	TR		LT	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10	3	48	88	17	0
Peak Hour Factor, PHF	0.79	0.79	0.79	0.78	0.78	0.78
Hourly Flow Rate, HFR	12	3	60	112	21	0
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No /			No /	
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT		LTR			LTR	
v (vph)	21	3		75			133	
C(m) (vph)	1442	1323		828			605	
v/c	0.01	0.00		0.09			0.22	
95% queue length	0.04	0.01		0.30			0.84	
Control Delay	7.5	7.7		9.8			12.6	
LOS	A	A		A			B	
Approach Delay				9.8			12.6	
Approach LOS				A			B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 09/02/2008
Analysis Time Period: Saturday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/project
Project ID:
East/West Street: Prince Edwards
North/South Street: Kaiulani/Kanekapolei
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	5	191	32	6	110	17
Peak-Hour Factor, PHF	0.86	0.86	0.86	0.77	0.77	0.77
Hourly Flow Rate, HFR	5	222	37	7	142	22
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	2	0	0	2	0
Configuration	LT	TR		LT	TR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	1	29	74	42	0
Peak Hour Factor, PHF	0.65	0.65	0.65	0.61	0.61	0.61
Hourly Flow Rate, HFR	6	1	44	121	68	0
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT		LTR			LTR	
v (vph)	5	7		51			189	
C(m) (vph)	1412	1303		825			566	
v/c	0.00	0.01		0.06			0.33	
95% queue length	0.01	0.02		0.20			1.49	
Control Delay	7.6	7.8		9.7			14.5	
LOS	A	A		A			B	
Approach Delay				9.7			14.5	
Approach LOS				A			B	

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Weekday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project

N/S St: Kaiulani Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	1	1	0	0	0
LGConfig		LT			TR			T	R			
Volume	59	597			343	31		31	58			
Lane Width		12.0			12.0			12.0	12.0			
RTOR Vol						3			6			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
WB Left					SB Left			
Thru	A				Thru			
Right	A				Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0				30.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1720	3096	0.42	0.56	11.8	B	11.8	B
Westbound								
TR	1948	3507	0.20	0.56	10.1	B	10.1	B
Northbound								
T	621	1863	0.07	0.33	20.5	C	20.9	C
R	528	1583	0.14	0.33	21.1	C		
Southbound								

Intersection Delay = 12.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Saturday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project

N/S St: Kaiulani Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	1	1	0	0	0
LGConfig		LT			TR			T	R			
Volume	54	515			406	44		29	51			
Lane Width		12.0			12.0			12.0	12.0			
RTOR Vol						4			5			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
WB Left					SB Left			
Thru	A				Thru			
Right	A				Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0				30.0			
Yellow	4.0				4.0			
All Red	1.0				1.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1679	3022	0.44	0.56	12.0	B	12.0	B
Westbound								
TR	1944	3499	0.25	0.56	10.4	B	10.4	B
Northbound								
T	621	1863	0.08	0.33	20.6	C	20.9	C
R	528	1583	0.15	0.33	21.2	C		
Southbound								

Intersection Delay = 12.2 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Weekday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project

N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	0	2	0	0	2	0	0	2	0
LGConfig	L	TR			LTR			LT			LTR	
Volume	102	591	51	15	307	18	85	205		65	65	36
Lane Width	12.0	12.0			12.0			12.0			12.0	
RTOR Vol			5			2						4

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right			
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	543	977	0.21	0.56	10.2	B		
TR	1949	3508	0.36	0.56	11.3	B	11.1	B
Westbound								
LTR	1792	3225	0.21	0.56	10.2	B	10.2	B
Northbound								
LT	954	2863	0.33	0.33	22.7	C	22.7	C
Southbound								
LTR	854	2563	0.19	0.33	21.5	C	21.5	C

Intersection Delay = 14.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Saturday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project
N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	0	2	0	0	2	0	0	2	0
LGConfig	L	TR			LTR			LT		DefL	TR	
Volume	117	483	37	26	355	20	91	203		83	70	27
Lane Width	12.0	12.0			12.0			12.0		12.0	12.0	
RTOR Vol			4			2						3

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right			
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	503	906	0.26	0.56	10.7	B		
TR	1952	3513	0.30	0.56	10.7	B	10.7	B
Westbound								
LTR	1753	3155	0.25	0.56	10.4	B	10.4	B
Northbound								
LT	961	2882	0.42	0.33	23.6	C	23.6	C
Southbound								
DefL	285	856	0.38	0.33	23.7	C		
TR	597	1792	0.20	0.33	21.6	C	22.6	C

Intersection Delay = 15.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Weekday PM Peak
Project ID:
E/W St: Ala Wai Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project
N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	3	0	2	0	0	0	0	0
LGConfig					LT		L					
Volume				152	1557		297					
Lane Width					12.0		12.0					
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	A		
Thru					Thru			
Right					Right			
Peds					Peds			
WB Left		A			SB Left			
Thru		A			Thru			
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		45.0				15.0		
Yellow		4.0				4.0		
All Red		1.0				1.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LT	3248	5052	0.54	0.64	7.0	A	7.0	A
Northbound								
L	737	3437	0.47	0.21	24.5	C		
							24.5	C
Southbound								

Intersection Delay = 9.9 (sec/veh) Intersection LOS = A

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Saturday PM Peak
Project ID:
E/W St: Ala Wai Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project
N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	3	0	2	0	0	0	0	0
LGConfig					LT		L					
Volume				172	1604		349					
Lane Width					12.0		12.0					
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	A		
Thru					Thru			
Right					Right			
Peds					Peds			
WB Left		A			SB Left			
Thru		A			Thru			
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		45.0				15.0		
Yellow		4.0				4.0		
All Red		1.0				1.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LT	3246	5050	0.59	0.64	7.5	A	7.5	A
Northbound								
L	737	3437	0.70	0.21	28.3	C	28.3	C
Southbound								

Intersection Delay = 11.9 (sec/veh) Intersection LOS = B

APPENDIX F

CAPACITY ANALYSIS CALCULATIONS
PROJECTED YEAR 2012 PEAK HOUR TRAFFIC
ANALYSIS WITH PROJECT &
DIAMOND HEAD TOWER

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Weekday PM Peak
Project ID:
E/W St: Kalakaua Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project & Tower
N/S St: Kaiulani/Diamond Head Tower

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	0	0	0	0	0	1	0	0	0	0
LGConfig	L	TR						TR				
Volume	323	1381	38					24	14			
Lane Width	12.0	12.0						12.0				
RTOR Vol			4						1			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left					SB Left			
Thru					Thru			
Right					Right			
Peds	X				Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	458	824	0.72	0.56	20.5	C		
TR	2809	5056	0.51	0.56	12.6	B	14.1	B
Westbound								
Northbound								
TR	592	1775	0.07	0.33	20.5	C	20.5	C
Southbound								

Intersection Delay = 14.2 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 09/02/2008
Period: Saturday PM Peak
Project ID:
E/W St: Kalakaua Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project & Tower

N/S St: Kaiulani/Diamond Head Tower

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	3	0	0	0	0	0	1	0	0	0	0
LGConfig	L	TR						TR				
Volume	329	1143	41					28	13			
Lane Width	12.0	12.0						12.0				
RTOR Vol			4						1			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
WB Left					SB Left			
Thru					Thru			
Right					Right			
Peds	X				Peds	X		
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	458	824	0.76	0.56	22.7	C		
TR	2806	5050	0.44	0.56	11.9	B	14.3	B
Westbound								
Northbound								
TR	596	1787	0.07	0.33	20.5	C	20.5	C
Southbound								

Intersection Delay = 14.4 (sec/veh) Intersection LOS = B

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 2/23/09
Analysis Time Period: Weekday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/ project & Tower
Project ID:
East/West Street: Koa Ave
North/South Street: Kaiulani Ave
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	16	237	94	97		2
Peak-Hour Factor, PHF	0.92	0.92	1.00	0.75		0.75
Hourly Flow Rate, HFR	17	257	94	129		2
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						No
Lanes	0	2	0	1		1
Configuration		LT	TR	L		R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				14		
Peak Hour Factor, PHF				0.90		
Hourly Flow Rate, HFR				15		
Percent Heavy Vehicles				2		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		
Configuration				L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	L				L		
v (vph)	17	129				15		
C(m) (vph)	1620	1208				521		
v/c	0.01	0.11				0.03		
95% queue length	0.03	0.36				0.09		
Control Delay	7.2	8.3				12.1		
LOS	A	A				B		
Approach Delay							12.1	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 2/23/09
Analysis Time Period: Saturday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/ project & Tower
Project ID:
East/West Street: Koa Ave
North/South Street: Kaiulani Ave
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	227	105	112		2
Peak-Hour Factor, PHF	0.92	0.92	1.00	0.67		0.67
Hourly Flow Rate, HFR	27	246	105	167		2
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						No
Lanes	0	2	0	1		1
Configuration	LT		TR	L		R
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume				16		
Peak Hour Factor, PHF				0.90		
Hourly Flow Rate, HFR				17		
Percent Heavy Vehicles				2		
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			/			/
Lanes				1		
Configuration				L		

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	L				L		
v (vph)	27	167				17		
C(m) (vph)	1620	1208				443		
v/c	0.02	0.14				0.04		
95% queue length	0.05	0.48				0.12		
Control Delay	7.3	8.5				13.5		
LOS	A	A				B		
Approach Delay							13.5	
Approach LOS							B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 2/23/09
Analysis Time Period: Weekday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/ project & Tower
Project ID:
East/West Street: Prince Edwards
North/South Street: Kaiulani/Kanekapolei
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	28	161	62	3	89	39
Peak-Hour Factor, PHF	0.92	0.92	0.92	0.91	0.91	0.91
Hourly Flow Rate, HFR	30	174	67	3	97	42
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	2	0	0	2	0
Configuration		LT	TR		LT	TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10	3	48	93	17	0
Peak Hour Factor, PHF	0.79	0.79	0.79	0.78	0.78	0.78
Hourly Flow Rate, HFR	12	3	60	119	21	0
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No	/		No	/
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT		LTR			LTR	
v (vph)	30	3		75			140	
C(m) (vph)	1442	1323		820			587	
v/c	0.02	0.00		0.09			0.24	
95% queue length	0.06	0.01		0.30			0.94	
Control Delay	7.5	7.7		9.8			13.1	
LOS	A	A		A			B	
Approach Delay				9.8			13.1	
Approach LOS				A			B	

HCS+: Unsignalized Intersections Release 5.3

TWO-WAY STOP CONTROL SUMMARY

Analyst: CL
Agency/Co.:
Date Performed: 2/23/09
Analysis Time Period: Saturday PM Peak
Intersection:
Jurisdiction:
Units: U. S. Customary
Analysis Year: Year 2012 w/project & Tower
Project ID:
East/West Street: Prince Edwards
North/South Street: Kaiulani/Kanekapolei
Intersection Orientation: NS Study period (hrs): 1.00

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	18	192	33	6	110	17
Peak-Hour Factor, PHF	0.86	0.86	0.86	0.77	0.77	0.77
Hourly Flow Rate, HFR	20	223	38	7	142	22
Percent Heavy Vehicles	2	--	--	2	--	--
Median Type/Storage	Undivided /					
RT Channelized?						
Lanes	0	2	0	0	2	0
Configuration		LT	TR		LT	TR
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	1	29	81	42	0
Peak Hour Factor, PHF	0.65	0.65	0.65	0.61	0.61	0.61
Hourly Flow Rate, HFR	6	1	44	132	68	0
Percent Heavy Vehicles	2	2	2	2	2	2
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage		No	/		No	/
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LT	LT		LTR			LTR	
v (vph)	20	7		51			200	
C(m) (vph)	1412	1300		812			537	
v/c	0.01	0.01		0.06			0.37	
95% queue length	0.04	0.02		0.20			1.76	
Control Delay	7.6	7.8		9.7			15.7	
LOS	A	A		A			C	
Approach Delay				9.7			15.7	
Approach LOS				A			C	

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 2/23/09
Period: Weekday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project & Tower

N/S St: Kaiulani Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	1	1	0	0	0
LGConfig		LT			TR			T	R			
Volume	59	597			343	31		31	58			
Lane Width		12.0			12.0			12.0	12.0			
RTOR Vol						3			6			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
WB Left					SB Left			
Thru	A				Thru			
Right	A				Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1720	3096	0.42	0.56	11.8	B	11.8	B
Westbound								
TR	1948	3507	0.20	0.56	10.1	B	10.1	B
Northbound								
T	621	1863	0.07	0.33	20.5	C	20.9	C
R	528	1583	0.14	0.33	21.1	C		
Southbound								

Intersection Delay = 12.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 2/23/09
Period: Saturday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project & Tower
N/S St: Kaiulani Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	2	0	0	2	0	0	1	1	0	0	0
LGConfig		LT			TR			T	R			
Volume	54	515			406	44		29	52			
Lane Width		12.0			12.0			12.0	12.0			
RTOR Vol						4			5			

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left			
Thru	A				Thru	A		
Right					Right	A		
Peds					Peds			
WB Left					SB Left			
Thru	A				Thru			
Right	A				Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
LT	1679	3022	0.44	0.56	12.0	B	12.0	B
Westbound								
TR	1944	3499	0.25	0.56	10.4	B	10.4	B
Northbound								
T	621	1863	0.08	0.33	20.6	C	21.0	C
R	528	1583	0.15	0.33	21.2	C		
Southbound								

Intersection Delay = 12.3 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 2/23/09
Period: Weekday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project & Tower
N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	0	2	0	0	2	0	0	2	0
LGConfig	L	TR			LTR			LT			LTR	
Volume	102	591	51	15	307	18	90	205		65	65	36
Lane Width	12.0	12.0			12.0			12.0			12.0	
RTOR Vol			5			2						4

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	A				NB Left	A		
Thru	A				Thru	A		
Right	A				Right			
Peds					Peds			
WB Left	A				SB Left	A		
Thru	A				Thru	A		
Right	A				Right	A		
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	50.0					30.0		
Yellow	4.0					4.0		
All Red	1.0					1.0		

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	543	977	0.21	0.56	10.2	B		
TR	1949	3508	0.36	0.56	11.3	B	11.1	B
Westbound								
LTR	1792	3225	0.21	0.56	10.2	B	10.2	B
Northbound								
LT	946	2837	0.34	0.33	22.8	C	22.8	C
Southbound								
LTR	852	2557	0.19	0.33	21.5	C	21.5	C

Intersection Delay = 14.1 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 2/23/09
Period: Saturday PM Peak
Project ID:
E/W St: Kuhio Ave

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project & Tower
N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	2	0	0	2	0	0	2	0	0	2	0
LGConfig	L	TR			LTR			LT		DefL	TR	
Volume	117	483	37	26	355	20	98	204		83	70	27
Lane Width	12.0	12.0			12.0			12.0		12.0	12.0	
RTOR Vol			4			2						3

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	A				NB Left	A			
Thru	A				Thru	A			
Right	A				Right				
Peds					Peds				
WB Left	A				SB Left	A			
Thru	A				Thru	A			
Right	A				Right	A			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	50.0					30.0			
Yellow	4.0					4.0			
All Red	1.0					1.0			

Cycle Length: 90.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
L	503	906	0.26	0.56	10.7	B		
TR	1952	3513	0.30	0.56	10.7	B	10.7	B
Westbound								
LTR	1753	3155	0.25	0.56	10.4	B	10.4	B
Northbound								
LT	954	2863	0.44	0.33	23.8	C	23.8	C
Southbound								
DefL	280	839	0.39	0.33	23.8	C		
TR	597	1792	0.20	0.33	21.6	C	22.7	C

Intersection Delay = 15.2 (sec/veh) Intersection LOS = B

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 2/23/09
Period: Weekday PM Peak
Project ID:
E/W St: Ala Wai Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project & Tower
N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	3	0	2	0	0	0	0	0
LGConfig					LT		L					
Volume				152	1557		297					
Lane Width					12.0		12.0					
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	A		
Thru					Thru			
Right					Right			
Peds					Peds			
WB Left		A			SB Left			
Thru		A			Thru			
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		45.0				15.0		
Yellow		4.0				4.0		
All Red		1.0				1.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LT	3248	5052	0.54	0.64	7.0	A	7.0	A
Northbound								
L	737	3437	0.47	0.21	24.5	C		
							24.5	C
Southbound								

Intersection Delay = 9.9 (sec/veh) Intersection LOS = A

HCS+: Signalized Intersections Release 5.3

Analyst: CL
Agency:
Date: 2/23/09
Period: Saturday PM Peak
Project ID:
E/W St: Ala Wai Blvd

Inter.:
Area Type: All other areas
Jurisd:
Year : Year 2012 w/ project & Tower

N/S St: Kanekapolei Ave

SIGNALIZED INTERSECTION SUMMARY

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	0	0	0	3	0	2	0	0	0	0	0
LGConfig					LT		L					
Volume				172	1604		350					
Lane Width					12.0		12.0					
RTOR Vol												

Duration 1.00 Area Type: All other areas

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left					NB Left	A		
Thru					Thru			
Right					Right			
Peds					Peds			
WB Left		A			SB Left			
Thru		A			Thru			
Right					Right			
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green		45.0				15.0		
Yellow		4.0				4.0		
All Red		1.0				1.0		

Cycle Length: 70.0 secs

Intersection Performance Summary

Appr/ Lane Grp	Lane Group Capacity	Adj Sat Flow Rate (s)	Ratios v/c	Ratios g/C	Lane Group Delay	Lane Group LOS	Approach Delay	Approach LOS
Eastbound								
Westbound								
LT	3246	5050	0.59	0.64	7.5	A	7.5	A
Northbound								
L	737	3437	0.70	0.21	28.4	C	28.4	C
Southbound								

Intersection Delay = 11.9 (sec/veh) Intersection LOS = B

APPENDIX 4

A Survey of Princess Ka'iulani and Sheraton Waikīkī parking garages, dated April 22, 2009, prepared by Wilson Okamoto Corporation

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CORPORATION
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7787-02
April 22, 2009

Mr. Greg Dickhens
Kyo-Ya Company, LLC.
Sheraton Waikiki Hotel, 2nd Floor
2255 Kalakaua Avenue
Honolulu, HI 96815

Subject: Parking Garage Surveys

Dear Mr. Dickhens:

As requested, we conducted surveys of the parking garages at the Princess Kaiulani and Sheraton Waikiki hotels on a representative weekday (Friday) and weekend day (Saturday). The following is a summary of our findings.

Field Investigation

Field investigations were conducted at the Princess Kaiulani Hotel parking garage on February 20 & 21, 2009 and at the Sheraton Waikiki Hotel parking garage on February 27 & 28, 2009. The investigations were conducted between the hours of 6:00 AM and midnight on each day and consisted of parking stall occupancy inventories every 15 minutes. During the surveys, occupancy rates at the Princess Kaiulani (PK) and Moana Surfrider (MSR) hotels were in excess of 80% with several planned functions on-going. Occupancy rates at the Sheraton Waikiki Hotel (SW) were lower, approximately 65%, however there was a large local event on-going. At the Royal Hawaiian Hotel (RH), occupancy rates were fairly low, approximately 25%, since the surveys occurred prior to the Grand Re-Opening of the hotel.

The PK parking garage serves the PK and MSR hotels. The garage includes 54 valet stalls, 444 self-parking stalls, and 18 reserved stalls for a total of 516 parking stalls. It should be noted that valet operations were curtailed at 7:00 PM on February 21, 2009 during the study period due to the high volume of vehicles on that day.

The SW parking garage serves the SW and RH hotels. The garage includes 124 valet stalls, 700 self-parking stalls, 13 reserved stalls, 38 private stalls, and 10 no parking stalls for a total of 885 parking stalls. It should be noted that the valets also utilize parking within the porte cochere and bus depot areas which were not surveyed for this report.

Appendix A includes the survey data.

Collected Data Summary

Princess Kaiulani Hotel Parking Garage

Overall, the average occupancy of the parking garage was approximately 78% on both days with peaks of approximately 89% around 9:00 AM and 3:00 PM on the 20th (Friday), and 93% around 7:00 PM on the 21st (Saturday). The following is a summary of the average and peak occupancy of the various stall types during the survey:

Friday, February 20th:

Valet	Ave. Occ. = 70% Peak Occ. = 93% (10:30 – 11:00 PM)
Self-Parking	Ave. Occ. = 81% Peak Occ. = 91% (9:00 – 9:30 AM and 2:45 – 3:15 PM)
Reserved	Ave. Occ. = 56% Peak Occ. = 94% (2:15 – 3:15 PM)

Saturday, February 21st:

Valet	Ave. Occ. = 78% Peak Occ. = 100% (6:45 – 8:30 PM)
Self-Parking	Ave. Occ. = 80% Peak Occ. = 95% (6:45 – 7:15 PM)
Reserved	Ave. Occ. = 22% Peak Occ. = 39% (1:30 – 2:15 PM)

Sheraton Waikiki Hotel Parking Garage

Overall, the average occupancy of the parking garage was approximately 75% on the 20th (Friday) and 60% on the 28th (Saturday) with peaks of approximately 86% around 7:15 PM on the 27th, and 82% around 9:15 PM on the 28th. The following is a summary of the average and peak occupancy of the various stall types during the survey:

Friday, February 27th:

Valet	Ave. Occ. = 56% Peak Occ. = 82% (8:30 PM)
Self-Parking	Ave. Occ. = 80% Peak Occ. = 95% (11:45 AM)
Reserved/Private/ No Parking	Ave. Occ. = 49% Peak Occ. = 75% (4:45 PM)

Saturday, February 28th:

Valet	Ave. Occ. = 71% Peak Occ. = 97% (9:30 – 10:00 PM)
Self-Parking	Ave. Occ. = 59% Peak Occ. = 81% (8:00 – 9:30 PM)
Reserved/Private/ No Parking	Ave. Occ. = 46% Peak Occ. = 79% (9:45 PM)

Parking Analysis

Princess Kaiulani Hotel Parking Garage

The valet parked vehicles are associated with guests of the MSR since the PK does not have valet operations while the vehicles parked in reserved stalls are primarily associated with management staff for the both hotels. The self-parked vehicles can be segregated into several categories which include PK employees, MSR employees, PK guests, and MSR guests. The relative split between employee and guest related vehicles exiting the parking garage was determined utilizing data collected at the garage exit. This split was then applied to the self-parked vehicles in the garage to segregate them into employee and guest related categories. As such, approximately 50% of the self-parked vehicles were assumed to be associated with employee parking and approximately 50% were assumed to be associated with guest parking. The employee-related vehicles were then segregated by hotel based upon the relative proportion of employees at each hotel. As such, approximately 55% were assumed to be associated with the MSR and approximately 45% were assumed to be associated with the PK. Similarly, the guest-related vehicles were segregated by hotel based upon the relative proportion of parking pass use

by guests at each hotel. As such, 15% were assumed to be associated with the MSR and 85% were assumed to be associated with the PK.

Sheraton Waikiki Hotel Parking Garage

The valet parked vehicles are associated with guests of the SW and RH hotels while the vehicles parked in reserved, private, and no parking stalls are primarily associated with management staff for both the hotels. The self-parked vehicles can be segregated into either employee- or guest-related categories. The relative split between employee- and guest-related vehicles exiting the parking garage was determined utilizing data collected at the garage exit. This split was then applied to the self-parked vehicles in the garage to segregate them into employee- and guest-related categories. As such, approximately 50% of the self-parked vehicles were assumed to be associated with employee parking and approximately 50% were assumed to be associated with guest parking. Since the occupancy at the RH was relatively low during the survey, the vehicle exit data from the parking garage was compared to data collected in March 2008 (prior to the closing of the RH). At that time, occupancy at the SW was approximately 80% and occupancy at the RH was approximately 94%. A comparison of the guest-related exits from the parking garage in March 2008 and February 2009 indicates that although occupancy at the RH was low in February, vehicular exits during February 2009 were only lower than exits during March 2008 on the weekend, approximately 5% lower. As such, the number of valet and self-parked vehicles on the weekend was increased by 5%.

Parking Analysis

The PK will be completely closed during the planned renovation and, as such, parking for the employees and guests of the MSR will need to be accommodated within the parking garage at the SW. The SW parking garage has a sufficient number of parking stalls to accommodate all of the anticipated guest-related vehicles, provided valets utilize self-parking stalls when valet stalls are filled, and some of the employee-related vehicles. Employee parking should be limited on-site for the duration of the construction at the PK to ensure an adequate supply of parking stalls for hotel guests. Under conditions similar to those during the February 2009 survey, employee parking would need to be reduced by approximately 25% to ensure adequate parking for hotel guests. Employees unable to park on-site could be accommodated in other parking facilities in Waikiki or an off-site location with shuttle service, or utilize public transportation. Additional measures may also be required if hotel occupancy is significantly higher than during the survey period or if a large number of local

events are anticipated. With regards to the vehicles parked in the reserved stalls at the PK, the SW parking garage has sufficient reserved/private/no parking stalls to accommodate all of these vehicles. For the purpose of this report, all vehicles currently parking in reserved stalls at the PK were assumed to relocate to the SW parking garage.

Appendix B includes the parking analysis tables.

Should you have any questions or require additional information, please contact Mr. Pete Pascua or myself at 946-2277.

Sincerely,

Cathy Leong, P.E.

APPENDIX A

SURVEY DATA

Princess Kaiulani Parking Garage Vehicle Count

February 20, 2009

Time	Ramp Down Parking			Ramp Up Parking		Roof Deck Parking		Total
	Self Parking	Reserved Parking	Valet Parking	Self Parking	Valet Parking	Self Parking	Reserved Parking	
6:00AM	137	3	18	101	24	89	0	372
6:15AM	145	3	18	105	24	87	2	384
6:30AM	148	3	18	106	25	96	2	398
6:45AM	153	4	18	108	24	103	2	412
7:00AM	153	4	18	112	25	111	2	425
7:15AM	154	4	17	110	24	114	2	425
7:30AM	155	6	16	113	24	112	2	428
7:45AM	158	7	15	113	26	119	2	440
8:00AM	152	10	15	112	24	129	2	444
8:15AM	154	10	14	109	25	127	2	441
8:30AM	154	10	14	110	24	124	2	438
8:45AM	157	11	13	110	25	128	2	446
9:00AM	156	14	13	113	24	138	2	460
9:15AM	155	13	14	111	25	136	2	456
9:30AM	150	14	13	109	24	139	2	451
9:45AM	146	14	13	110	23	137	2	445
10:00AM	146	14	12	115	21	132	2	442
10:15AM	142	14	12	113	20	132	2	435
10:30AM	143	14	12	108	19	131	2	429
10:45AM	145	14	12	113	19	128	2	433
11:00AM	139	14	11	112	18	124	2	420
11:15AM	138	14	11	103	18	121	2	407
11:30AM	137	14	11	106	17	124	2	411
11:45AM	142	14	10	100	15	124	2	407
12 Noon	141	14	9	101	14	124	2	405
12:15PM	135	14	9	105	12	110	2	387
12:30PM	135	14	9	106	11	120	2	397
12:45PM	144	14	9	108	12	118	2	407
1:00PM	135	13	8	114	13	124	2	409
1:15PM	148	14	8	105	14	125	2	416
1:30PM	142	14	8	105	17	125	2	413
1:45PM	149	14	7	105	17	128	2	422
2:00PM	152	14	7	111	17	128	2	431
2:15PM	152	15	9	109	20	124	2	431
2:30PM	153	15	11	111	20	129	2	441
2:45PM	161	15	13	111	21	133	2	456
3:00PM	154	15	15	112	24	137	2	459
3:15PM	143	14	16	106	27	131	2	439
3:30PM	141	14	15	102	26	125	2	425
3:45PM	139	14	15	105	25	122	1	421
4:00PM	140	14	13	105	22	115	1	410
4:15PM	141	14	13	104	23	115	0	410
4:30PM	129	14	12	106	23	105	0	389
4:45PM	138	13	11	108	24	99	0	393
5:00PM	141	13	10	107	19	101	0	391
5:15PM	139	12	10	107	20	99	0	387
5:30PM	142	7	10	109	21	99	0	388
5:45PM	143	6	11	108	22	100	0	390

Princess Kaiulani Parking Garage Vehicle Count

February 20, 2009

Time	Ramp Down Parking			Ramp Up Parking		Roof Deck Parking		Total
	Self Parking	Reserved Parking	Valet Parking	Self Parking	Valet Parking	Self Parking	Reserved Parking	
6:00PM	141	6	14	111	22	96	0	390
6:15PM	138	6	14	112	24	97	0	391
6:30PM	145	5	15	111	26	94	0	396
6:45PM	143	6	15	111	26	96	0	397
7:00PM	143	5	15	115	25	103	0	406
7:15PM	138	5	15	113	23	103	0	397
7:30PM	141	4	15	112	24	97	0	393
7:45PM	141	3	15	108	24	99	0	390
8:00PM	143	3	15	109	26	96	0	392
8:15PM	139	3	15	110	27	96	0	390
8:30PM	142	4	15	108	27	94	0	390
8:45PM	143	4	15	106	29	91	0	388
9:00PM	136	4	15	105	30	83	0	373
9:15PM	136	4	15	107	31	80	0	373
9:30PM	135	4	15	108	31	82	0	375
9:45PM	134	4	15	106	31	81	0	371
10:00PM	136	4	15	108	32	79	0	374
10:15PM	126	4	15	108	32	77	0	362
10:30PM	131	4	17	110	33	73	0	368
10:45PM	130	4	17	109	33	67	0	360
11:00PM	133	3	17	107	32	62	0	354
11:15PM	118	3	17	103	31	53	0	325
11:30PM	115	3	17	104	31	53	0	323
11:45PM	108	4	17	101	31	52	0	313

Princess Kaiulani Parking Garage Vehicle Count

February 21, 2009

Time	Ramp Down Parking			Ramp Up Parking		Roof Deck Parking		Total
	Self Parking	Reserved Parking	Valet Parking	Self Parking	Valet Parking	Self Parking	Reserved Parking	
6:00AM	117	2	18	103	29	57	0	326
6:15AM	122	2	18	104	30	62	0	338
6:30AM	131	2	18	105	30	67	0	353
6:45AM	135	2	18	107	28	71	0	361
7:00am	136	2	17	109	26	78	0	368
7:15AM	136	2	17	107	27	73	0	362
7:30AM	140	2	16	106	25	75	0	364
7:45AM	145	2	15	108	25	71	0	366
8:00AM	150	3	15	105	25	76	0	374
8:15AM	149	3	14	106	25	77	0	374
8:30AM	143	3	13	106	27	87	0	379
8:45AM	145	3	12	109	24	88	0	381
9:00AM	148	2	12	108	23	86	0	379
9:15AM	147	2	10	106	24	87	0	376
9:30AM	148	2	10	109	22	86	0	377
9:45AM	147	2	9	100	22	90	0	370
10:00AM	144	2	8	103	20	89	0	366
10:15AM	140	3	8	101	19	90	0	361
10:30AM	143	3	8	108	20	89	0	371
10:45AM	148	3	8	107	22	90	0	378
11:00AM	146	2	8	110	21	91	0	378
11:15AM	145	2	9	109	21	93	0	379
11:30AM	141	2	9	108	22	93	0	375
11:45AM	149	3	8	108	23	97	0	388
12 Noon	149	3	8	109	23	96	0	388
12:15PM	147	4	9	109	22	102	0	393
12:30PM	148	5	9	108	23	99	0	392
12:45PM	150	6	10	109	23	95	0	393
1:00PM	150	6	10	107	25	94	0	392
1:15PM	151	6	10	107	27	93	0	394
1:30PM	148	7	11	107	27	93	0	393
1:45PM	149	7	11	108	26	97	0	398
2:00PM	150	7	13	101	25	97	0	393
2:15pm	144	6	12	104	25	95	0	386
2:30PM	145	4	12	101	28	91	0	381
2:45PM	146	4	12	106	24	90	0	382
3:00PM	150	3	11	105	20	88	0	377
3:15PM	148	3	11	104	20	89	0	375
3:30PM	143	4	13	106	21	92	0	379
3:45PM	143	4	14	107	24	81	0	373
4:00PM	153	4	16	110	27	85	0	395
4:15PM	150	4	16	109	31	87	0	397
4:30PM	152	4	16	110	33	96	0	411
4:45PM	152	4	18	110	34	103	0	421
5:00PM	148	4	18	111	30	119	0	430
5:15PM	149	3	20	111	29	125	0	437
5:30PM	153	3	22	112	26	138	0	454
5:45PM	151	3	22	112	26	138	1	453

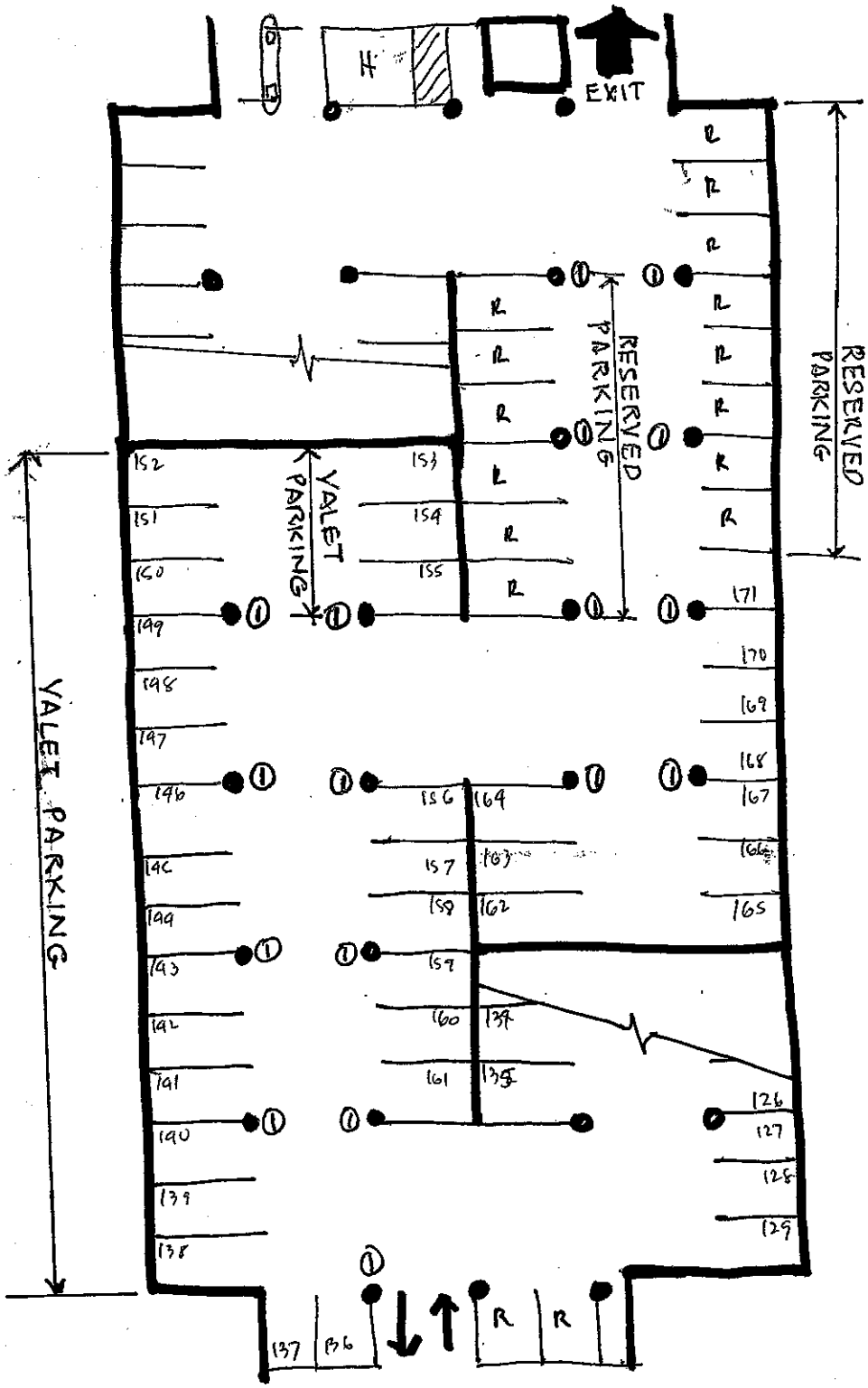
Princess Kaiulani Parking Garage Vehicle Count

February 21, 2009

Time	Ramp Down Parking			Ramp Up Parking		Roof Deck Parking		Total
	Self Parking	Reserved Parking	Valet Parking	Self Parking	Valet Parking	Self Parking	Reserved Parking	
6:00PM	150	3	22	112	27	153	0	467
6:15PM	154	2	23	112	29	157	0	477
6:30PM	151	2	23	112	30	155	0	473
6:45PM	154	3	23	112	31	155	0	478
7:00PM	153	3	24	111	30	160	0	481
7:15PM	150	3	24	112	30	157	0	476
7:30PM	152	4	24	113	30	156	0	479
7:45PM	152	4	24	111	30	157	0	478
8:00PM	150	4	24	110	30	153	0	471
8:15PM	149	3	23	109	31	150	0	465
8:30PM	147	4	23	107	27	149	0	457
8:45PM	145	4	23	109	27	141	0	449
9:00PM	141	4	22	110	27	138	0	442
9:15PM	143	4	22	108	25	129	0	431
9:30PM	144	4	22	112	22	122	0	426
9:45PM	141	4	22	110	24	123	0	424
10:00PM	139	5	22	105	22	118	0	411
10:15PM	143	5	22	104	22	112	0	408
10:30PM	135	5	22	106	24	109	0	401
10:45PM	136	5	22	105	25	108	0	401
11:00PM	128	5	22	104	26	100	0	385
11:15PM	127	5	22	95	27	93	0	369
11:30PM	120	5	22	87	29	87	0	350
11:45PM	120	5	22	89	29	84	0	349

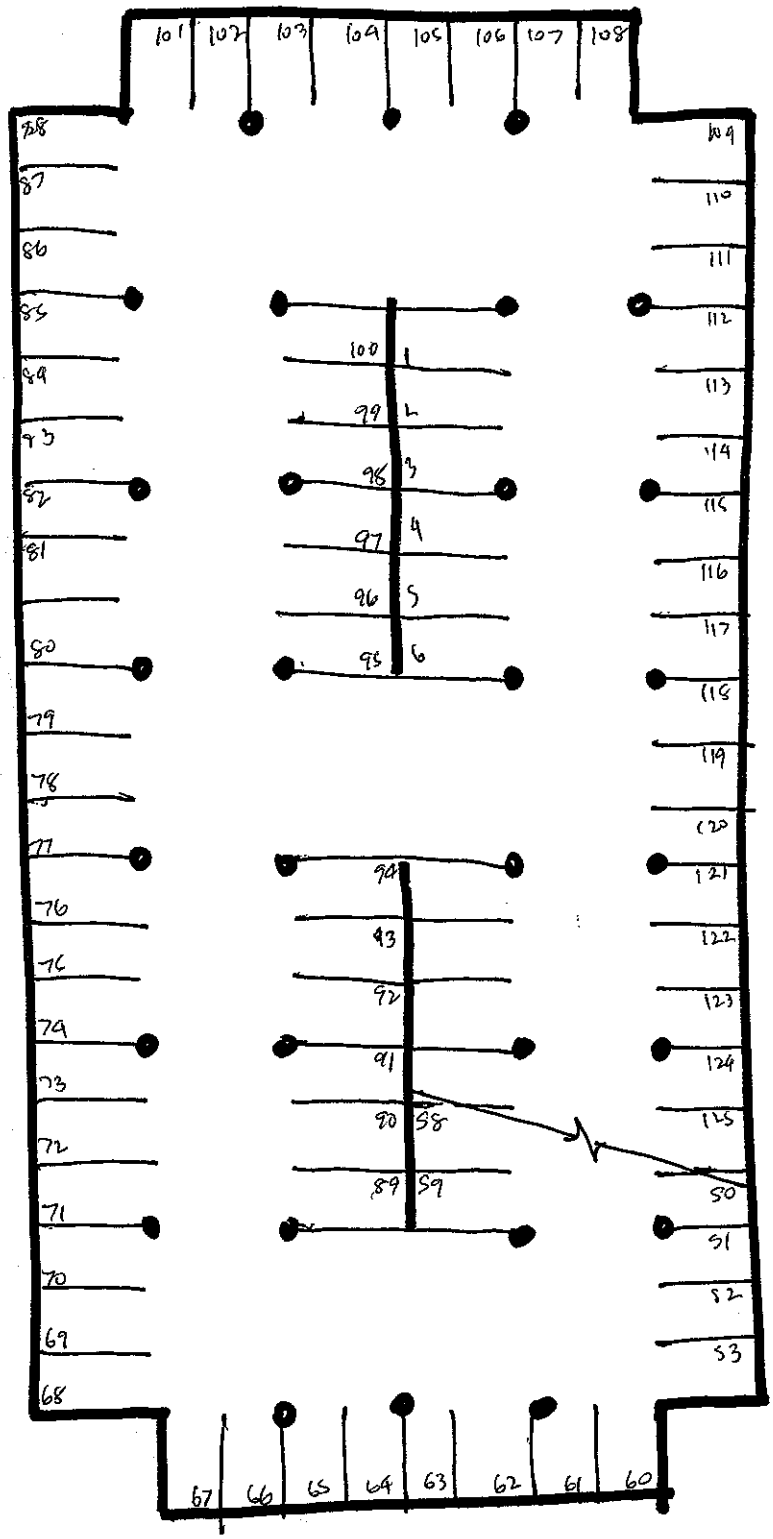
401.097222

401



RAMP DOWN PARKING

V-24
SP-153
R-16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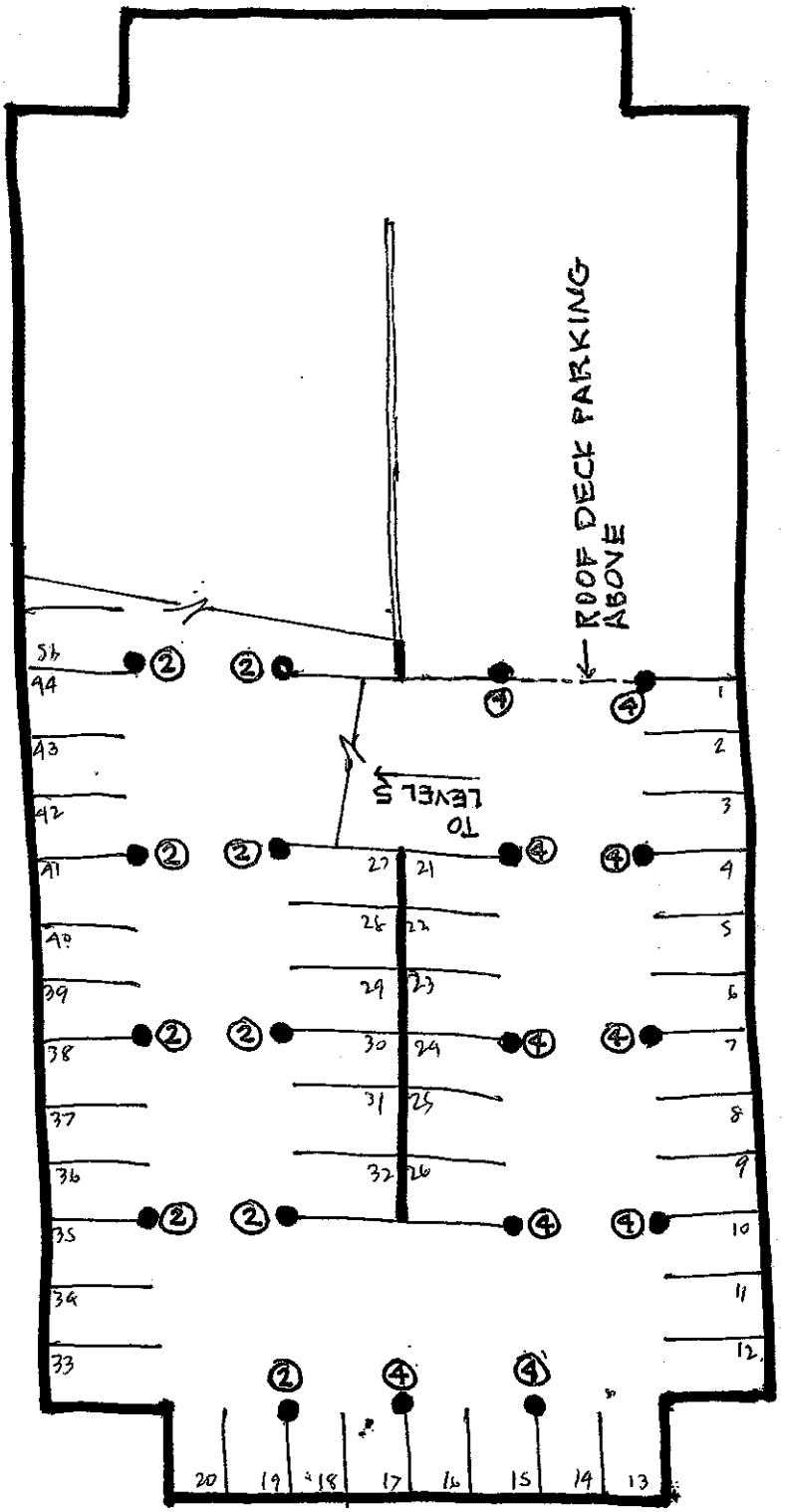
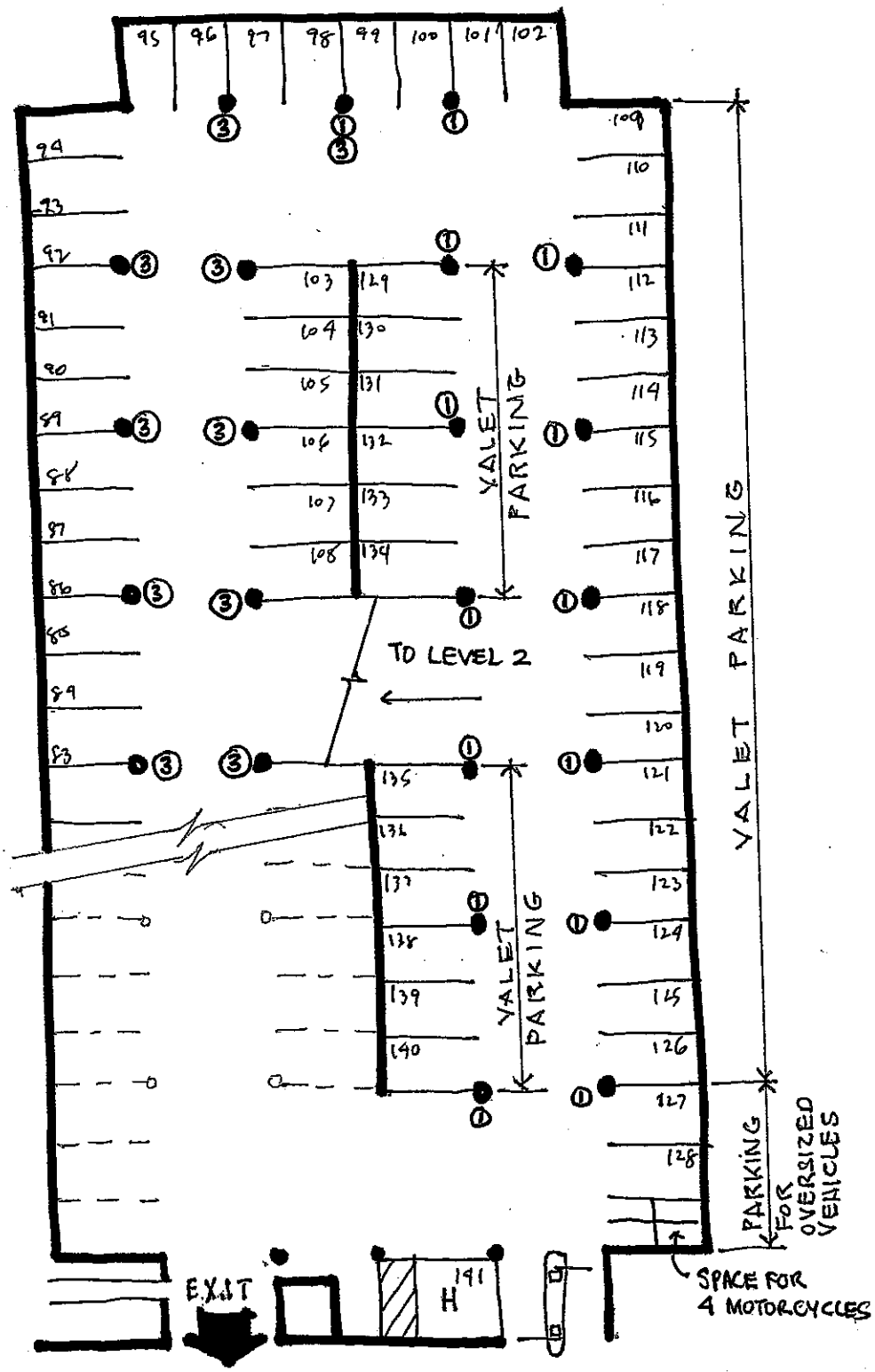
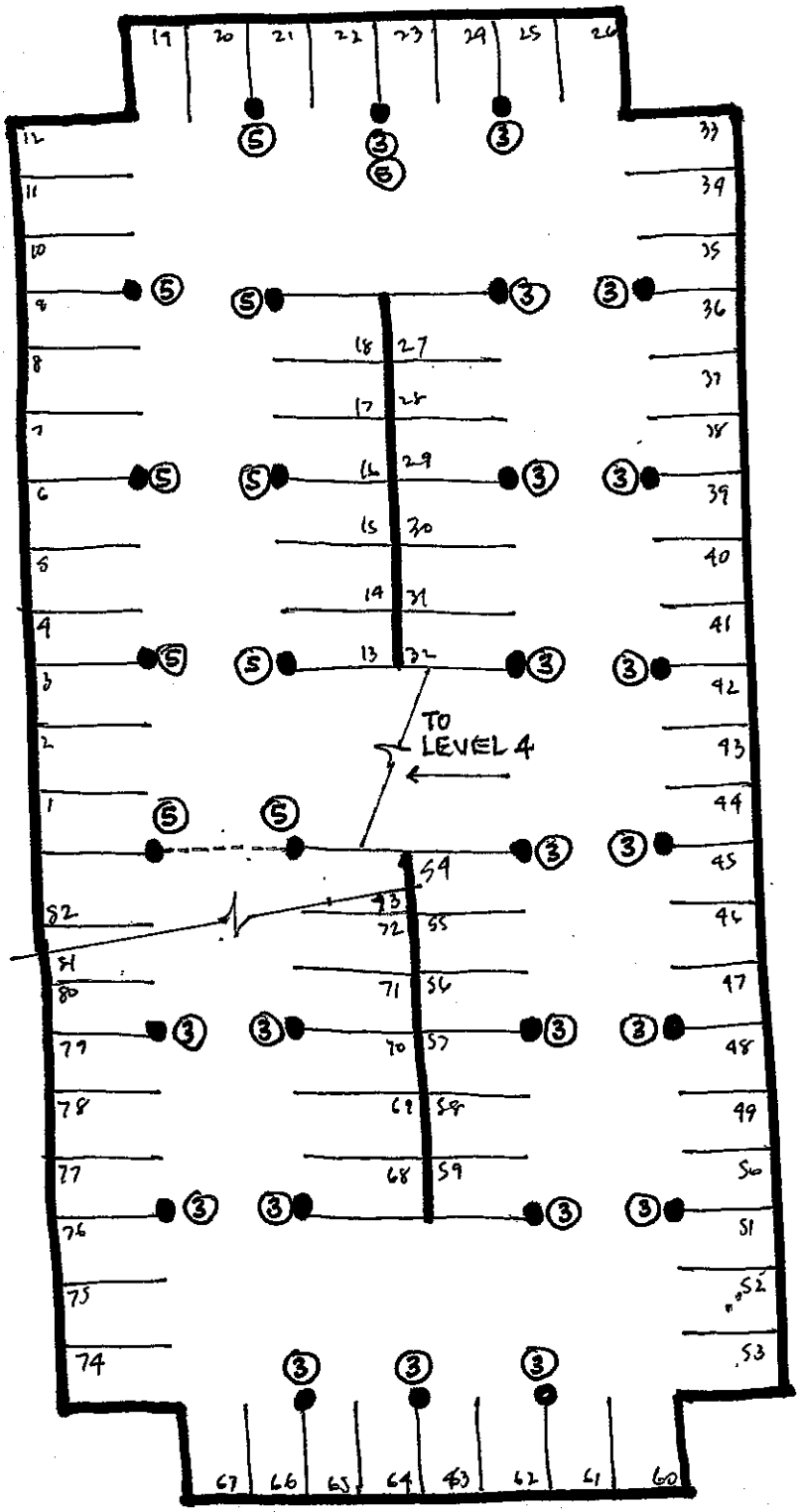
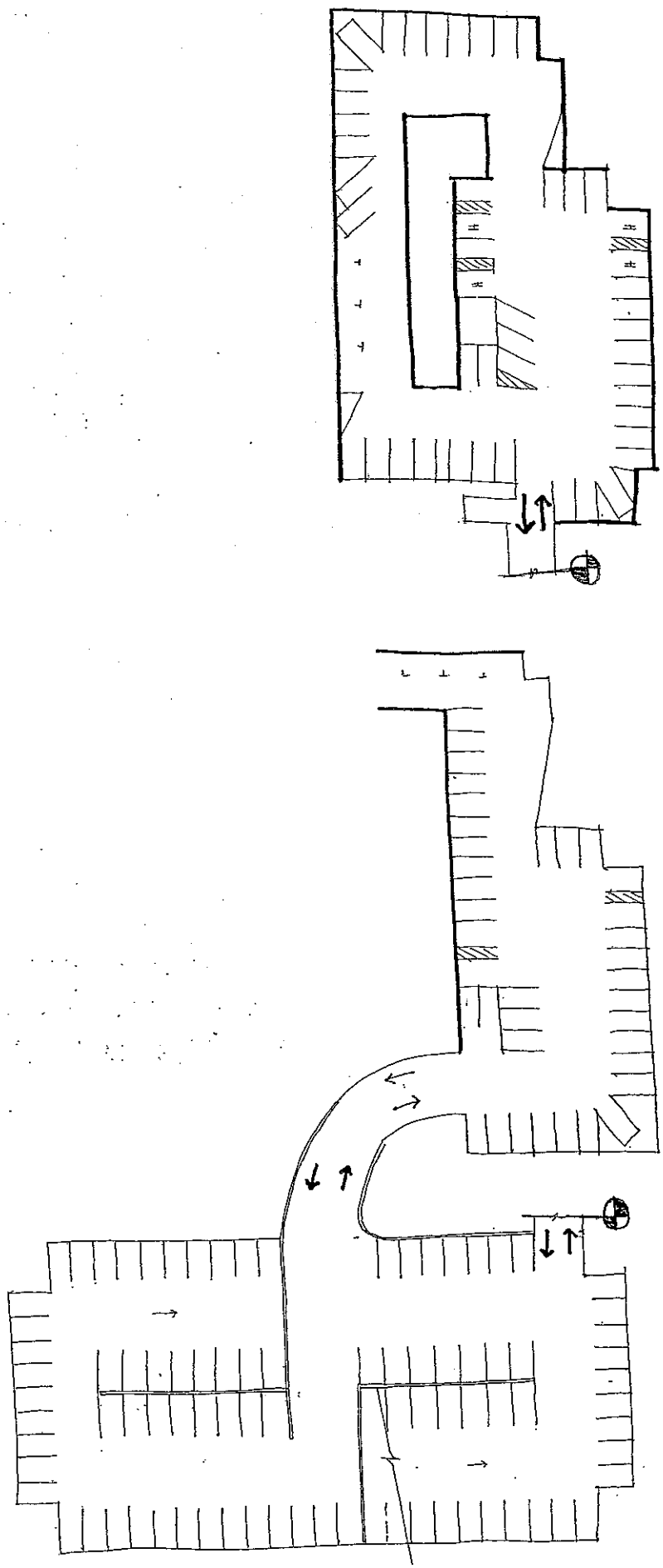

ROOF DECK PARKING ABOVE
TO LEVEL 5



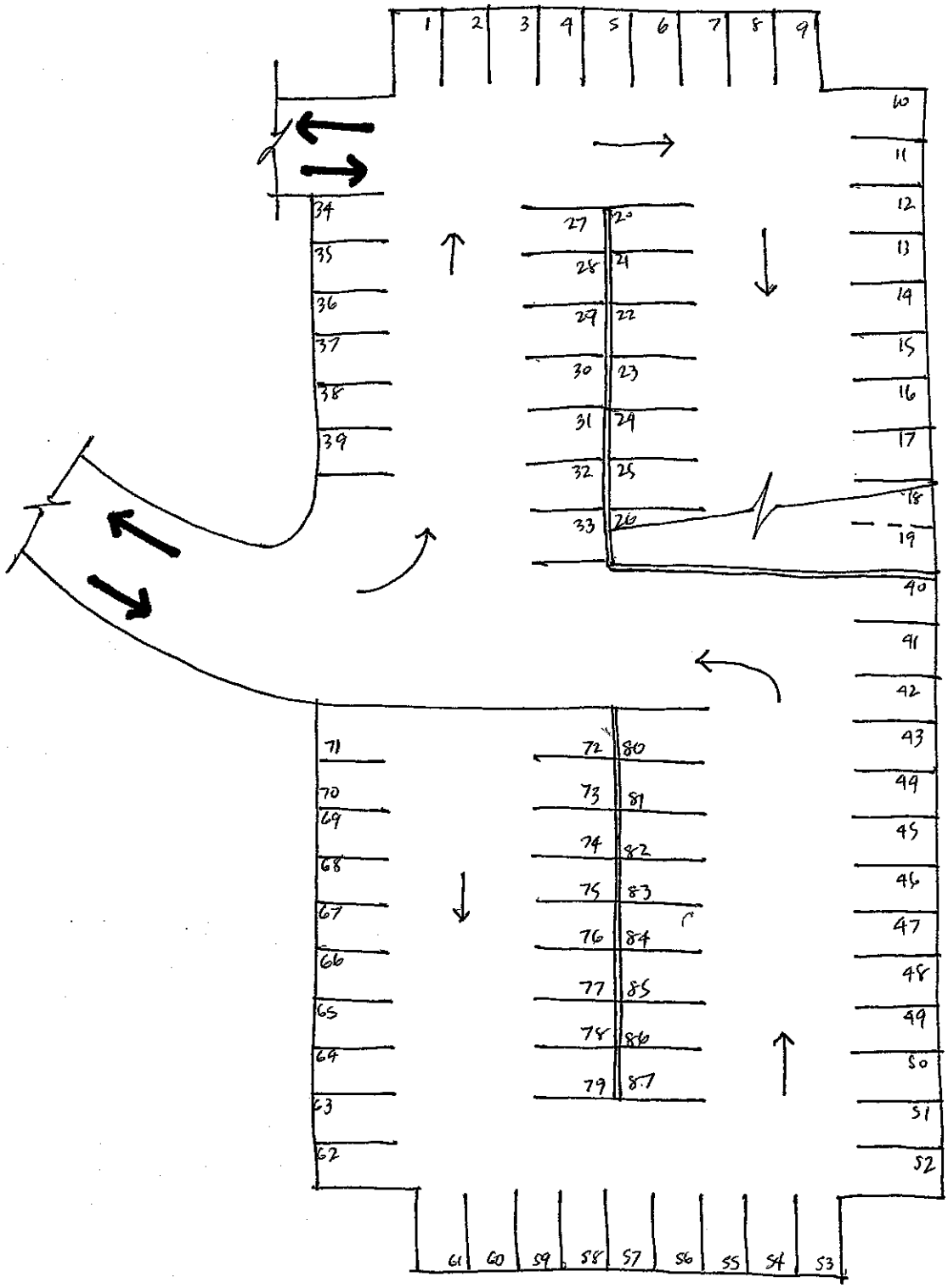
RAMP UP PARKING

V-30
SP-111
BIKES - 4


TO
LEVEL 4



MAP OF ROOF DECKING PARKING SPACES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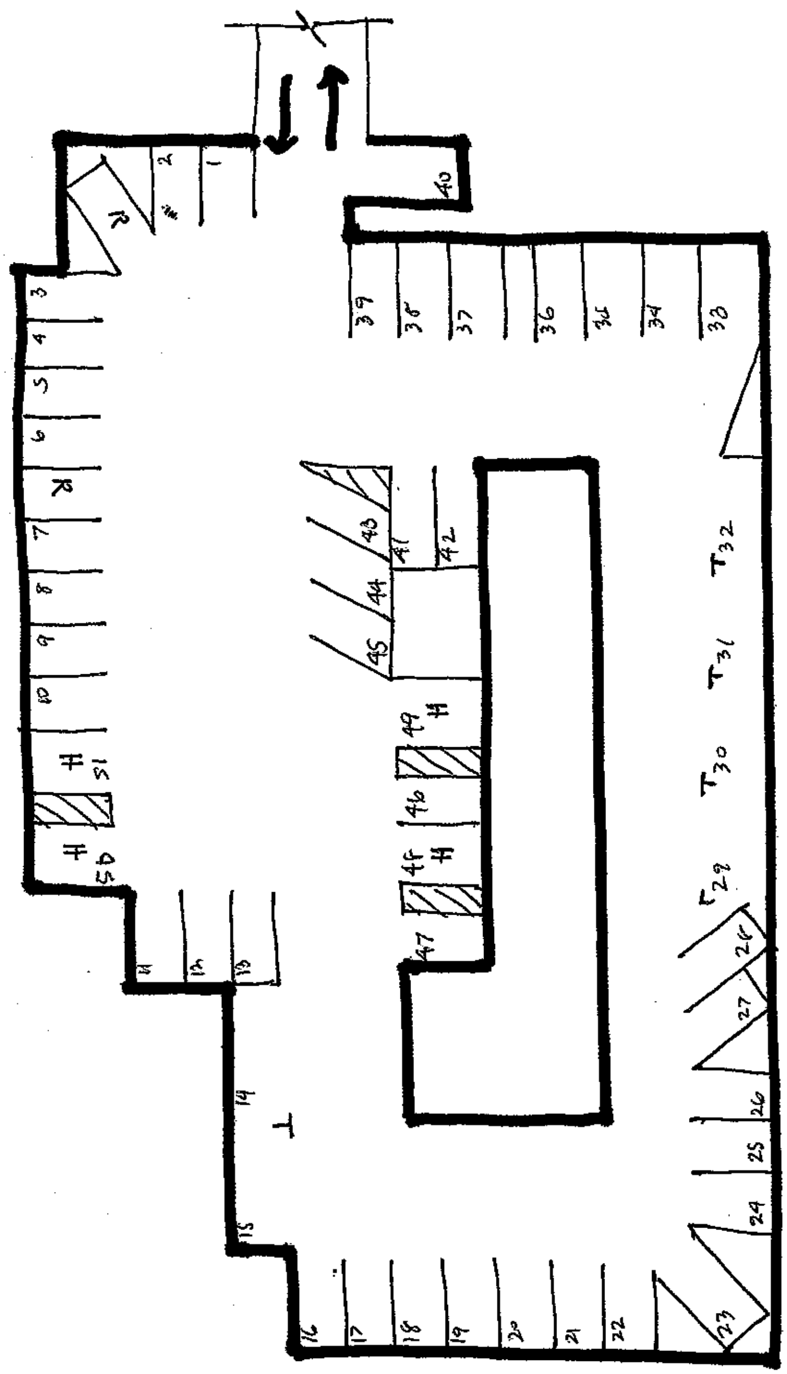
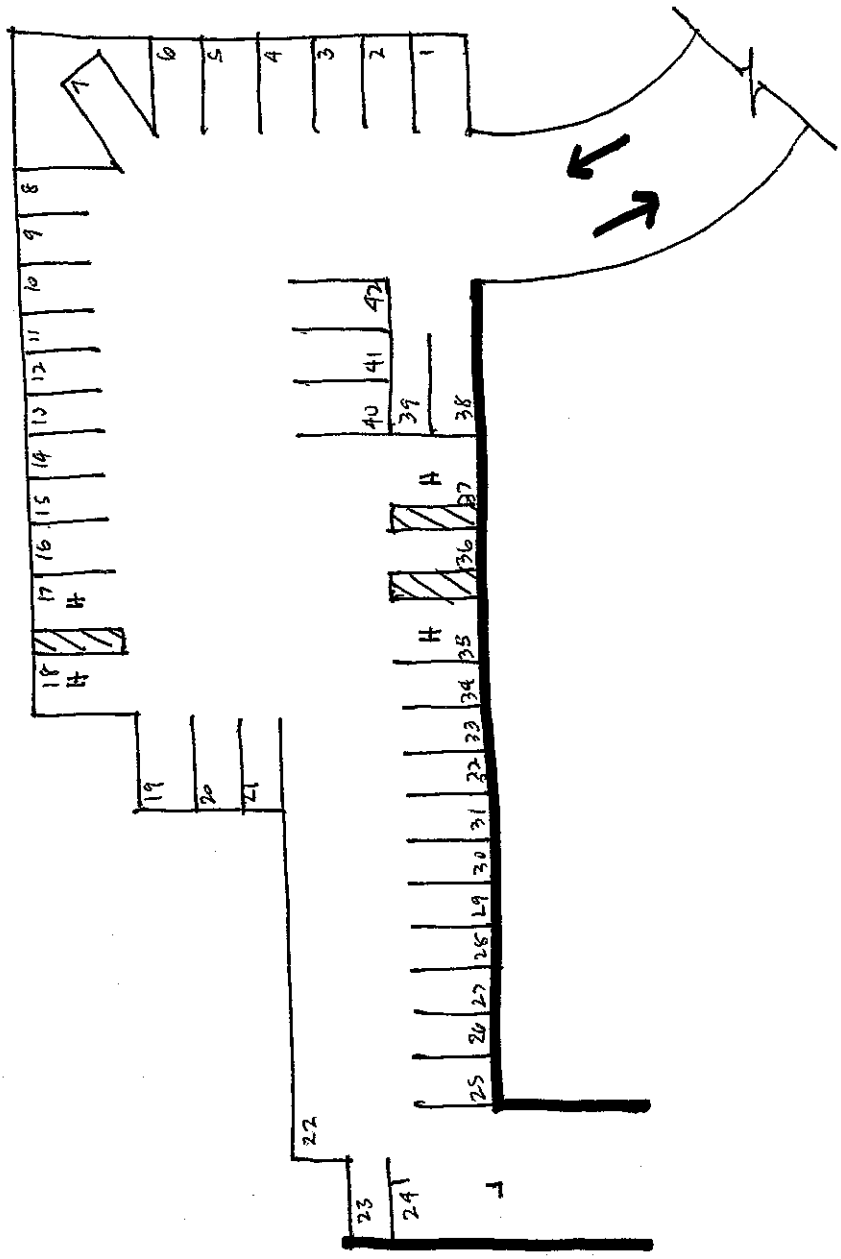
72 73 74 75 76 77 78 79 80 81 82 83 84 85 86 87

SP-87

R - 2
SP-51



SP - 51
R - 2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Sheraton Waikiki Hotel Parking Garage Vehicle Count

February 27, 2009

Interval	Ramp Up Parking (M Floor thru 5th Floor Parking)				Ramp Down Parking (M Floor thru 5th Floor Parking				6th Floor thru 7th Floor Parking	Total
	Self Parking	Reserved Parking	Private Parking	Valet Parking	Self Parking	Reserved Parking	Private / No Parking	Valet Parking	Self Parking	
6:00AM	154	0	4	50	125	1	7	21	25	387
6:15AM	161	0	4	50	134	1	8	32	27	417
6:30AM	165	0	2	51	143	1	8	33	30	433
6:45AM	186	1	2	51	160	1	8	33	31	473
7:00AM	193	1	2	48	167	4	9	32	42	498
7:15AM	212	1	3	43	182	6	8	32	55	542
7:30AM	217	1	4	40	192	6	7	32	76	575
7:45AM	231	1	5	39	201	9	7	40	91	624
8:00AM	230	1	5	37	200	8	12	29	115	637
8:15AM	244	1	5	34	201	10	12	26	138	671
8:30AM	241	1	6	31	214	10	12	25	157	697
8:45AM	256	1	6	35	207	7	13	25	168	718
9:00AM	242	1	6	36	207	14	14	23	190	733
9:15AM	240	1	5	36	208	15	14	21	205	745
9:30AM	243	1	5	34	206	14	15	21	210	749
9:45AM	238	1	5	35	206	14	16	21	210	746
10:00AM	242	2	6	28	203	15	15	18	209	738
10:15AM	239	2	6	26	198	15	15	17	216	734
10:30AM	232	1	5	29	207	14	15	17	208	728
10:45AM	224	1	5	28	208	14	15	15	215	725
11:00AM	222	1	5	28	210	14	15	14	218	727
11:15AM	216	1	5	28	207	13	16	13	215	714
11:30AM	228	1	5	25	212	12	15	11	215	724
11:45AM	233	1	5	25	209	12	15	11	225	736
12 Noon	232	1	6	21	207	10	15	11	214	717
12:15PM	221	1	6	19	207	11	14	11	212	702
12:30PM	215	1	7	19	201	10	14	11	208	686
12:45PM	217	1	7	22	201	11	14	11	207	691
1:00PM	211	1	7	21	200	12	15	10	205	682
1:15PM	203	1	7	22	195	12	16	10	203	669
1:30PM	200	2	7	21	196	11	18	11	207	673
1:45PM	207	2	7	26	193	9	17	11	199	671

Sheraton Waikiki Hotel Parking Garage Vehicle Count

February 27, 2009

Interval	Ramp Up Parking (M Floor thru 5th Floor Parking)				Ramp Down Parking (M Floor thru 5th Floor Parking				6th Floor thru 7th Floor Parking	Total
	Self Parking	Reserved Parking	Private Parking	Valet Parking	Self Parking	Reserved Parking	Private / No Parking	Valet Parking	Self Parking	
2:00PM	202	2	7	27	186	10	17	9	195	655
2:15PM	196	2	7	32	183	10	16	11	186	643
2:30PM	190	2	7	38	179	10	17	12	183	638
2:45PM	201	2	7	40	183	10	17	12	180	652
3:00PM	207	2	7	49	184	10	17	10	176	662
3:15PM	210	2	7	47	173	9	18	11	179	656
3:30PM	210	2	7	49	175	11	19	17	176	666
3:45PM	215	2	7	50	174	11	19	18	176	672
4:00PM	210	3	7	52	165	11	20	22	163	653
4:15PM	208	2	7	51	164	9	20	22	137	620
4:30PM	210	2	7	54	162	7	22	21	138	623
4:45PM	212	2	7	57	170	12	25	26	134	645
5:00PM	245	2	7	55	197	13	20	27	126	692
5:15PM	230	2	7	53	184	12	19	26	116	649
5:30PM	232	2	7	55	185	12	19	27	109	648
5:45PM	242	2	7	55	199	10	22	27	99	663
6:00PM	243	1	5	56	210	9	22	28	105	679
6:15PM	244	1	5	56	209	8	20	29	129	701
6:30PM	244	1	3	57	211	7	22	30	148	723
6:45PM	248	1	3	57	213	8	21	31	157	739
7:00PM	263	1	2	61	204	9	22	34	163	759
7:15PM	269	1	2	59	209	8	20	32	161	761
7:30PM	262	1	2	60	209	7	19	32	166	758
7:45PM	245	1	2	60	210	5	19	33	170	745
8:00PM	249	1	1	62	208	5	18	34	168	746
8:15PM	244	1	1	60	208	4	17	34	162	731
8:30PM	243	1	1	67	208	5	17	35	158	735
8:45PM	244	1	1	59	210	3	17	36	157	728
9:00PM	245	0	2	62	212	5	18	36	141	721
9:15PM	238	0	2	62	210	4	18	38	152	724
9:30PM	250	0	2	61	210	7	18	38	154	740
9:45PM	243	0	2	60	210	6	18	35	149	723

Sheraton Waikiki Hotel Parking Garage Vehicle Count

February 27, 2009

Interval	Ramp Up Parking (M Floor thru 5th Floor Parking)				Ramp Down Parking (M Floor thru 5th Floor Parking				6th Floor thru 7th Floor Parking	Total
	Self Parking	Reserved Parking	Private Parking	Valet Parking	Self Parking	Reserved Parking	Private / No Parking	Valet Parking	Self Parking	
10:00PM	234	0	2	63	194	8	13	35	146	695
10:15PM	209	0	2	61	175	8	13	35	131	634
10:30PM	205	0	2	64	159	10	11	35	95	581
10:45PM	191	0	2	63	151	9	11	35	80	542
11:00PM	183	0	2	64	140	9	10	37	79	524
11:15PM	167	0	2	65	128	10	8	36	76	492
11:30PM	162	0	2	63	128	9	7	36	71	478
11:45PM	155	0	2	63	123	8	7	37	68	463

Sheraton Waikiki Hotel Parking Garage Vehicle Count

February 28, 2009

Interval	Ramp Down Parking (M Floor thru 5th Floor Parking)				Ramp Up Parking (M Floor thru 5th Floor Parking				6th Floor thru 7th Floor Parking	Total
	Self Parking	Reserved Parking	Private / No Parking	Valet Parking	Self Parking	Reserved Parking	Private Parking	Valet Parking	Self Parking	
6:00AM	114	8	11	35	132	0	1	60	41	402
6:15AM	116	8	11	37	130	0	1	60	40	403
6:30AM	120	8	11	30	135	0	1	58	42	405
6:45AM	134	8	11	36	142	0	1	60	44	436
7:00AM	127	7	11	35	140	0	1	61	48	430
7:15AM	127	7	11	35	148	0	1	59	48	436
7:30AM	136	7	10	34	156	0	1	57	51	452
7:45AM	128	6	10	34	165	0	1	57	54	455
8:00AM	139	6	10	34	170	0	1	56	52	468
8:15AM	137	6	10	33	170	0	1	56	51	464
8:30AM	138	6	10	32	170	0	2	55	51	464
8:45AM	140	7	10	34	173	0	2	54	50	470
9:00AM	145	5	9	33	174	1	2	52	51	472
9:15AM	146	5	8	33	172	1	2	51	52	470
9:30AM	145	5	10	32	171	1	2	50	54	470
9:45AM	150	6	12	30	171	1	2	52	50	474
10:00AM	149	3	12	28	175	1	2	43	49	462
10:15AM	149	4	12	27	171	1	2	43	51	460
10:30AM	148	6	12	25	172	1	1	44	47	456
10:45AM	146	7	12	24	162	1	1	40	47	440
11:00AM	152	8	12	23	159	1	1	36	47	439
11:15AM	145	7	12	23	156	1	1	37	45	427
11:30AM	146	7	12	22	156	1	1	37	44	426
11:45AM	150	6	12	21	159	1	1	36	44	430
12 Noon	149	7	13	19	155	1	1	31	46	422
12:15PM	145	6	14	19	155	1	1	33	42	416
12:30PM	149	6	14	19	163	1	2	35	41	430
12:45PM	153	6	14	19	160	1	2	34	41	430
1:00PM	150	9	12	18	157	1	3	38	41	429
1:15PM	150	6	13	21	165	1	3	38	40	437
1:30PM	150	6	13	22	169	1	3	36	42	442
1:45PM	153	8	9	19	173	0	3	35	41	441

Sheraton Waikiki Hotel Parking Garage Vehicle Count

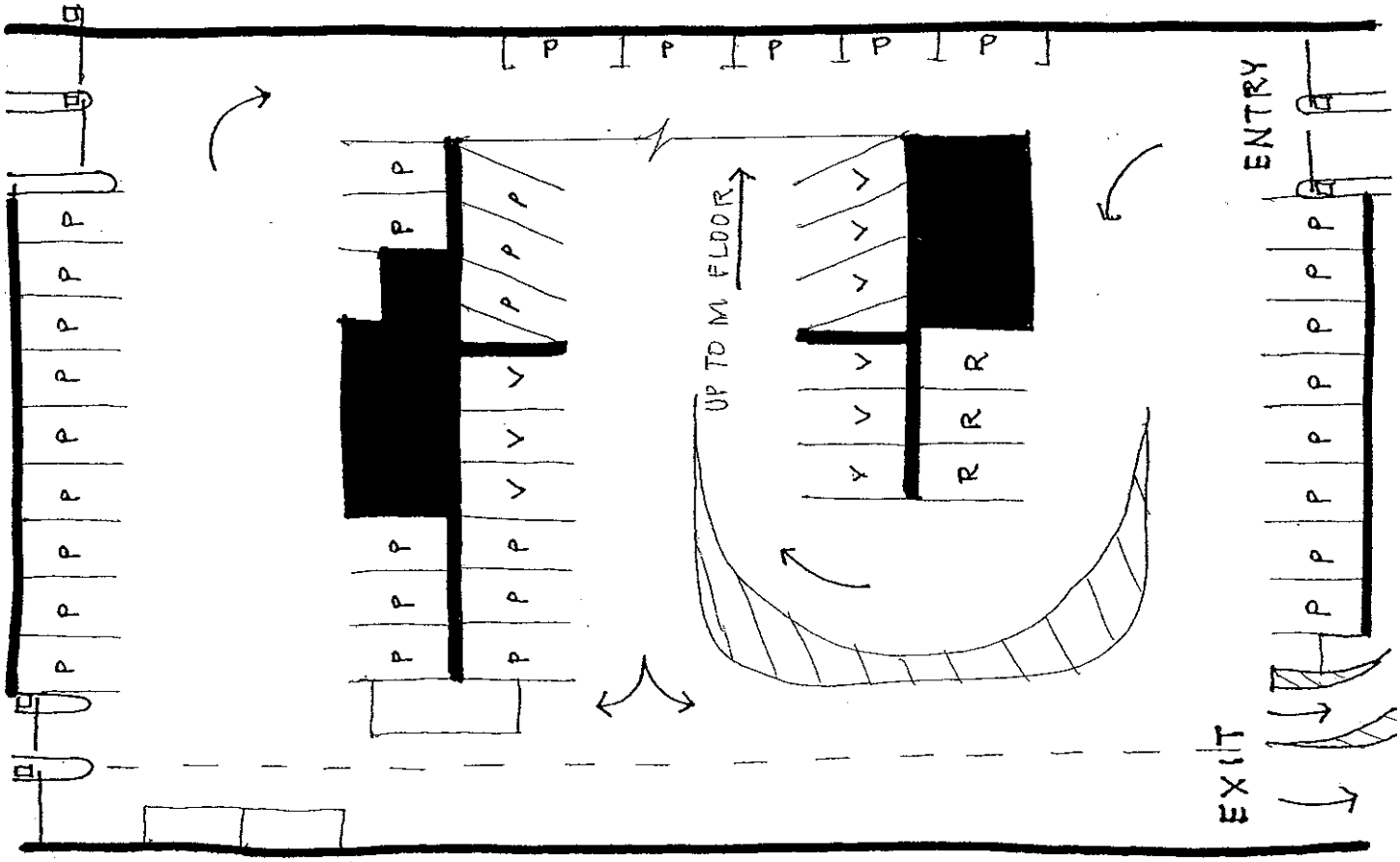
February 28, 2009

Interval	Ramp Down Parking (M Floor thru 5th Floor Parking)				Ramp Up Parking (M Floor thru 5th Floor Parking				6th Floor thru 7th Floor Parking	Total
	Self Parking	Reserved Parking	Private / No Parking	Valet Parking	Self Parking	Reserved Parking	Private Parking	Valet Parking	Self Parking	
2:00PM	155	7	9	20	177	0	3	34	42	447
2:15PM	159	7	11	20	184	0	3	37	41	462
2:30PM	160	7	11	20	182	1	3	41	39	464
2:45PM	159	7	11	20	185	1	3	43	39	468
3:00PM	163	7	12	21	191	1	3	45	38	481
3:15PM	165	7	12	22	189	1	3	48	37	484
3:30PM	167	7	13	21	196	1	3	51	39	498
3:45PM	173	7	13	21	204	1	3	53	39	514
4:00PM	177	7	11	21	202	1	3	56	41	519
4:15PM	168	6	14	23	193	1	3	58	40	506
4:30PM	165	8	15	28	198	1	3	58	34	510
4:45PM	171	10	15	28	202	1	3	58	34	522
5:00PM	191	9	18	37	202	1	2	57	37	554
5:15PM	192	9	22	39	218	1	2	60	37	580
5:30PM	194	11	22	42	227	1	2	64	36	599
5:45PM	205	10	25	41	232	1	2	63	38	617
6:00PM	210	10	23	41	237	1	2	66	39	629
6:15PM	210	10	23	42	247	1	1	66	43	643
6:30PM	212	16	23	42	248	1	1	67	60	670
6:45PM	212	14	24	43	248	1	1	66	82	691
7:00PM	202	16	26	41	244	1	0	69	87	686
7:15PM	210	15	26	42	240	1	0	68	96	698
7:30PM	209	15	27	41	243	1	0	67	100	703
7:45PM	212	16	27	41	241	1	0	69	103	710
8:00PM	215	17	24	42	241	1	1	67	111	719
8:15PM	212	16	25	41	240	1	1	67	112	715
8:30PM	210	16	26	40	243	1	1	69	115	721
8:45PM	211	15	26	41	242	1	1	69	116	722
9:00PM	210	16	26	43	241	1	2	69	117	725
9:15PM	209	16	27	44	242	1	2	73	115	729
9:30PM	202	16	28	45	240	1	2	75	114	723
9:45PM	203	16	29	46	234	1	2	74	107	712

Sheraton Waikiki Hotel Parking Garage Vehicle Count

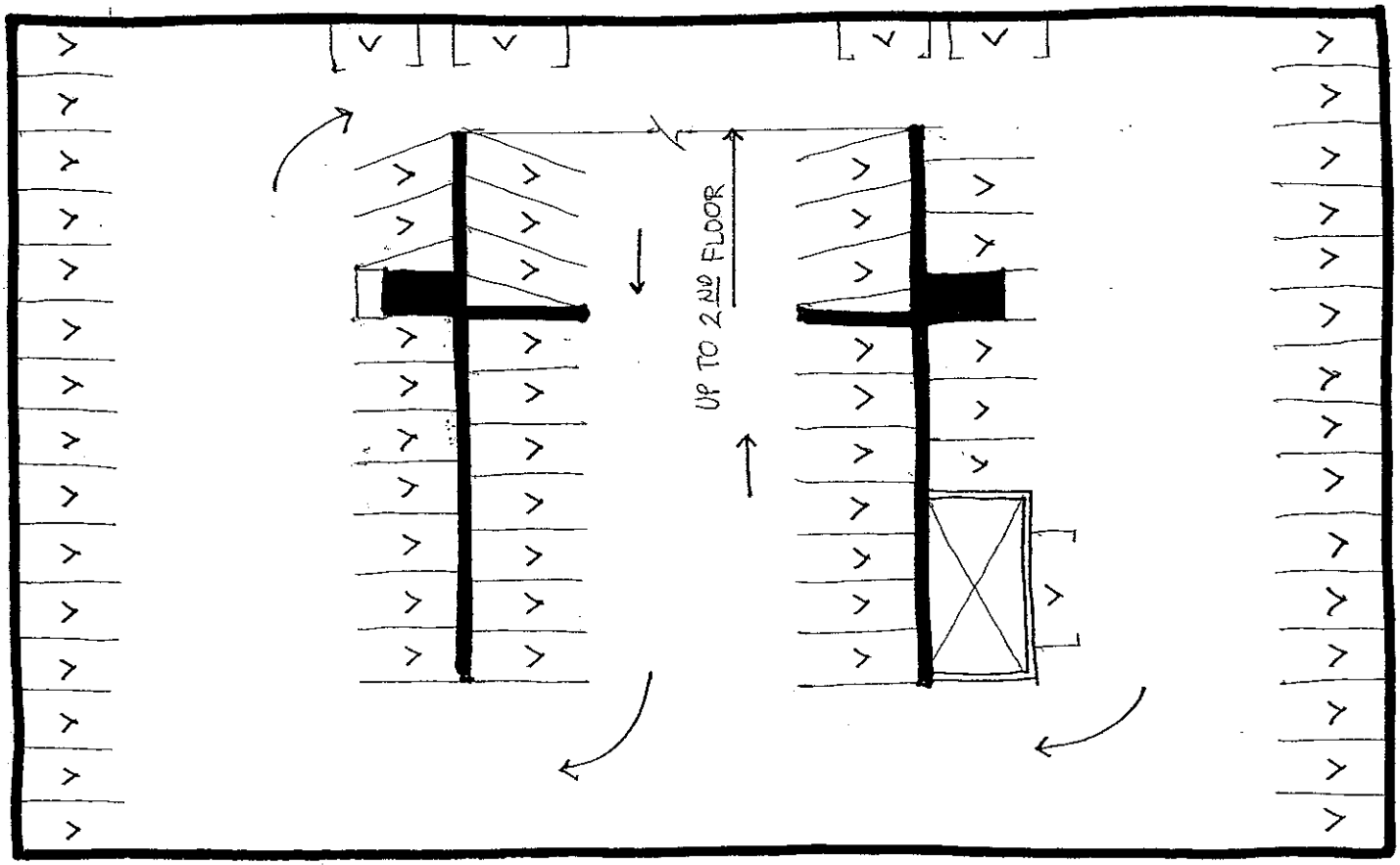
February 28, 2009

Interval	Ramp Down Parking (M Floor thru 5th Floor Parking)				Ramp Up Parking (M Floor thru 5th Floor Parking				6th Floor thru 7th Floor Parking	Total
	Self Parking	Reserved Parking	Private / No Parking	Valet Parking	Self Parking	Reserved Parking	Private Parking	Valet Parking	Self Parking	
10:00PM	200	15	28	45	231	1	2	73	103	698
10:15PM	181	18	25	36	219	1	2	74	99	655
10:30PM	174	17	18	41	208	1	2	74	89	624
10:45PM	173	17	19	42	184	1	2	74	74	586
11:00PM	171	16	18	41	182	0	2	74	80	584
11:15PM	126	16	14	43	169	0	2	73	74	517
11:30PM	120	15	13	45	165	0	2	70	67	497
11:45PM	117	15	13	44	166	0	2	69	66	492



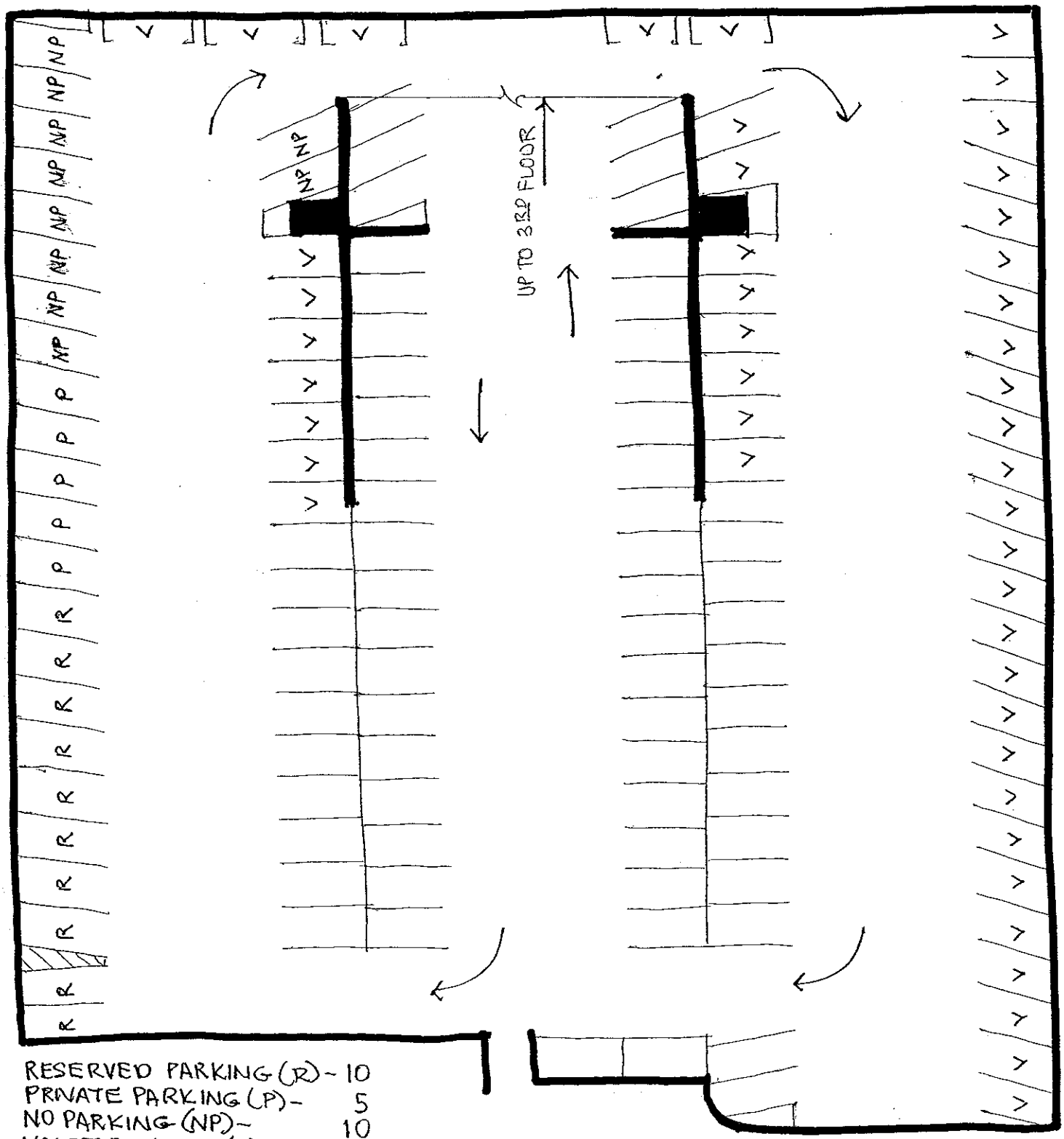
PRIVATE PARKING (P) - 33
VALET PARKING (V) - 9
RESERVED PARKING (R) - 3
45

GROUND FLOOR



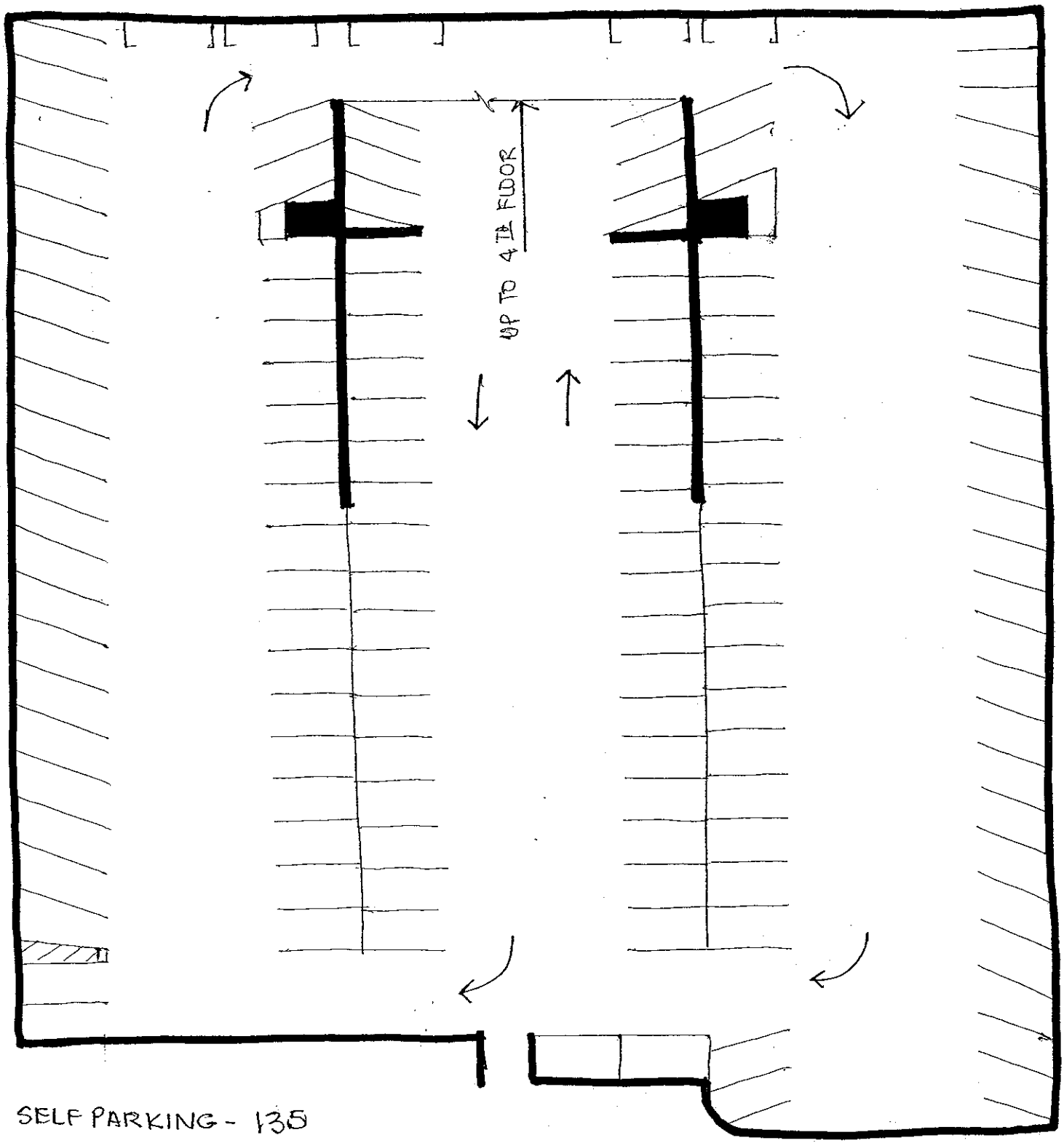
VALET PARKING (V) - 69

M FLOOR



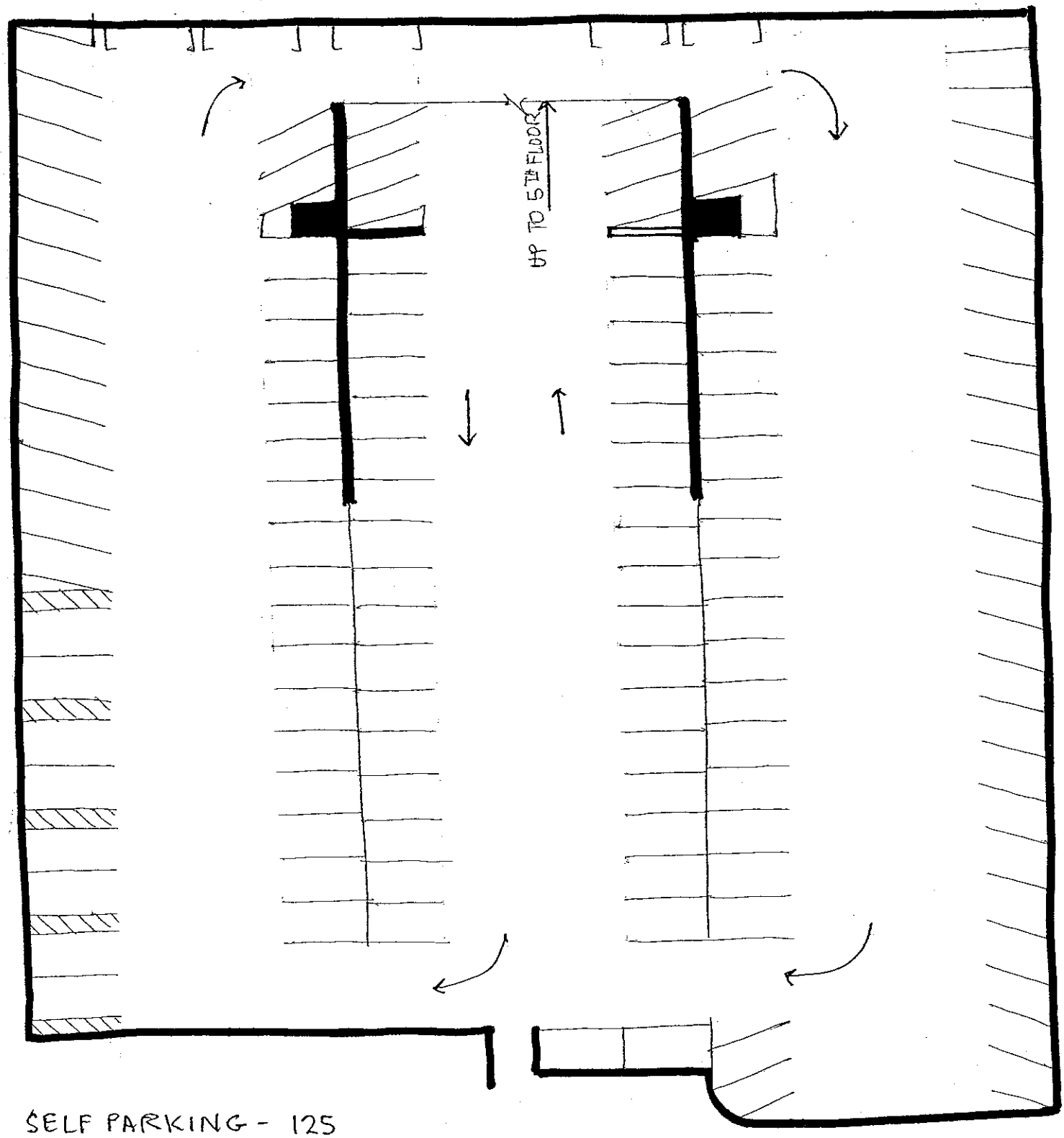
RESERVED PARKING (R) - 10
PRIVATE PARKING (P) - 5
NO PARKING (NP) - 10
VALET PARKING (V) - 46
SELF PARKING - 65
136

2ND FLOOR



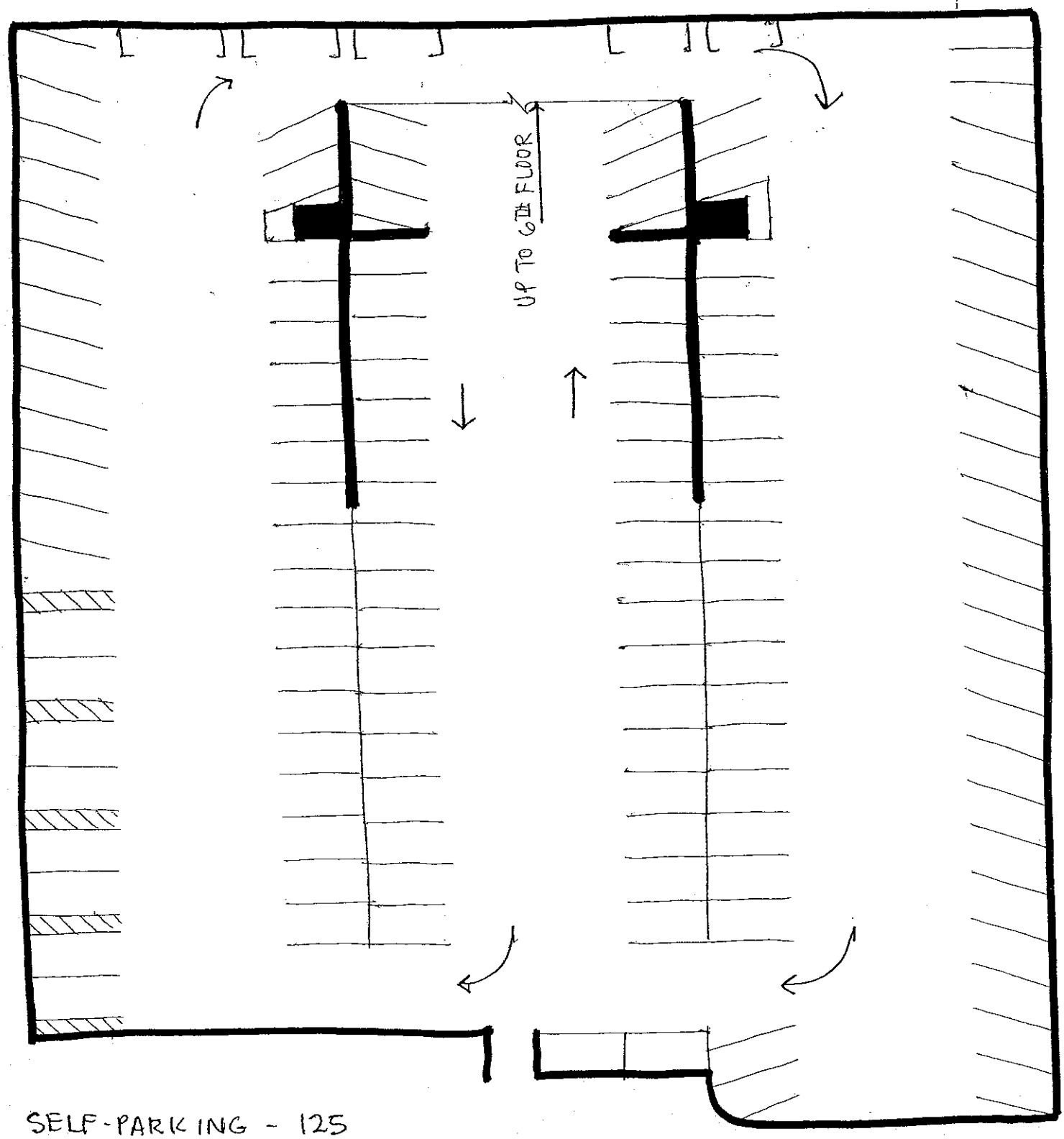
SELF PARKING - 135

3RD FLOOR



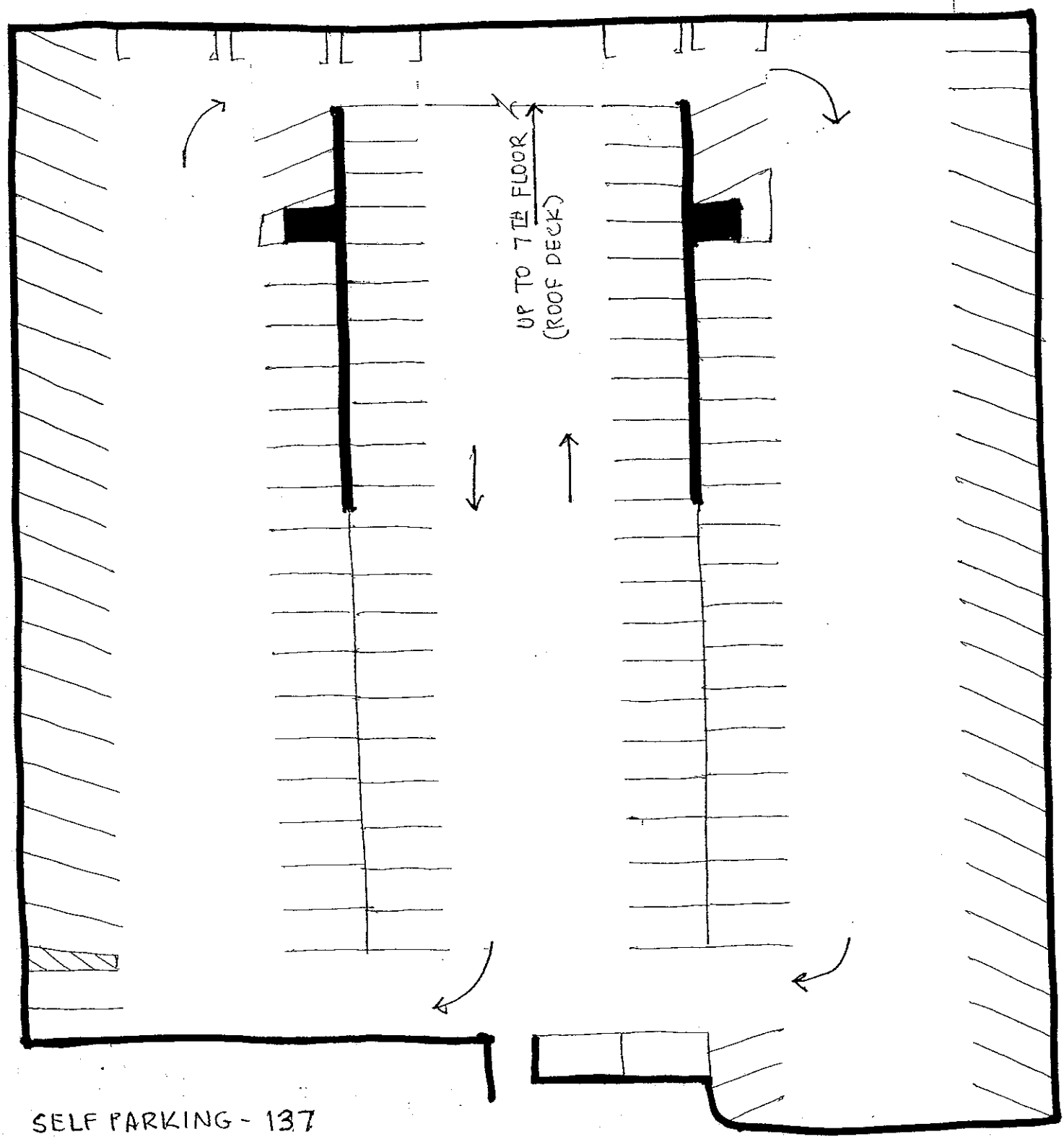
SELF PARKING - 125

4TH FLOOR



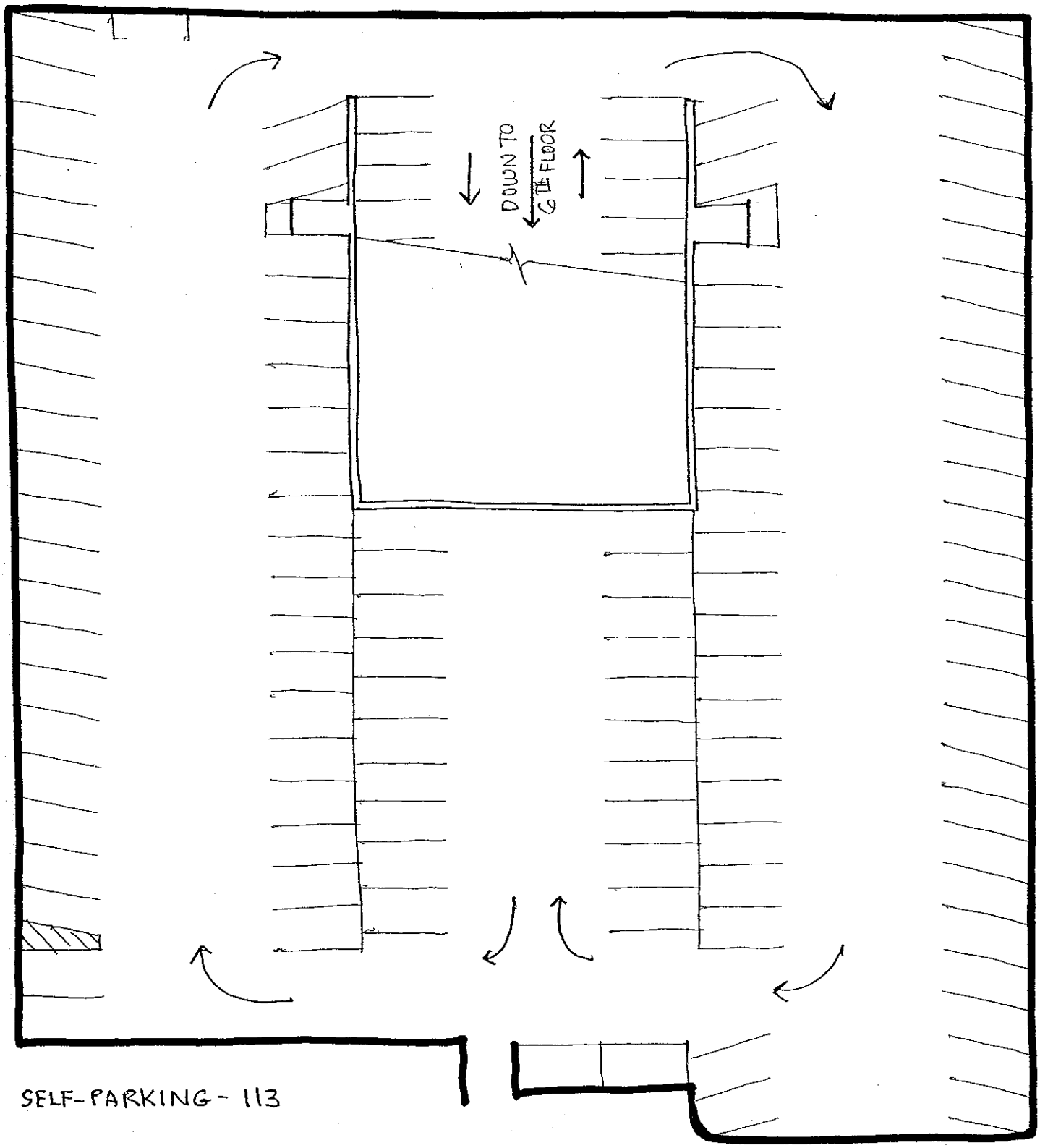
SELF-PARKING - 125

5TH FLOOR



SELF PARKING - 137

6TH FLOOR



SELF-PARKING - 113

7TH FLOOR (ROOF DECK)

APPENDIX B

PARKING ANALYSIS

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekday - Valet Stalls

	SW Valet	Excess SW Valet	Moana Valet	Net Valet
6:00AM	71	53	42	11
6:15AM	82	42	42	0
6:30AM	84	40	43	-3
6:45AM	84	40	42	-2
7:00AM	80	44	43	1
7:15AM	75	49	41	8
7:30AM	72	52	40	12
7:45AM	79	45	41	4
8:00AM	66	58	39	19
8:15AM	60	64	39	25
8:30AM	56	68	38	30
8:45AM	60	64	38	26
9:00AM	59	65	37	28
9:15AM	57	67	39	28
9:30AM	55	69	37	32
9:45AM	56	68	36	32
10:00AM	46	78	33	45
10:15AM	43	81	32	49
10:30AM	46	78	31	47
10:45AM	43	81	31	50
11:00AM	42	82	29	53
11:15AM	41	83	29	54
11:30AM	36	88	28	60
11:45AM	36	88	25	63
12 Noon	32	92	23	69
12:15PM	30	94	21	73
12:30PM	30	94	20	74
12:45PM	33	91	21	70
1:00PM	31	93	21	72
1:15PM	32	92	22	70
1:30PM	32	92	25	67
1:45PM	37	87	24	63
2:00PM	36	88	24	64
2:15PM	43	81	29	52
2:30PM	50	74	31	43
2:45PM	52	72	34	38
3:00PM	59	65	39	26
3:15PM	58	66	43	23
3:30PM	66	58	41	17
3:45PM	68	56	40	16
4:00PM	74	50	35	15
4:15PM	73	51	36	15
4:30PM	75	49	35	14
4:45PM	83	41	35	6

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekday - Valet Stalls

	SW Valet	Excess SW Valet	Moana Valet	Net Valet
5:00PM	82	42	29	13
5:15PM	79	45	30	15
5:30PM	82	42	31	11
5:45PM	82	42	33	9
6:00PM	84	40	36	4
6:15PM	85	39	38	1
6:30PM	87	37	41	-4
6:45PM	88	36	41	-5
7:00PM	95	29	40	-11
7:15PM	91	33	38	-5
7:30PM	92	32	39	-7
7:45PM	93	31	39	-8
8:00PM	96	28	41	-13
8:15PM	94	30	42	-12
8:30PM	102	22	42	-20
8:45PM	95	29	44	-15
9:00PM	98	26	45	-19
9:15PM	100	24	46	-22
9:30PM	99	25	46	-21
9:45PM	95	29	46	-17
10:00PM	98	26	47	-21
10:15PM	96	28	47	-19
10:30PM	99	25	50	-25
10:45PM	98	26	50	-24
11:00PM	101	23	49	-26
11:15PM	101	23	48	-25
11:30PM	99	25	48	-23
11:45PM	100	24	48	-24

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekday - Self-Parking Stalls

	SW Self	SW Self (Employee)	SW Self (Guest)	Excess SW Self	PK/Moana Self	PK/Moana Self (Employee)	Moana Self (Employee)	PK/Moana Self (Guest)	Moana Self (Guest)	Moana Self	Net Self	Required Add'l Valet Parking	Net Self Less Valet
6:00AM	304	152	152	396	327	164	90	164	25	25	371	0	371
6:15AM	322	161	161	378	337	169	93	169	25	118	260	0	260
6:30AM	338	169	169	362	350	175	96	175	26	122	240	3	237
6:45AM	377	189	189	323	364	182	100	182	27	127	196	2	194
7:00AM	402	201	201	298	376	188	103	188	28	131	167	0	167
7:15AM	449	225	225	251	378	189	104	189	28	132	119	0	119
7:30AM	485	243	243	215	380	190	105	190	29	134	81	0	81
7:45AM	523	262	262	177	390	195	107	195	29	136	41	0	41
8:00AM	545	273	273	155	393	197	108	197	30	138	17	0	17
8:15AM	583	292	292	117	390	195	107	195	29	136	-19	0	-19
8:30AM	612	306	306	88	388	194	107	194	29	136	-48	0	-48
8:45AM	631	316	316	69	395	198	109	198	30	139	-70	0	-70
9:00AM	639	320	320	61	407	204	112	204	31	143	-82	0	-82
9:15AM	653	327	327	47	402	201	111	201	30	141	-94	0	-94
9:30AM	659	330	330	41	398	199	109	199	30	139	-98	0	-98
9:45AM	654	327	327	46	393	197	108	197	30	138	-92	0	-92
10:00AM	654	327	327	46	393	197	108	197	30	138	-92	0	-92
10:15AM	653	327	327	47	387	194	107	194	29	136	-89	0	-89
10:30AM	647	324	324	53	382	191	105	191	29	134	-81	0	-81
10:45AM	647	324	324	53	386	193	106	193	29	135	-82	0	-82
11:00AM	650	325	325	50	375	188	103	188	28	131	-81	0	-81
11:15AM	638	319	319	62	362	181	100	181	27	127	-65	0	-65
11:30AM	655	328	328	45	367	184	101	184	28	129	-84	0	-84
11:45AM	667	334	334	33	366	183	101	183	27	128	-95	0	-95
12 Noon	653	327	327	47	366	183	101	183	27	128	-81	0	-81
12:15PM	640	320	320	60	350	175	96	175	26	122	-62	0	-62
12:30PM	624	312	312	76	361	181	100	181	27	127	-51	0	-51
12:45PM	625	313	313	75	370	185	102	185	28	130	-55	0	-55
1:00PM	616	308	308	84	373	187	103	187	28	131	-47	0	-47
1:15PM	601	301	301	99	378	189	104	189	28	132	-33	0	-33
1:30PM	603	302	302	97	372	186	102	186	28	130	-33	0	-33
1:45PM	599	300	300	101	382	191	105	191	29	134	-33	0	-33
2:00PM	583	292	292	117	391	196	108	196	29	137	-20	0	-20
2:15PM	565	283	283	135	385	193	106	193	29	135	0	0	0
2:30PM	552	276	276	148	393	197	108	197	30	138	10	0	10
2:45PM	564	282	282	136	405	203	112	203	30	142	-6	0	-6
3:00PM	567	284	284	133	403	202	111	202	30	141	-8	0	-8
3:15PM	562	281	281	138	380	190	105	190	29	134	4	0	4
3:30PM	561	281	281	139	368	184	101	184	28	129	10	0	10
3:45PM	565	283	283	135	366	183	101	183	27	128	7	0	7
4:00PM	538	269	269	162	360	180	99	180	27	126	36	0	36
4:15PM	509	255	255	191	360	180	99	180	27	126	65	0	65
4:30PM	510	255	255	190	340	170	94	170	26	120	70	0	70
4:45PM	516	258	258	184	345	173	95	173	26	121	63	0	63

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekday - Self-Parking Stalls

	SW Self	SW Self (Employee)	SW Self (Guest)	Excess SW Self	PK/Moana Self	PK/Moana Self (Employee)	Moana Self (Employee)	PK/Moana Self (Guest)	Moana Self (Guest)	Moana Self	Net Self	Required Add'l Valet Parking	Net Self Less Valet
5:00PM	568	284	284	132	349	175	96	175	26	122	10	0	10
5:15PM	530	265	265	170	345	173	95	173	26	121	49	0	49
5:30PM	526	263	263	174	350	175	96	175	26	122	52	0	52
5:45PM	540	270	270	160	351	176	97	176	26	123	37	0	37
6:00PM	558	279	279	142	348	174	96	174	26	122	20	0	20
6:15PM	582	291	291	118	347	174	96	174	26	122	-4	0	-4
6:30PM	603	302	302	97	350	175	96	175	26	122	-25	4	-29
6:45PM	618	309	309	82	350	175	96	175	26	122	-40	5	-45
7:00PM	630	315	315	70	361	181	100	181	27	127	-57	11	-68
7:15PM	639	320	320	61	354	177	97	177	27	124	-63	5	-68
7:30PM	637	319	319	63	350	175	96	175	26	122	-59	7	-66
7:45PM	625	313	313	75	348	174	96	174	26	122	-47	8	-55
8:00PM	625	313	313	75	348	174	96	174	26	122	-47	13	-60
8:15PM	614	307	307	86	345	173	95	173	26	121	-35	12	-47
8:30PM	609	305	305	91	344	172	95	172	26	121	-30	20	-50
8:45PM	611	306	306	89	340	170	94	170	26	120	-31	15	-46
9:00PM	598	299	299	102	324	162	89	162	24	113	-11	19	-30
9:15PM	600	300	300	100	323	162	89	162	24	113	-13	22	-35
9:30PM	614	307	307	86	325	163	90	163	24	114	-28	21	-49
9:45PM	602	301	301	98	321	161	89	161	24	113	-15	17	-32
10:00PM	574	287	287	126	323	162	89	162	24	113	13	21	-8
10:15PM	515	258	258	185	311	156	86	156	23	109	76	19	57
10:30PM	459	230	230	241	314	157	86	157	24	110	131	25	106
10:45PM	422	211	211	278	306	153	84	153	23	107	171	24	147
11:00PM	402	201	201	298	302	151	83	151	23	106	192	26	166
11:15PM	371	186	186	329	274	137	75	137	21	96	233	25	208
11:30PM	361	181	181	339	272	136	75	136	20	95	244	23	221
11:45PM	346	173	173	354	261	131	72	131	20	92	262	24	238

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekday - Reserved/Private/No Parking Stalls

	SW Reserved	Excess SW Reserved	PK/Moana Reserved	Moana Reserved	Net Reserved
6:00AM	12	49	3	2	47
6:15AM	13	48	5	3	45
6:30AM	11	50	5	3	47
6:45AM	12	49	6	3	46
7:00AM	16	45	6	3	42
7:15AM	18	43	6	3	40
7:30AM	18	43	8	4	39
7:45AM	22	39	9	5	34
8:00AM	26	35	12	7	28
8:15AM	28	33	12	7	26
8:30AM	29	32	12	7	25
8:45AM	27	34	13	7	27
9:00AM	35	26	16	9	17
9:15AM	35	26	15	8	18
9:30AM	35	26	16	9	17
9:45AM	36	25	16	9	16
10:00AM	38	23	16	9	14
10:15AM	38	23	16	9	14
10:30AM	35	26	16	9	17
10:45AM	35	26	16	9	17
11:00AM	35	26	16	9	17
11:15AM	35	26	16	9	17
11:30AM	33	28	16	9	19
11:45AM	33	28	16	9	19
12 Noon	32	29	16	9	20
12:15PM	32	29	16	9	20
12:30PM	32	29	16	9	20
12:45PM	33	28	16	9	19
1:00PM	35	26	15	8	18
1:15PM	36	25	16	9	16
1:30PM	38	23	16	9	14
1:45PM	35	26	16	9	17
2:00PM	36	25	16	9	16
2:15PM	35	26	17	9	17
2:30PM	36	25	17	9	16
2:45PM	36	25	17	9	16
3:00PM	36	25	17	9	16
3:15PM	36	25	16	9	16
3:30PM	39	22	16	9	13
3:45PM	39	22	15	8	14
4:00PM	41	20	15	8	12
4:15PM	38	23	14	8	15
4:30PM	38	23	14	8	15
4:45PM	46	15	13	7	8

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekday - Reserved/Private/No Parking Stalls

	SW Reserved	Excess SW Reserved	PK/Moana Reserved	Moana Reserved	Net Reserved
5:00PM	42	19	13	7	12
5:15PM	40	21	12	7	14
5:30PM	40	21	7	4	17
5:45PM	41	20	6	3	17
6:00PM	37	24	6	3	21
6:15PM	34	27	6	3	24
6:30PM	33	28	5	3	25
6:45PM	33	28	6	3	25
7:00PM	34	27	5	3	24
7:15PM	31	30	5	3	27
7:30PM	29	32	4	2	30
7:45PM	27	34	3	2	32
8:00PM	25	36	3	2	34
8:15PM	23	38	3	2	36
8:30PM	24	37	4	2	35
8:45PM	22	39	4	2	37
9:00PM	25	36	4	2	34
9:15PM	24	37	4	2	35
9:30PM	27	34	4	2	32
9:45PM	26	35	4	2	33
10:00PM	23	38	4	2	36
10:15PM	23	38	4	2	36
10:30PM	23	38	4	2	36
10:45PM	22	39	4	2	37
11:00PM	21	40	3	2	38
11:15PM	20	41	3	2	39
11:30PM	18	43	3	2	41
11:45PM	17	44	4	2	42

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekday - Self-Parking Stalls
Reduced Employee Parking

	Net SW Self Less Valet	Total Employee Parking	Reduced Employee Parking	Adjusted Net Valet & Self
6:00AM	371	242	182	431
6:15AM	260	254	191	323
6:30AM	237	265	199	303
6:45AM	194	289	217	266
7:00AM	167	304	228	243
7:15AM	119	329	247	201
7:30AM	81	348	261	168
7:45AM	41	369	277	133
8:00AM	17	381	286	112
8:15AM	-19	399	299	81
8:30AM	-48	413	310	55
8:45AM	-70	425	319	36
9:00AM	-82	432	324	26
9:15AM	-94	438	329	15
9:30AM	-98	439	329	12
9:45AM	-92	435	326	17
10:00AM	-92	435	326	17
10:15AM	-89	434	326	19
10:30AM	-81	429	322	26
10:45AM	-82	430	323	25
11:00AM	-81	428	321	26
11:15AM	-65	419	314	40
11:30AM	-84	429	322	23
11:45AM	-95	435	326	14
12 Noon	-81	428	321	26
12:15PM	-62	416	312	42
12:30PM	-51	412	309	52
12:45PM	-55	415	311	49
1:00PM	-47	411	308	56
1:15PM	-33	405	304	68
1:30PM	-33	404	303	68
1:45PM	-33	405	304	68
2:00PM	-20	400	300	80
2:15PM	0	389	292	97
2:30PM	10	384	288	106
2:45PM	-6	394	296	92
3:00PM	-8	395	296	91
3:15PM	4	386	290	100
3:30PM	10	382	287	105
3:45PM	7	384	288	103
4:00PM	36	368	276	128
4:15PM	65	354	266	153
4:30PM	70	349	262	157
4:45PM	63	353	265	151

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekday - Self-Parking Stalls
Reduced Employee Parking

	Net SW Self Less Valet	Total Employee Parking	Reduced Employee Parking	Adjusted Net Valet & Self
5:00PM	10	380	285	105
5:15PM	49	360	270	139
5:30PM	52	359	269	142
5:45PM	37	367	275	129
6:00PM	20	375	281	114
6:15PM	-4	387	290	93
6:30PM	-29	398	299	70
6:45PM	-45	405	304	56
7:00PM	-68	415	311	36
7:15PM	-68	417	313	36
7:30PM	-66	415	311	38
7:45PM	-55	409	307	47
8:00PM	-60	409	307	42
8:15PM	-47	402	302	53
8:30PM	-50	400	300	50
8:45PM	-46	400	300	54
9:00PM	-30	388	291	67
9:15PM	-35	389	292	62
9:30PM	-49	397	298	50
9:45PM	-32	390	293	65
10:00PM	-8	376	282	86
10:15PM	57	344	258	143
10:30PM	106	316	237	185
10:45PM	147	295	221	221
11:00PM	166	284	213	237
11:15PM	208	261	196	273
11:30PM	221	256	192	285
11:45PM	238	245	184	299

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekend - Valet Stalls

	SW Valet	SW Valet Adj	Excess SW Valet	Moana Valet	Net Valet
6:00AM	95	100	24	47	-23
6:15AM	97	102	22	48	-26
6:30AM	88	92	32	48	-16
6:45AM	96	101	23	46	-23
7:00AM	96	101	23	43	-20
7:15AM	94	99	25	44	-19
7:30AM	91	96	28	41	-13
7:45AM	91	96	28	40	-12
8:00AM	90	95	29	40	-11
8:15AM	89	93	31	39	-8
8:30AM	87	91	33	40	-7
8:45AM	88	92	32	36	-4
9:00AM	85	89	35	35	0
9:15AM	84	88	36	34	2
9:30AM	82	86	38	32	6
9:45AM	82	86	38	31	7
10:00AM	71	75	49	28	21
10:15AM	70	74	50	27	23
10:30AM	69	72	52	28	24
10:45AM	64	67	57	30	27
11:00AM	59	62	62	29	33
11:15AM	60	63	61	30	31
11:30AM	59	62	62	31	31
11:45AM	57	60	64	31	33
12 Noon	50	53	71	31	40
12:15PM	52	55	69	31	38
12:30PM	54	57	67	32	35
12:45PM	53	56	68	33	35
1:00PM	56	59	65	35	30
1:15PM	59	62	62	37	25
1:30PM	58	61	63	38	25
1:45PM	54	57	67	37	30
2:00PM	54	57	67	38	29
2:15PM	57	60	64	37	27
2:30PM	61	64	60	40	20
2:45PM	63	66	58	36	22
3:00PM	66	69	55	31	24
3:15PM	70	74	50	31	19
3:30PM	72	76	48	34	14
3:45PM	74	78	46	38	8
4:00PM	77	81	43	43	0
4:15PM	81	85	39	47	-8
4:30PM	86	90	34	49	-15
4:45PM	86	90	34	52	-18

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekend - Valet Stalls

	SW Valet	SW Valet Adj	Excess SW Valet	Moana Valet	Net Valet
5:00PM	94	99	25	48	-23
5:15PM	99	104	20	49	-29
5:30PM	106	111	13	48	-35
5:45PM	104	109	15	48	-33
6:00PM	107	112	12	49	-37
6:15PM	108	113	11	52	-41
6:30PM	109	114	10	53	-43
6:45PM	109	114	10	54	-44
7:00PM	110	116	8	54	-46
7:15PM	110	116	8	54	-46
7:30PM	108	113	11	54	-43
7:45PM	110	116	8	54	-46
8:00PM	109	114	10	54	-44
8:15PM	108	113	11	54	-43
8:30PM	109	114	10	50	-40
8:45PM	110	116	8	50	-42
9:00PM	112	118	6	49	-43
9:15PM	117	123	1	47	-46
9:30PM	120	126	-2	44	-46
9:45PM	120	126	-2	46	-48
10:00PM	118	124	0	44	-44
10:15PM	110	116	8	44	-36
10:30PM	115	121	3	46	-43
10:45PM	116	122	2	47	-45
11:00PM	115	121	3	48	-45
11:15PM	116	122	2	49	-47
11:30PM	115	121	3	51	-48
11:45PM	113	119	5	51	-46

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekend - Self-Parking Stalls

	SW Self	SW Self (Employee)	SW Self (Guest)	SW Self Adj	Excess SW Self	PK/Moana Self	PK/Moana Self (Employee)	Moana Self (Employee)	PK/Moana Self (Guest)	Moana Self (Guest)	Moana Self	Net Self	Required Add'l Valet Parking	Net Self Less Valet
6:00AM	287	144	144	301	399	277	139	76	139	21	97	302	23	279
6:15AM	286	143	143	300	400	288	144	79	144	22	101	299	26	273
6:30AM	297	149	149	312	388	303	152	84	152	23	107	281	16	265
6:45AM	320	160	160	336	364	313	157	86	157	24	110	254	23	231
7:00AM	315	158	158	331	369	323	162	89	162	24	113	256	20	236
7:15AM	323	162	162	339	361	316	158	87	158	24	111	250	19	231
7:30AM	343	172	172	360	340	321	161	89	161	24	113	227	13	214
7:45AM	347	174	174	364	336	324	162	89	162	24	113	223	12	211
8:00AM	361	181	181	379	321	331	166	91	166	25	116	205	11	194
8:15AM	358	179	179	376	324	332	166	91	166	25	116	208	8	200
8:30AM	359	180	180	377	323	336	168	92	168	25	117	206	7	199
8:45AM	363	182	182	381	319	342	171	94	171	26	120	199	4	195
9:00AM	370	185	185	389	311	342	171	94	171	26	120	191	0	191
9:15AM	370	185	185	389	311	340	170	94	170	26	120	191	0	191
9:30AM	370	185	185	389	311	343	172	95	172	26	121	190	0	190
9:45AM	371	186	186	390	310	337	169	93	169	25	118	192	0	192
10:00AM	373	187	187	392	308	336	168	92	168	25	117	191	0	191
10:15AM	371	186	186	390	310	331	166	91	166	25	116	194	0	194
10:30AM	367	184	184	385	315	340	170	94	170	26	120	195	0	195
10:45AM	355	178	178	373	327	345	173	95	173	26	121	206	0	206
11:00AM	358	179	179	376	324	347	174	96	174	26	122	202	0	202
11:15AM	346	173	173	363	337	347	174	96	174	26	122	215	0	215
11:30AM	346	173	173	363	337	342	171	94	171	26	120	217	0	217
11:45AM	353	177	177	371	329	354	177	97	177	27	124	205	0	205
12 Noon	350	175	175	368	332	354	177	97	177	27	124	208	0	208
12:15PM	342	171	171	359	341	358	179	98	179	27	125	216	0	216
12:30PM	353	177	177	371	329	355	178	98	178	27	125	204	0	204
12:45PM	354	177	177	372	328	354	177	97	177	27	124	204	0	204
1:00PM	348	174	174	365	335	351	176	97	176	26	123	212	0	212
1:15PM	355	178	178	373	327	351	176	97	176	26	123	204	0	204
1:30PM	361	181	181	379	321	348	174	96	174	26	122	199	0	199
1:45PM	367	184	184	385	315	354	177	97	177	27	124	191	0	191
2:00PM	374	187	187	393	307	348	174	96	174	26	122	185	0	185
2:15PM	384	192	192	403	297	343	172	95	172	26	121	176	0	176
2:30PM	381	191	191	400	300	337	169	93	169	25	118	182	0	182
2:45PM	383	192	192	402	298	342	171	94	171	26	120	178	0	178
3:00PM	392	196	196	412	288	343	172	95	172	26	121	167	0	167
3:15PM	391	196	196	411	289	341	171	94	171	26	120	169	0	169
3:30PM	402	201	201	422	278	341	171	94	171	26	120	158	0	158
3:45PM	416	208	208	437	263	331	166	91	166	25	116	147	0	147
4:00PM	420	210	210	441	259	348	174	96	174	26	122	137	0	137
4:15PM	401	201	201	421	279	346	173	95	173	26	121	158	8	150
4:30PM	397	199	199	417	283	358	179	98	179	27	125	158	15	143
4:45PM	407	204	204	427	273	365	183	101	183	27	128	145	18	127

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekend - Self-Parking Stalls

	SW Self	SW Self (Employee)	SW Self (Guest)	SW Self Adj	Excess SW Self	PK/Moana Self	PK/Moana Self (Employee)	Moana Self (Employee)	PK/Moana Self (Guest)	Moana Self (Guest)	Moana Self	Net Self	Required Add'l Valet Parking	Net Self Less Valet
5:00PM	430	215	215	452	248	378	189	104	189	28	132	116	23	93
5:15PM	447	224	224	469	231	385	193	106	193	29	135	96	29	67
5:30PM	457	229	229	480	220	403	202	111	202	30	141	79	35	44
5:45PM	475	238	238	499	201	401	201	111	201	30	141	60	33	27
6:00PM	486	243	243	510	190	415	208	114	208	31	145	45	37	8
6:15PM	500	250	250	525	175	423	212	117	212	32	149	26	41	-15
6:30PM	520	260	260	546	154	418	209	115	209	31	146	8	43	-35
6:45PM	542	271	271	569	131	421	211	116	211	32	148	-17	44	-61
7:00PM	533	267	267	560	140	424	212	117	212	32	149	-9	46	-55
7:15PM	546	273	273	573	127	419	210	116	210	32	148	-21	46	-67
7:30PM	552	276	276	580	120	421	211	116	211	32	148	-28	43	-71
7:45PM	556	278	278	584	116	420	210	116	210	32	148	-32	46	-78
8:00PM	567	284	284	595	105	413	207	114	207	31	145	-40	44	-84
8:15PM	564	282	282	592	108	408	204	112	204	31	143	-35	43	-78
8:30PM	568	284	284	596	104	403	202	111	202	30	141	-37	40	-77
8:45PM	569	285	285	597	103	395	198	109	198	30	139	-36	42	-78
9:00PM	568	284	284	596	104	389	195	107	195	29	136	-32	43	-75
9:15PM	566	283	283	594	106	380	190	105	190	29	134	-28	46	-74
9:30PM	556	278	278	584	116	378	189	104	189	28	132	-16	46	-62
9:45PM	544	272	272	571	129	374	187	103	187	28	131	-2	48	-50
10:00PM	534	267	267	561	139	362	181	100	181	27	127	12	44	-32
10:15PM	499	250	250	524	176	359	180	99	180	27	126	50	36	14
10:30PM	471	236	236	495	205	350	175	96	175	26	122	83	43	40
10:45PM	431	216	216	453	247	349	175	96	175	26	122	125	45	80
11:00PM	433	217	217	455	245	332	166	91	166	25	116	129	45	84
11:15PM	369	185	185	387	313	315	158	87	158	24	111	202	47	155
11:30PM	352	176	176	370	330	294	147	81	147	22	103	227	48	179
11:45PM	349	175	175	366	334	293	147	81	147	22	103	231	46	185

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekend - Reserved/Private/No Parking Stalls

	SW Reserved	Excess SW Reserved	PK/Moana Reserved	Moana Reserved	Net Reserved
6:00AM	20	41	2	1	40
6:15AM	20	41	2	1	40
6:30AM	20	41	2	1	40
6:45AM	20	41	2	1	40
7:00AM	19	42	2	1	41
7:15AM	19	42	2	1	41
7:30AM	18	43	2	1	42
7:45AM	17	44	2	1	43
8:00AM	17	44	3	2	42
8:15AM	17	44	3	2	42
8:30AM	18	43	3	2	41
8:45AM	19	42	3	2	40
9:00AM	17	44	2	1	43
9:15AM	16	45	2	1	44
9:30AM	18	43	2	1	42
9:45AM	21	40	2	1	39
10:00AM	18	43	2	1	42
10:15AM	19	42	3	2	40
10:30AM	20	41	3	2	39
10:45AM	21	40	3	2	38
11:00AM	22	39	2	1	38
11:15AM	21	40	2	1	39
11:30AM	21	40	2	1	39
11:45AM	20	41	3	2	39
12 Noon	22	39	3	2	37
12:15PM	22	39	4	2	37
12:30PM	23	38	5	3	35
12:45PM	23	38	6	3	35
1:00PM	25	36	6	3	33
1:15PM	23	38	6	3	35
1:30PM	23	38	7	4	34
1:45PM	20	41	7	4	37
2:00PM	19	42	7	4	38
2:15PM	21	40	6	3	37
2:30PM	22	39	4	2	37
2:45PM	22	39	4	2	37
3:00PM	23	38	3	2	36
3:15PM	23	38	3	2	36
3:30PM	24	37	4	2	35
3:45PM	24	37	4	2	35
4:00PM	22	39	4	2	37
4:15PM	24	37	4	2	35
4:30PM	27	34	4	2	32
4:45PM	29	32	4	2	30

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekend - Reserved/Private/No Parking Stalls

	SW Reserved	Excess SW Reserved	PK/Moana Reserved	Moana Reserved	Net Reserved
5:00PM	30	31	4	2	29
5:15PM	34	27	3	2	25
5:30PM	36	25	3	2	23
5:45PM	38	23	4	2	21
6:00PM	36	25	3	2	23
6:15PM	35	26	2	1	25
6:30PM	41	20	2	1	19
6:45PM	40	21	3	2	19
7:00PM	43	18	3	2	16
7:15PM	42	19	3	2	17
7:30PM	43	18	4	2	16
7:45PM	44	17	4	2	15
8:00PM	43	18	4	2	16
8:15PM	43	18	3	2	16
8:30PM	44	17	4	2	15
8:45PM	43	18	4	2	16
9:00PM	45	16	4	2	14
9:15PM	46	15	4	2	13
9:30PM	47	14	4	2	12
9:45PM	48	13	4	2	11
10:00PM	46	15	5	3	12
10:15PM	46	15	5	3	12
10:30PM	38	23	5	3	20
10:45PM	39	22	5	3	19
11:00PM	36	25	5	3	22
11:15PM	32	29	5	3	26
11:30PM	30	31	5	3	28
11:45PM	30	31	5	3	28

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekend - Self-Parking Stalls
Reduced Employee Parking

	Net SW Self Less Valet	Total Employee Parking	Reduced Employee Parking	Adjusted Net Valet & Self
6:00AM	279	220	165	334
6:15AM	273	222	167	328
6:30AM	265	233	175	323
6:45AM	231	246	185	292
7:00AM	236	247	185	298
7:15AM	231	249	187	293
7:30AM	214	261	196	279
7:45AM	211	263	197	277
8:00AM	194	272	204	262
8:15AM	200	270	203	267
8:30AM	199	272	204	267
8:45AM	195	276	207	264
9:00AM	191	279	209	261
9:15AM	191	279	209	261
9:30AM	190	280	210	260
9:45AM	192	279	209	262
10:00AM	191	279	209	261
10:15AM	194	277	208	263
10:30AM	195	278	209	264
10:45AM	206	273	205	274
11:00AM	202	275	206	271
11:15AM	215	269	202	282
11:30AM	217	267	200	284
11:45AM	205	274	206	273
12 Noon	208	272	204	276
12:15PM	216	269	202	283
12:30PM	204	275	206	273
12:45PM	204	274	206	272
1:00PM	212	271	203	280
1:15PM	204	275	206	273
1:30PM	199	277	208	268
1:45PM	191	281	211	261
2:00PM	185	283	212	256
2:15PM	176	287	215	248
2:30PM	182	284	213	253
2:45PM	178	286	215	249
3:00PM	167	291	218	240
3:15PM	169	290	218	241
3:30PM	158	295	221	232
3:45PM	147	299	224	222
4:00PM	137	306	230	213
4:15PM	150	296	222	224
4:30PM	143	297	223	217
4:45PM	127	305	229	203
5:00PM	93	319	239	173
5:15PM	67	330	248	149

Sheraton Waikiki and Princess Kaiulani Hotels Parking Survey
Weekend - Self-Parking Stalls
Reduced Employee Parking

	Net SW Self Less Valet	Total Employee Parking	Reduced Employee Parking	Adjusted Net Valet & Self
5:30PM	44	340	255	129
5:45PM	27	349	262	114
6:00PM	8	357	268	97
6:15PM	-15	367	275	77
6:30PM	-35	375	281	59
6:45PM	-61	387	290	36
7:00PM	-55	384	288	41
7:15PM	-67	389	292	30
7:30PM	-71	392	294	27
7:45PM	-78	394	296	20
8:00PM	-84	398	299	15
8:15PM	-78	394	296	20
8:30PM	-77	395	296	22
8:45PM	-78	394	296	20
9:00PM	-75	391	293	23
9:15PM	-74	388	291	23
9:30PM	-62	382	287	33
9:45PM	-50	375	281	44
10:00PM	-32	367	275	60
10:15PM	14	349	262	101
10:30PM	40	332	249	123
10:45PM	80	312	234	158
11:00PM	84	308	231	161
11:15PM	155	272	204	223
11:30PM	179	257	193	243
11:45PM	185	256	192	249

APPENDIX 5

Sewer Connection Permit Applications approved March 6, 2009

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET * HONOLULU, HAWAII 96813
Phone: (808) 768-8209 * Fax: (808) 768-4210

SEWER CONNECTION APPLICATION

APPLICATION NO.: **2009/SCA-0112** STATUS: **Approved with conditions**

DATE RECEIVED: **02/24/2009** IWDP APP. NO.:

PROJECT NAME: **2009/SCA-0112 Princess Kaiulani Hotel Redevelopment-Pikake Tower, Retail, Restaurant, Meeting/Ballrooms / Residential Condominium, Restaurant, Retail, Meeting/Ballrooms**

$987,147.00
Estimated Wastewater System Facility Charge*

LOCATION:

Zone	Section	Plat	Parcel
2	6	022	001

104 KAIULANI AVE **122,809** Sq. Ft.

SPECIFIC LOCATION: **104 Kaiulani Ave**

APPLICANT: **Belt Collins Hawaii Ltd., John Chung**
2153 N King St Suite 200
Honolulu, Hawaii 96819

DEVELOPMENT TYPE: **Dwelling, Multi-family** SEWER CONNECTION WORK DESIRED: **New**

OTHER USES: **Retail-72,000 s.f.; Meeting/Ballroom-14,758 s.f.; Restaurant-14,755 s.f.**

NON-RESIDENTIAL AREA: s.f. APPROXIMATE DATE OF CONNECTION: **06/01/2012**

PROPOSED UNITS		EXISTING UNITS		UNITS TO BE DEMOLISHED	
No. of New Units:	**270**	No. of Existing Units:	**0**	No. of Units to be Demolished:	**0**
Studios:	**200**	Studios:		Studios:	
1-Bedroom:	**18**	1-Bedroom:		1-Bedroom:	
2-Bedroom:	**39**	2-Bedroom:		2-Bedroom:	
3-Bedroom:	**12**	3-Bedroom:		3-Bedroom:	
4-Bedroom:	**1**	4-Bedroom:		4-Bedroom:	
5-Bedroom:		5-Bedroom:		5-Bedroom:	
6-Bedroom:		6-Bedroom:		6-Bedroom:	

REMARKS **Approval is conditioned that connection for this project shall be made directly to the existing 18-inch sewer line on Kuhio Avenue. Submit construction plans for review and approval.**

APPROVAL DATE: **03/06/2009**

EXPIRATION DATE:**03/06/2011**

Valid 2-years after approval date. Construction plans shall be completed and approved within this 2-year period. Construction shall commence within 1-year after approval of plans.
** Applicable WSFC shall be collected at the prevailing rate in accordance with ROH 1990, Chapter 14, Sections 14-10.3, 14-10.4, 14-10.5 and Appendix 14-D.*

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

A. Saavedra Jr.
Site Development Division, Wastewater Branch

ExternalID: **031756150-001** JobId: **31756150**

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET * HONOLULU, HAWAII 96813
Phone: (808) 768-8209 * Fax: (808) 768-4210

SEWER CONNECTION APPLICATION

APPLICATION NO.: **2009/SCA-0113** STATUS: **Approved with conditions**

DATE RECEIVED: **02/24/2009** IWDP APP. NO.:

PROJECT NAME: **2009/SCA-0113 Princess Kaiulani Hotel Redevelopment-Ainahau Tower Renovation / Hotel**

$870,151.80
Estimated Wastewater System Facility Charge*

LOCATION:

Zone	Section	Plat	Parcel
2	6	022	041

2340 KALAKAUA AVE **58,111** Sq. Ft.

SPECIFIC LOCATION: **2340 Kalakaua Ave**

APPLICANT: **Belt Collins Hawaii Ltd., John Chung**
2153 N King St Suite 200
Honolulu, Hawaii 96819

DEVELOPMENT TYPE: **Hotel** SEWER CONNECTION WORK DESIRED: **Existing**

OTHER USES: **Hotel-666 guest rooms; Retail-1,600 s.f.; Restaurant-7,000 s.f.**

NON-RESIDENTIAL AREA: s.f. APPROXIMATE DATE OF CONNECTION: **06/01/2012**

PROPOSED UNITS	EXISTING UNITS	UNITS TO BE DEMOLISHED
No. of New Units: **238**	No. of Existing Units: **0**	No. of Units to be Demolished: **0**
Studios: **195**	Studios:	Studios:
1-Bedroom:	1-Bedroom:	1-Bedroom:
2-Bedroom: **32**	2-Bedroom:	2-Bedroom:
3-Bedroom: **10**	3-Bedroom:	3-Bedroom:
4-Bedroom: **1**	4-Bedroom:	4-Bedroom:
5-Bedroom:	5-Bedroom:	5-Bedroom:
6-Bedroom:	6-Bedroom:	6-Bedroom:

REMARKS **Approval is conditioned that the existing 8-inch sewer line fronting Moana's Diamond Head Tower shall be upgraded to accommodate the increase in sewage flow from the redevelopment. In addition, the sewage flow from the Redevelopment of Princess Kaiulani Pikake Tower, retail, restaurant and meeting/ballroom shall be connected directly to the existing 18-inch sewer line on Kuhio Ave. Submit construction plan for review and approval.**

APPROVAL DATE: **03/06/2009**

EXPIRATION DATE:**03/06/2011**

Valid 2-years after approval date. Construction plans shall be completed and approved within this 2-year period. Construction shall commence within 1-year after approval of plans.
** Applicable WSFC shall be collected at the prevailing rate in accordance with ROH 1990, Chapter 14, Sections 14-10.3, 14-10.4, 14-10.5 and Appendix 14-D.*

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

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

ExternalID: **031756382-001** JobId: **31756382**

Initial Print Date: Friday March 6, 2009 10:23 am

APPENDIX 6

Moana Surfrider Shoreline Assessment dated March 24, 2009 for the
Diamond Head Tower project prepared by Sea Engineering

Moana Surfrider Shoreline Assessment

Prepared for: Kyo-ya Hotels & Resorts, LP

Prepared by: Sea Engineering, Inc.

April 20, 2009

Introduction and Executive Summary

Kyo-Ya Hotels & Resorts, LP is proposing renovations to the Diamond Head Tower of the Moana Surfrider hotel. Because of the close proximity of the hotel to the ocean, a shoreline assessment has been performed to evaluate the existing shoreline condition and characteristics, and evaluate potential coastal hazards that should be considered when designing the new hotel structures and facilities.

The assessment included site investigations and a shoreline profile survey, and a review of existing available information pertinent to the project area. The assessment includes discussion of the prevailing and extreme wave conditions at the project site. The effects of sea level rise and historical shoreline trends in Waikiki are also addressed.

Based on the findings of this assessment, the following issues are recommended for consideration during project planning and design:

1. Beach width is variable seasonally and without maintenance/nourishment may disappear over the long term. While a wide beach acts as a buffer against high waves and can successfully protect backshore property from coastal inundation, it is also very dynamic and cannot be considered as permanent protection against waves and flooding without also considering the possibility of long term maintenance. A beach nourishment and periodic maintenance program would provide a first level of defense against storm wave coastal inundation at the project site.

2. Existing beach and seawall elevations cannot be relied on solely to provide a barrier to flooding by storm waves and tsunamis. This problem will be exacerbated should sea level rise as currently predicted. A solution may include raising the existing seawall or constructing an additional higher wall mauka of the existing seawall.

3. Hurricane and tsunami studies suggest flooding to +9 to +10 feet above mean lower low water (MLLW) can currently be expected. Additionally, estimates point to a sea level rise of 1.3 feet in 50 years and 3.3 feet in 100 years. Even with possible beach widening and a higher seawall, the potential for inland flooding should be addressed by designing the new hotel structure in such a way that important infrastructure is located above the possible flood elevation.

Oceanographic Characteristics

Waves

Prevailing waves

The wave climate in Hawaii is typically characterized by four general wave types. These include northeast tradewind waves, southern swell, North Pacific swell, and Kona wind waves. Tropical storms and hurricanes also generate waves that can approach the islands from virtually any direction. Unlike winds, any and all of these wave conditions may occur at the same time.

Tradewind waves occur throughout the year and are the most persistent April through September when they usually dominate the local wave climate. They result from the strong and steady tradewinds blowing from the northeast quadrant over long fetches of open ocean. Tradewind deepwater waves are typically between 3 to 8 feet high with periods of 5 to 10 seconds, depending upon the strength of the tradewinds and how far the fetch extends east of the Hawaiian Islands. The direction of approach, like the tradewinds themselves, varies between north-northeast and east-southeast and is centered on the east-northeast direction. The project site is well sheltered from the direct approach of tradewind waves by the island itself, and only a portion of the tradewind wave energy refracting and diffracting around the southeast end of the island reaches Waikiki.

Southern swell is generated by storms in the southern hemisphere and is most prevalent during the summer months of April through September. Traveling distances of up to 5,000 miles, these waves arrive with relatively low deepwater wave heights of 1 to 4 feet and periods of 14 to 20 seconds. Depending on the positions and tracks of the southern hemisphere storms, southern swells approach between the southeasterly and southwesterly directions. The project site is directly exposed to swell from the southerly direction and these waves represent the greatest source of wave energy reaching the project site.

During the winter months in the northern hemisphere, strong storms are frequent in the North Pacific in the mid latitudes and near the Aleutian Islands. These storms generate large North Pacific swells that range in direction from west-northwest to northeast and arrive at the northern Hawaiian shores with little attenuation of wave energy. These are the waves that have made surfing beaches on the north shores of Oahu and Maui famous. Deepwater wave heights often reach 15 feet and in extreme cases can reach 30 feet. Periods vary between 12 and 20 seconds, depending on the location of the storm. The project site is sheltered from swell approach from the north and northwest.

Kona storm waves also directly approach the project site; however these waves are fairly infrequent, occurring only about 10 percent of the time during a typical year. Kona waves typically range in period from 6 to 10 seconds with heights of 5 to 10 feet, and approach from the southwest. Deepwater wave heights during the severe Kona storm of January 1980 were about 17 feet. Deepwater wave heights during the severe Kona storm of January 1980 were about 17 feet. These waves had a significant impact on the south and west shores of Oahu.

Severe tropical storms and hurricanes obviously have the potential to generate extremely large waves, which in turn could potentially result in large waves at the project site. Recent hurricanes impacting the Hawaiian Islands include Hurricane Iwa in 1982 and Hurricane Iniki in 1992. Iniki directly hit the island of Kauai and resulted in large waves along the southern shores of all the Hawaiian islands. Damage from these hurricanes was extensive. Although not a frequent or even likely event, they should be considered in the project design, particularly with regard to shoreline structures, both in the water and on land near the shore.

Prevailing Deepwater Wave Climate

Wave information is available in the form of hindcast data sets provided by the U.S. Army Corps of Engineers' Wave Information Studies (WIS). WIS results are generated by numerical simulation of past wind and wave conditions. WIS information produces records of wave conditions based on historical wind and wave conditions at numerous stations around the Hawaiian Islands. These hourly records of wave conditions are available for the years 1981 through 2004.

WIS Station 114, located 50 miles south of Lanai, was chosen as being representative, since it was exposed to the same waves that would affect the south shore of Oahu (e.g., exposed to southern swell and sheltered from prevailing tradewind waves by the island chain. Table 1 shows the frequency of occurrence of wave height and period for the WIS data. To make the data representative of wave conditions at the project site, this data has been filtered into 22.5-degree bins for directions southeast clockwise through west-southwest, as waves from other directions are blocked by the island of Oahu. The wave height and wave period distributions for the full WIS 114 data set are presented as roses in Figure 1 and Figure 2. Since the WIS station is located far from shore, the wave roses show the north swell, south swell, and tradewind waves.

The wave direction roses for WIS station 114 (shown previously in Figure 1 and Figure 2) show that greater than 23% of all waves at that station are from the south-southwest direction. The filtered data shows that nearly 54% of the waves approaching the project site are from the south-southwest direction. Within that direction band, nearly all of the significant wave heights are between 2 and 6 ft with periods of primarily 12 to 15 sec. Based on this information, the most frequently occurring deepwater wave that can affect the project site is *Dir* = SSW (202.5°), H_s = 4 ft, T_p = 14 sec.

Table 1 WIS 114 Deepwater waves, 1981-2004, filtered to directions SE to WSW. Percent frequency of occurrence: significant wave height H_s (ft) vs. peak period T_p (sec)

Dir (°TN)	Hs\Tp	<6	6-8	8-10	10-12	12-14	14-16	16-18	>=18	Total%
SE	<1	-	-	-	-	-	-	-	-	0.0
123.75 -	1-2	-	-	-	-	-	-	-	-	0.0
146.25	2-3	-	-	0.97	0.08	-	-	-	-	1.0
	3-4	-	-	0.85	0.14	-	-	-	-	1.0
	4-5	-	-	0.10	0.02	-	-	-	-	0.1
	5-6	0.06	-	-	-	-	-	-	-	0.1
	Total%	0.1	0.0	1.9	0.2	0.0	0.0	0.0	0.0	**2.2**
Dir (°TN)	**Hs\Tp**	**<6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**>=18**	**Total%**
SSE	<1	-	-	-	-	-	-	-	-	0.0
146.25 -	1-2	-	-	-	-	-	-	-	-	0.0
168.75	2-3	-	-	0.83	0.75	-	-	-	-	1.6
	3-4	-	-	0.24	1.80	-	-	-	-	2.0
	4-5	-	-	0.45	0.28	-	-	-	-	0.7
	5-6	-	-	-	0.12	-	-	-	-	0.1
	Total%	0.0	0.0	1.5	2.9	0.0	0.0	0.0	0.0	**4.5**
Dir (°TN)	**Hs\Tp**	**<6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**>=18**	**Total%**
S	<1	-	-	-	-	-	-	-	-	0.0
168.75 -	1-2	-	-	-	-	-	-	-	-	0.0
191.25	2-3	-	-	0.99	2.07	0.32	0.22	0.14	-	3.7
	3-4	-	-	0.14	5.75	5.14	1.88	0.63	-	13.5
	4-5	-	-	-	1.09	3.02	2.01	0.41	-	6.5
	5-6	-	-	-	0.08	-	-	0.02	-	0.1
	6-7	-	-	-	-	-	-	-	-	0.0
	7-8	0.06	-	-	-	-	-	-	-	0.1
	8-9	-	0.18	-	-	-	-	-	-	0.2
	Total%	0.1	0.2	1.1	9.0	8.5	4.1	1.2	0.0	**24.1**
Dir (°TN)	**Hs\Tp**	**<6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**>=18**	**Total%**
SSW	<1	-	-	-	-	-	-	-	-	0.0
191.25 -	1-2	-	-	-	-	-	-	-	-	0.0
213.75	2-3	-	-	0.30	1.96	3.42	2.19	1.24	0.24	9.3
	3-4	-	-	0.36	3.73	11.63	7.53	3.79	0.36	27.4
	4-5	-	-	-	1.28	4.98	4.62	1.84	0.08	12.8
	5-6	-	-	-	0.04	0.41	1.96	0.59	0.16	3.2
	6-7	-	-	-	-	0.04	0.40	0.55	-	1.0
	7-8	-	-	-	-	-	-	-	-	0.0
	8-9	-	0.06	-	-	-	-	-	-	0.1
	9-10	-	0.02	-	-	-	-	-	-	0.0
	Total%	0.0	0.1	0.7	7.0	20.5	16.7	8.0	0.8	**53.7**
Dir (°TN)	**Hs\Tp**	**<6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**>=18**	**Total%**
SW	<1	-	-	-	-	-	-	-	-	0.0
213.75 -	1-2	-	-	-	0.02	-	-	-	-	0.0
236.25	2-3	-	-	0.41	1.19	0.93	0.18	-	-	2.7
	3-4	-	-	0.18	1.66	2.05	0.75	0.16	-	4.8
	4-5	-	-	-	0.63	1.07	0.14	0.02	-	1.9
	5-6	-	-	-	0.02	0.24	-	-	-	0.3
	6-7	-	-	-	-	0.04	-	-	-	0.0
	7-8	-	-	-	-	-	-	-	-	0.0
	8-9	-	-	-	-	-	-	-	-	0.0
	9-10	-	0.04	-	-	-	-	-	-	0.0
	Total%	0.0	0.0	0.6	3.5	4.3	1.1	0.2	0.0	**9.7**
Dir (°TN)	**Hs\Tp**	**<6**	**6-8**	**8-10**	**10-12**	**12-14**	**14-16**	**16-18**	**>=18**	**Total%**
WSW	<1	-	-	-	-	-	-	-	-	0.0
236.25 -	1-2	-	-	-	-	-	-	-	-	0.0
258.75	2-3	-	-	0.32	0.38	0.04	-	-	-	0.7
	3-4	-	-	0.10	1.24	1.62	0.14	-	-	3.1
	4-5	-	-	-	0.87	0.65	0.06	-	-	1.6
	5-6	-	-	-	0.04	0.12	-	-	-	0.2
	6-7	-	-	-	-	0.02	-	-	-	0.0
	7-8	-	-	-	-	0.04	-	-	-	0.0
	8-9	-	-	-	-	0.08	-	-	-	0.1
	Total%	0.0	0.0	0.4	2.5	2.6	0.2	0.0	0.0	**5.7**
	All %	0.1	0.2	6.2	25.2	35.8	22.1	9.4	0.8	**100.0**

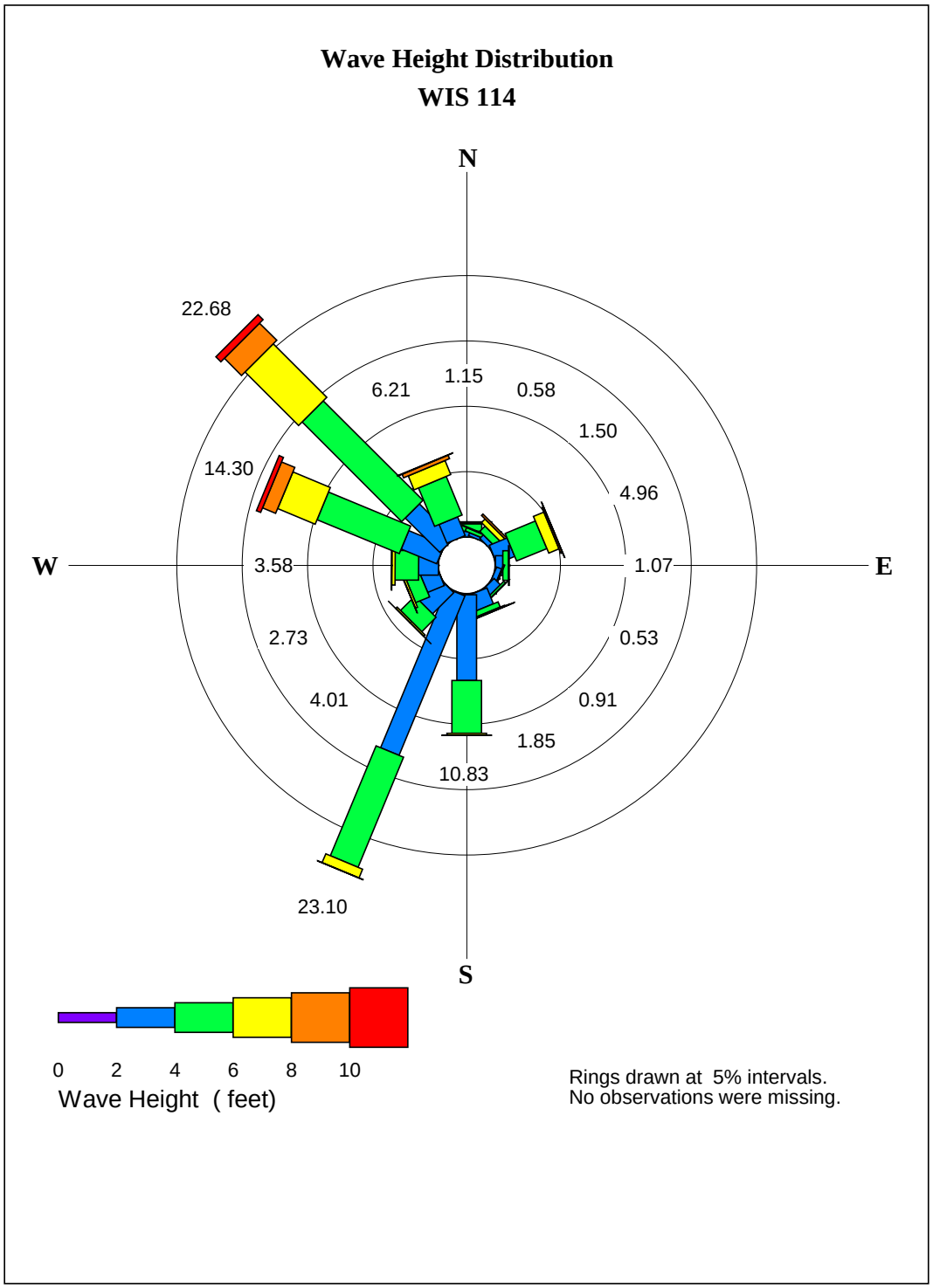


Figure 1 Wave Height Distribution: WIS Station 114

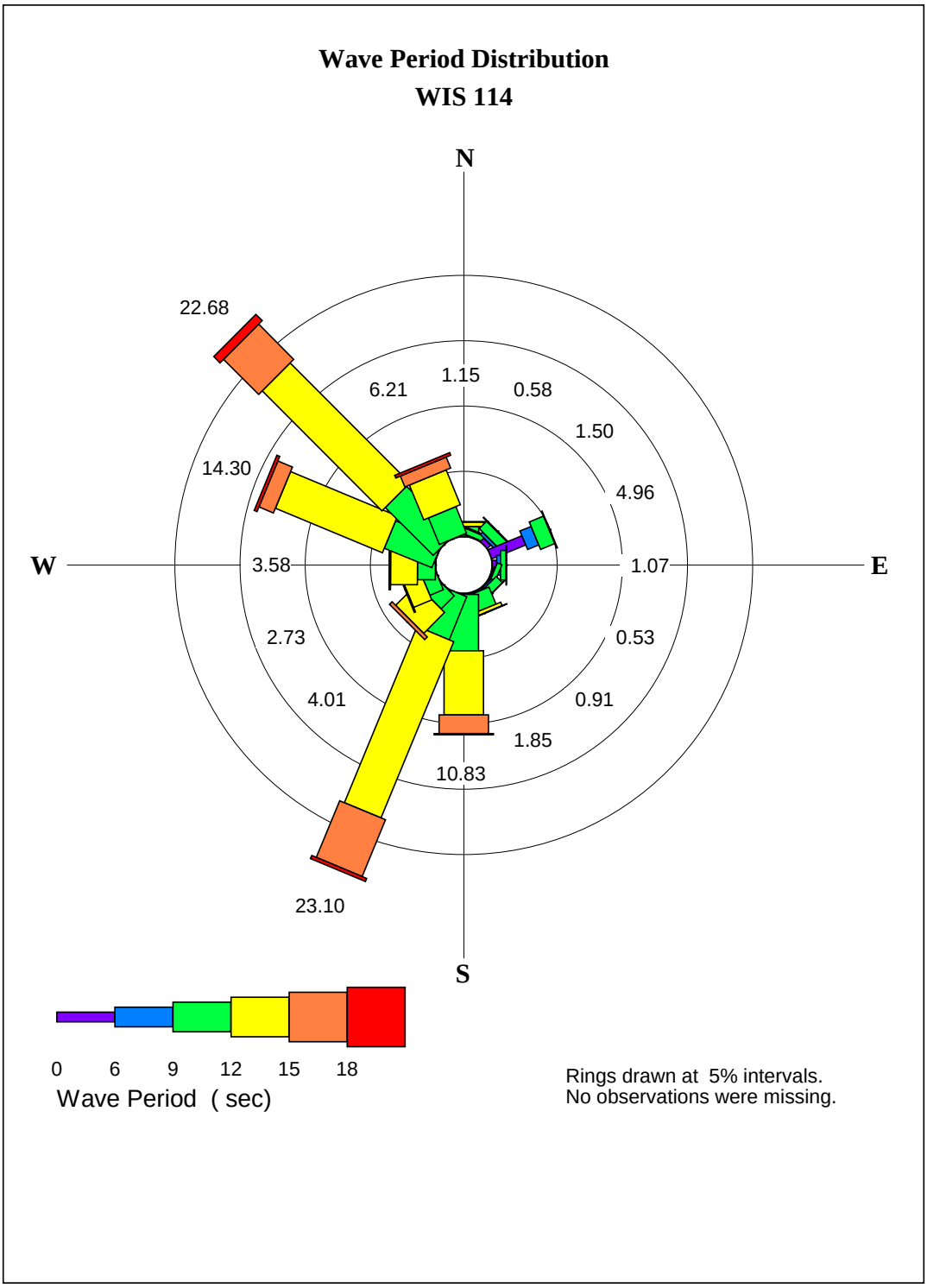


Figure 2 Wave Period Distribution: WIS Station 114

Extreme Wave Height

The severe kona storm of January 1980 is commonly used as a "design" Kona storm condition. The severity of this storm has been described as a "50-year" or even less frequent (i.e., more extreme) event. Hindcasts of the wave conditions by SEI following the storm indicated deepwater wave heights of 17 feet with a 9-second period approaching from 210°.

The report *Hurricanes in Hawaii* (Haraguchi, 1984) prepared for the USACE, Honolulu Engineer District (HED), presents hypothetical model and worst-case hurricane scenarios for the Hawaiian Islands. These scenario hurricanes have been used for detailed studies of hurricane storm wave inundation limits for the islands of Oahu and Kauai, prepared by Bretschneider and Noda (1985) and SEI (1986, 1993 and 2000) for the USACE-HED. The model hurricane is defined as the probable hurricane that will strike Hawaii in the future, based on the characteristics of storms previously approaching or striking the islands. The worst-case hurricane characteristics are based on subjective analysis of the data from 20 critical hurricanes in the Central Pacific and understanding of the basic atmospheric and oceanic conditions surrounding the Hawaiian Islands.

Bretschneider and Noda (1985) performed hurricane and wave modeling to determine the vulnerability of the south shore of Oahu to storm waves. Water level rise, wave runup elevation, and wave inundation limits were calculated at 71 locations between Koko Head and Barbers Point, including Profile 39, which was located at the Moana Surfrider shoreline. The findings of the report at that location are presented in Table 2 for southeast (SE) and southwest (SW) model and worst-case scenarios.

Table 2 Hurricane inundation at the Moana Surfrider shoreline

Hurricane		Still water level rise (feet)[1]	Runup elevation (feet)[1]	Inundation distance (feet)
SE	Model	6.5	8.3	206
	Worst	7.8	9.8	236
SW	Model	6.9	8.6	212
	Worst	9.3	----[2]	----[2]

1 Elevations relative to mean lower low water (MLLW)
2 Runup overtopped shoreline crest and inundated backshore

The calculated still water level rise in Table 2 includes inverse barometric tide (storm surge), wind setup, and +1.9 feet MLLW of astronomical tide.

Tsunamis and FIRM Designation

About 85 tsunamis have been observed in Hawai`i since 1813, with 15 resulting in serious damage. Four tsunamis have occurred in recent history, occurring in 1946, 1957, 1960, and 1964. The 1946 tsunami was the most destructive to ever hit Hawai`i. Loomis (1976) compiled

the available tsunami runup data for Hawaii and produced a report includes tsunami wave heights for a location in Waikiki near the western end of Kuhio Beach Park. The tsunami heights of +9 feet relative to mean lower low water for each of the 1946 and 1960 tsunamis are presented for that location.

The Flood Insurance Rate Map (FIRM) designation for the project site is special flood hazard zone AE with a base elevation of 8 feet. This designation corresponds to "areas of 100-year flood: base flood elevations and flood hazard factors determined."

The Natural Hazards Atlas (2002) states that a tsunami similar to the 1957 or 1960 tsunamis would have a high probability of causing significant damage to a low-lying developed area like Waikiki.

Wave Transformation to Shore

As deepwater waves propagate toward shore, they begin to encounter and be transformed by the ocean bottom. In shallow water, the wave speed becomes related to the water depth. As waves slow down with decreasing depth, the process of *wave shoaling* generally steepens the wave and increases the wave height. *Wave breaking* occurs when the wave profile shape becomes too steep to be maintained. This typically occurs when the ratio of wave height to water depth is about 0.8, and is a mechanism for dissipating the wave energy. Wave energy is also dissipated due to bottom friction. The phenomenon of *wave refraction* is caused by differential wave speed along a wave crest, and will cause wave crests to converge or diverge and may locally increase or decrease wave heights. *Wave diffraction* is the lateral transmission of wave energy along the wave crest, and will cause the spreading of waves in a shadow zone, such as occurs behind a breakwater or other barrier.

The nearshore bathymetry offshore of the project site shows the existence of several surf breaks. Waves approaching the shoreline typically break in these locations, reform, and break again closer to shore. Wave heights nearshore are partially a function of the water depth, i.e., they are depth limited. The existence of the shallow nearshore water depth limits the nearshore breaking wave height. Maximum nearshore breaking wave conditions under prevailing (non-storm) conditions is estimated to be about 2 feet and the corresponding wave runup elevations on the existing shoreline profile (presented later as Figure 9) were computed. The average of the highest 1/10 of the runup elevations was found to be +6.9 ft MLLW and the average of the highest 1/3 of the runup elevations was found to be +5.9 ft MLLW. Under storm conditions with elevated still water levels, maximum breaking wave height and wave runup elevations would be higher.

Shoreline Characteristics

Waikiki Shoreline History

Waikiki was originally a wetland consisting of taro fields, fishponds, streams and narrow sand beaches. Until the late 1800's, the Waikiki shoreline consisted of a narrow barrier beach in front of a swamp and lagoon. In the late 1800's, the first tourist attractions to the area included bathhouses that offered towels, swimsuits, changing rooms, and the use of the beach for a fee. Development of beachfront hotels such as the Sans Souci, Moana, and Honolulu Seaside soon followed, often necessitating construction of protective seawalls. In the early 1900's, the wetland areas were declared a hazard to public health, and the government decided to dredge a canal to drain the wetlands and use the dredge material to fill in the low lying areas (Fletcher and Miller, 2003).

The Moana Surfrider opened in 1901, and historic photographs show the dining room extended over the beach almost to the water's edge, supported by piles. It is likely that some form of seawall was constructed to protect the hotel's foundation. As early as 1910, seawalls became associated with beach loss. This resulted in the prohibition of additional seawall construction in 1917. This prohibition was generally ignored and by 1920, seawalls spanned the majority of the Waikiki shorefront (USACE, 1992). A 70-foot long concrete box culvert/groin was built northwest of the Halekulani channel in 1917. In 1927, the Board of Harbor Commissioners was allowed to rebuild the eroded Waikiki Beach and by 1930 they reported that eleven groins had been constructed including the Royal Hawaiian Groin which was built in 1927 and lengthened in 1930. Subsequently, the Waikiki area has undergone a succession of projects relating to dredging, sand replenishment, construction of groins, jetties, harbors and swimming areas, as well as removal of a number of piers that were declared unsafe (Wiegel, 2005).

"Beach Nourishment" as it is known today has probably been taking place since the early 1900's since it is likely that many if not all construction projects located near the beach included a component of sand relocation. Dredged material was commonly used as fill for adjacent projects or newly constructed beaches. Construction of groins often required grading of existing sand and addition of fill sand. An estimate, based on recorded volumes alone, indicates that nearly 400,000 cubic yards of sand has been placed on Waikiki beaches since 1929 (Wiegel, 2005). As a result of all this, there is very little, if any, "native" beach sand along Waikiki Beach. Miller and Fletcher (2003) used historical photogrammetry in combination with a model that relates beach width change to volumetric change in estimating that Waikiki beaches have gained less than 5,000 cubic yards since 1951 despite the fact that approximately 250,000 cubic yards of sand having been placed on it during that time. It can be deduced from this that at least 98% of the sand that government and private landowners have placed there has been lost.

Shoreline Trends

A series of historical aerial photographs can be used to show shoreline trends. The University of Hawaii Coastal Geology Group (UH CGG) has undertaken historical analysis of Oahu's

shoreline and is producing shoreline change maps based on aerial imagery from 1927 to 2005. The analyses use the beach toe as the shoreline reference feature. The analyses for the project shoreline are presented in Figure 3 and show that the shoreline fronting the Diamond Head Tower (transects 95 and 96) has accreted at a historical rate of about 0.5 ft/yr over the full 78 years of data.

Beach width in general is quite variable and changes in response to wave conditions. Periods of high surf can quickly cause the beach to narrow. This variability in the historical shoreline positions can result in misleading conclusions about the beach. A review of the shoreline positions from 1985 to 2005 shows a narrowing of the beach by 56 feet (shorelines determined by UH CGG). These more recent shorelines are shown in Figure 4. Since then, the beach has widened by 27 feet. The Royal Hawaiian Groin and the Ewa Groin at Kuhio Beach Park prevent longshore sediment transport into and out of the littoral cell; thus, sediment transport at the project site can be accomplished through onshore-offshore transport only. Observations of the nearshore waters in the vicinity of the project site have shown that there is sand available to naturally feed the beach and allow short-term and seasonal fluctuations in width. The longterm trend in Waikiki, however, is a net reduction in sand supply. For planning purposes, this trend should be given more weight than fluctuations in shoreline position.

The effectiveness of the Royal Hawaiian Groin and the Ewa Groin at preventing longshore transport opens up the possibility of beach nourishment along this shoreline reach, which can be considered as a single littoral cell. Limiting the longshore transport out of the cell and nourishing the full length of the cell would likely increase the lifetime of the nourishment. A total of 25,000 cubic yards of sand would be required to widen the 1,700-foot long reach by 40 feet (as a point of reference, Kuhio Beach was widened in 2005-2006 using approximately 10,000 cubic yards). Investigations by the University of Hawaii, Coastal Geology Group indicate that the offshore waters contain sufficient beach quality sand which could be recovered and used to nourish the beach.

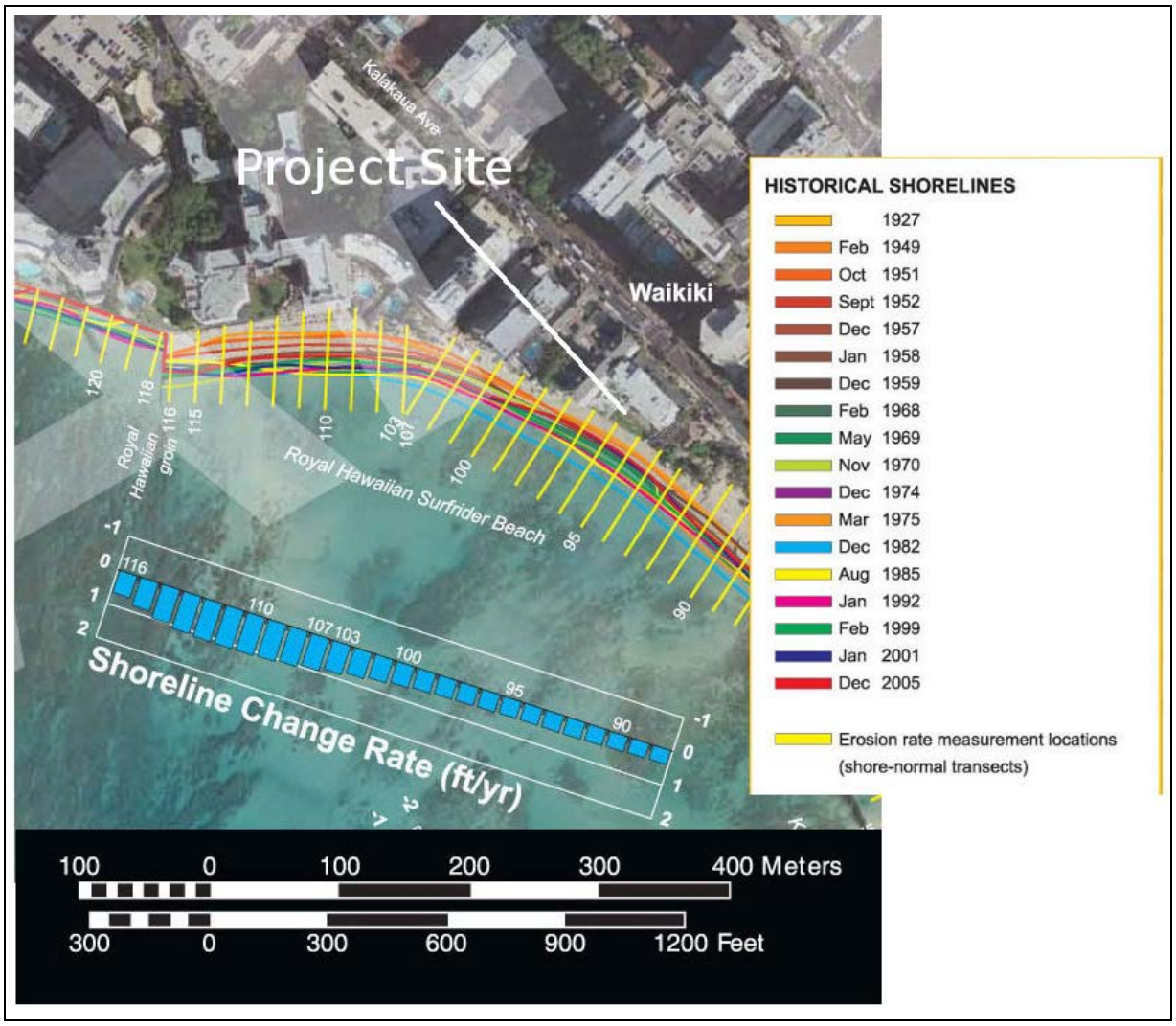


Figure 3 Historical shoreline change map (after Univ. of Hawaii Coastal Geology Group)

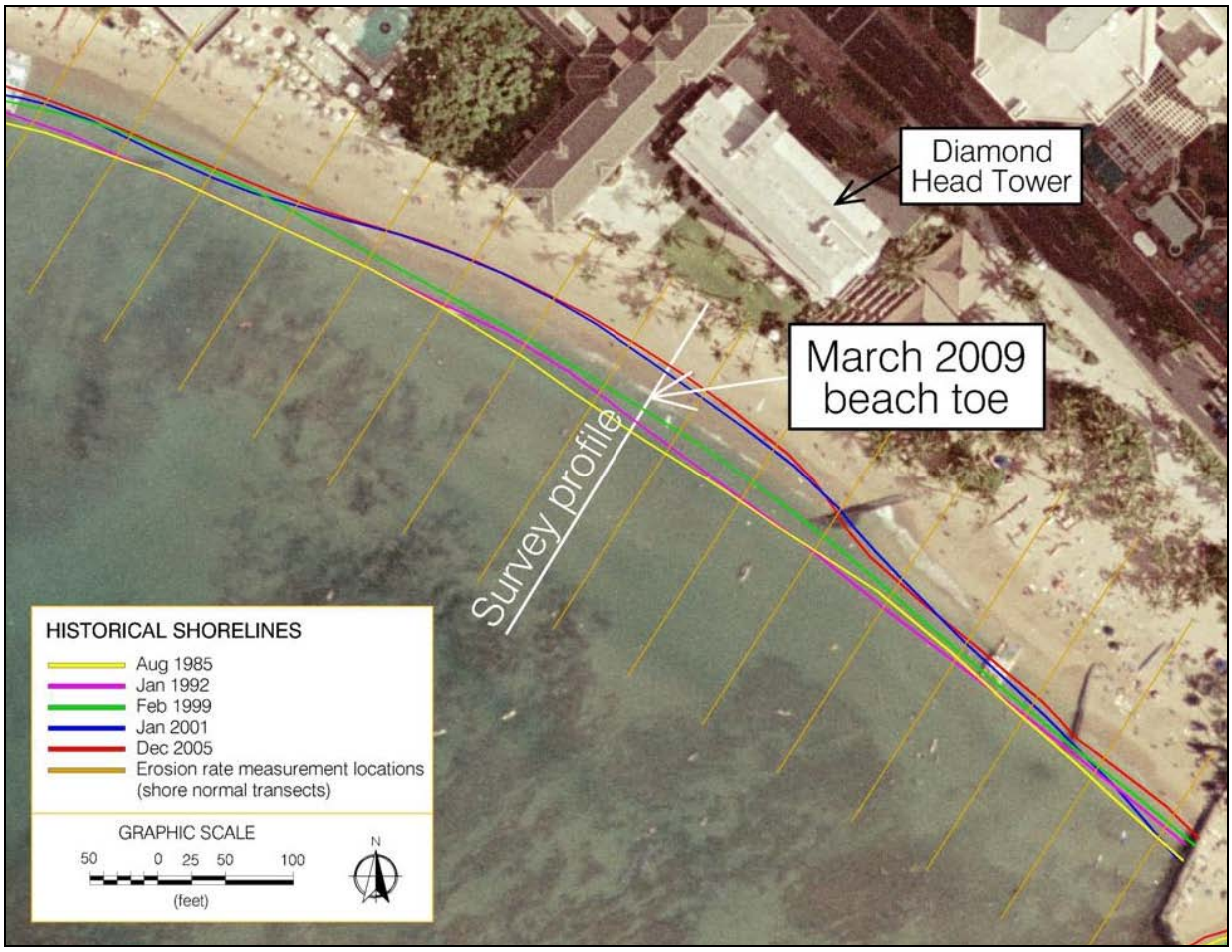


Figure 4 Historical shoreline positions, 1985-2005

Project Shoreline Description

The shoreline at the Moana Surfrider is situated in a slight embayment between Kuhio Beach and the Royal Hawaiian. Figure 5 shows an overview of the project site. The shoreline is fronted by a wide and shallow fringing reef extending over 4,000 feet from shore. The shallow nearshore water provides good natural protection from large storm waves; however, it also results in complex wave patterns as the incident waves propagate toward shore. The nearshore sea bottom is composed of calcareous limestone reef rock, with patches of sand and coral rubble. The shoreline is slightly concave and is composed primarily of fine to medium calcareous sand.

The 180-foot long project shoreline fronting the Diamond Head Tower is part of a 1,700-foot littoral cell that extends from the Royal Hawaiian Groin on the west to the ewa groin of Kuhio Beach Park on the east. There is no substantial widening of the beach at either of these groins, suggesting that longshore transport and littoral drift are negligible. The beach characteristics were found to be generally uniform along the full reach. Figure 6 and Figure 7 show typical views of the beach in front of the Diamond Head Tower.

The boundary between the sandy beach and the Diamond Head Tower appears to be a seawall with a splash guard on top. The 2.5-foot wide top is up to about one foot above sand level and the depth of the wall is unknown. The top serves as a walkway along the beach. A fence runs along the inshore side of the wall. The wall is experiencing spalling, as shown in Figure 8.

A 285-foot long profile was measured seaward from the fence. The profile, presented in Figure 9, shows backshore elevations of the top of the seawall/walkway to be +9.5 feet MLLW. The beach berm crest elevation is +8.2 feet MLLW and the beach foreshore slope was measured to be 1V:7.5H. Sandy bottom extended offshore to the end of the profile, where patches of hard bottom were found.

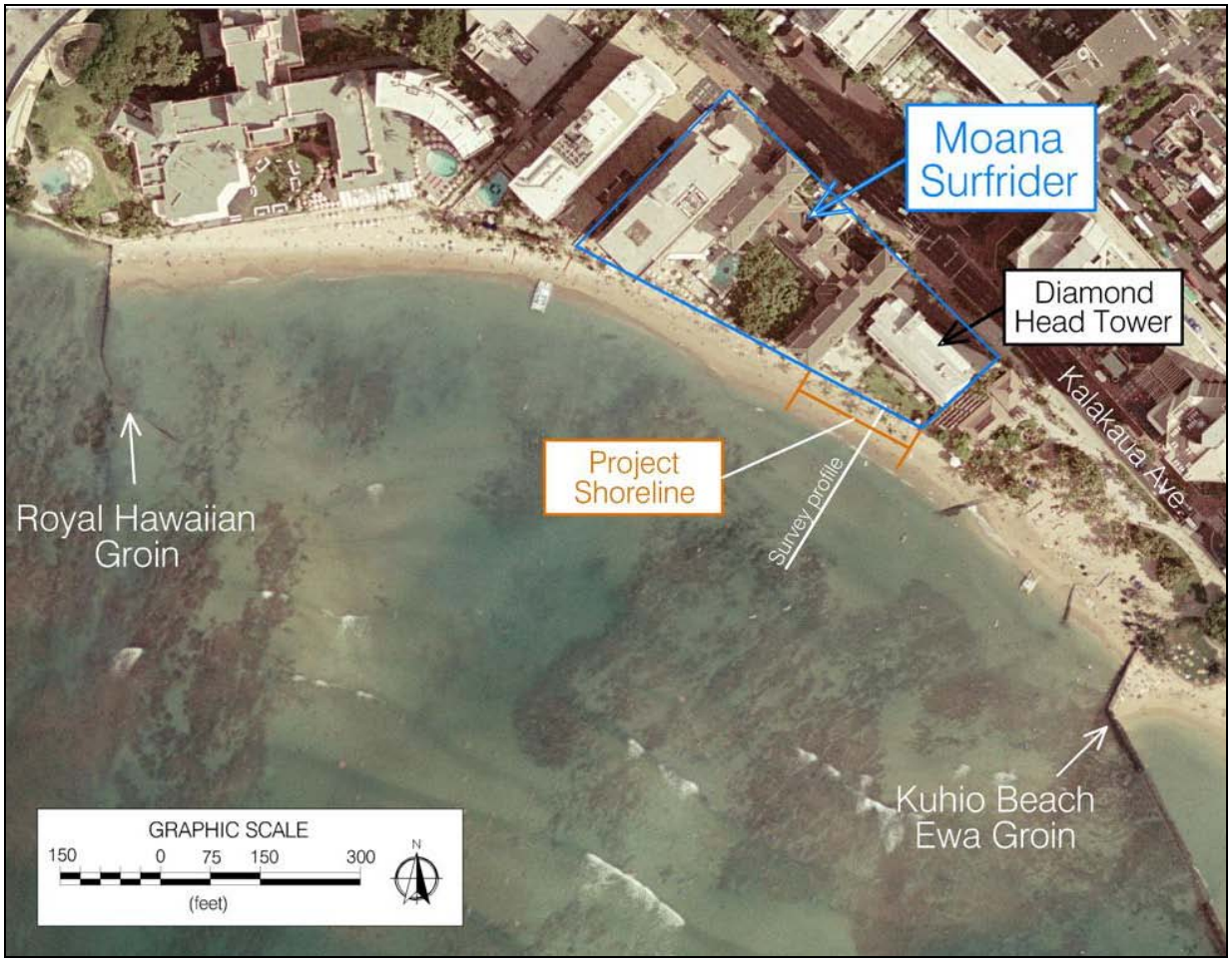


Figure 5 Overview of project site

Figure 6 View of beach fronting Diamond Head Tower, facing east

Figure 7 View of beach fronting Diamond Head Tower, facing west

Figure 8 Top of seawall along project shoreline

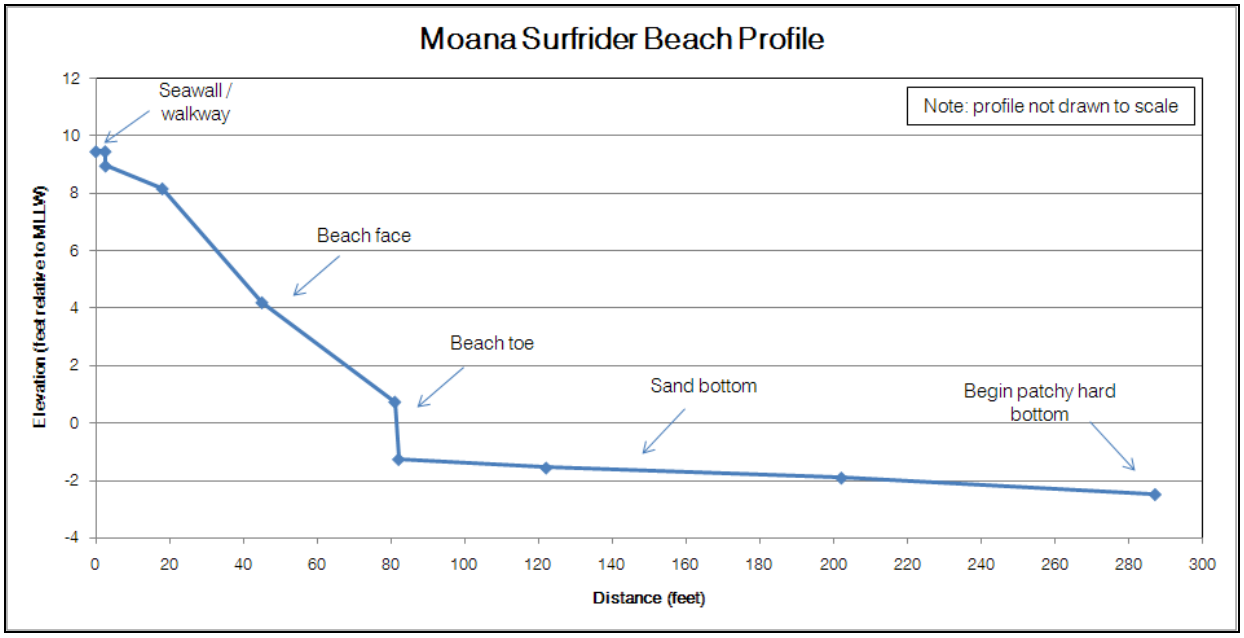


Figure 9 Beach profile measured on March 18, 2009

Sea Level Rise

The effects of global warming impact coastal communities in the form of sea level rise. Sea level rise is produced by the thermal expansion of the oceans along with additional water inputted to the system from the melting polar ice caps. A number of research institutions have produced varying estimates of sea level rise. University of Hawaii researchers have collected and analyzed the information and have produced estimates of sea level rise in Hawaii for planning purposes, and a paper describing the methodology and results is in preparation. The estimates point to a rise of 40 cm (1.3 ft) by the year 2060 and a rise of 100 cm (3.3 ft) by 2110.

Conclusions

The 1,700-foot littoral cell that extends from Kuhio Beach to the Royal Hawaiian Groin includes the 180-foot long shoreline fronting the Diamond Head Tower of the Moana Surfrider hotel. A site investigation was conducted on March 18, 2009, to assess the present condition of the beach. Reviews of historical wave, shoreline, and coastal hazard data were also performed. Based on the finding of this report, the following points should be considered for planning purposes:

- Beach width is variable seasonally and without maintenance/nourishment may disappear over the long term. Periodic beach nourishment to maintain the beach could be a viable means of helping ensure the continued existence of this first line of storm wave defense for the back shore.
- Existing beach and seawall elevations cannot be relied on to provide a barrier to flooding by storm waves and tsunamis. This problem will be exacerbated should sea level rise as currently predicted. Consideration should be given to raising the elevation of the existing wall, or constructing a second higher wall landward of the existing wall.
- Hurricane and tsunami studies indicate flooding to an elevation of +9 to +10 feet MLLW can currently be expected. Hotel renovation planning and design should consider raising the ground floor infrastructure and facilities above the estimated coastal flood elevation.
- Estimates point to a sea level rise of 1.3 feet in 50 years and 3.3 feet in 100 years. Should this occur, it would obviously exacerbate the coastal inundation potential.

References

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APPENDIX 7

Letter from DPP to Patrick Seguirant dated June 18, 2009

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

MUFI HANNEMANN
MAYOR

DAVID K. TANOUE
DIRECTOR

ROBERT M. SUMITOMO
DEPUTY DIRECTOR

2009/ELOG-1328(AA)
TMK: 2-6-1: 12

June 18, 2009

Mr. Patrick Seguirant
91-1030 Kaihi Street
Ewa Beach, Hawaii 96706

Dear Mr. Seguirant:

Subject: Request for Determination of Seawall Status
2365 Kalakaua Avenue - Waikiki
Tax Map Key 2-6-1: 12

This responds to your request, received June 3, 2009, to determine the nonconforming status of a seawall and walkway structure on the subject shoreline property. We have determined that the seawall and walkway structure are nonconforming for purposes of the Shoreline Setback Ordinance (Chapter 23, Revised Ordinances of Honolulu). Please be aware that this determination applies to the seawall and walkway structure only and not to the other structures (i.e., concrete benches) within the shoreline setback area.

The Department of Planning and Permitting (DPP) has no record of the lawful establishment, through building permit or other formal approval, of a concrete seawall and walkway structure located in the shoreline setback of the above-referenced property. Nevertheless, historical photographs, aerial photographs, and survey maps provided to the department indicate that the seawall and walkway structure were constructed in their present locations prior to the 1966 adoption of Ordinance 2837 ("Setback from Zone of Wave Action"). Thus, these structures are considered nonconforming for purposes of the shoreline setback regulations.

This letter is not a disclosure statement nor is it intended to substitute for mandatory seller disclosures in real estate transactions regarding the subject parcels. The City is under no obligation to investigate, research or participate in the preparation of disclosure statements, other than providing available public records.

This letter also does not create liability on the part of the City, or any officer or employee thereof, if used in or as a disclosure statement. The seller or the seller's agent, not the City, is solely responsible for the use of any public record information in the preparation of a disclosure statement.

Should you have any questions regarding the above, please contact Ann Asaumi of our staff at 768-8020.

Very truly yours,

David K. Tanoue, Director
Department of Planning and Permitting

DKT:cs

cc: DLNR (OCCL)

g:posseworkingdirectory\ann\2009elog1328nonconform.doc

APPENDIX 8

Flood Hazard Analysis Determination for the Princess Ka'iulani dated May 24, 2007 prepared by Army Corps of Engineers and a Flood Hazard Analysis Determination for the Moana Diamond Head Tower dated April 23, 2009 prepared by Army Corps of Engineers

DEPARTMENT OF THE ARMY
U.S. ARMY CORPS OF ENGINEERS, HONOLULU DISTRICT
FORT SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF: CEPOH-EC-T

RECEIVED
2009 APR 24 PM 1:50
BELT COLLINS HAWAII

April 23, 2009

Mapos, A.
Terry, M.
Agena, L.
Palesh, C.
Abe, R.
Andrade, C.
Billingsley, W.
Chan, V.
Chong, L.
Chung, J.
Cunningham, S.
Grilho, K.
Hamura, S.
Kaneshiro, C.
Kato, A.
✓ Klein, S.
Kondo, C.
Lee, L.
Lori, C.
Matsunaga, R.
Miyashiro, E.
Onuma, T.
Rasa, B.
Rivera, A.
Tanashiro, E.
Young, J.
Job No.

Civil Works Technical Branch

Mr. Sean Klein
Belt Collins Hawaii
2153 North King Street, Suite 200
Honolulu, Hawaii 96819

Dear Mr. Klein:

As requested on April 23, 2009, I am enclosing flood hazard information for property located at 2365 to 2393 Kalakaua Avenue, Honolulu, Oahu (Tax Map Key: 2-6-1: 12). A copy of the Flood Plain Management Services Checklist is also provided for your information.

According to the Flood Insurance Rate Map (FIRM), Panel #15003C0370F dated September 30, 2004, the property is located in the following flood zones:

a. Zone AE. These are areas subject to flooding by the 100-year/1% annual chance flood. The base flood elevation for this area is 8 feet above mean sea level datum.

b. Unshaded Zone X. These are areas determined to be outside of the500-year/0.2% annual chance flood.

c. Zone A. These are areas subject to hurricane and coastal flooding by the 100-year/1% annual chance flood where base flood elevations have not been determined. The parcel lies between profiles #39 and #40 where the approximate base flood elevation is estimated to be 7.8 feet above mean sea level datum.

The Zone A designation of the project parcel was determined from coastal flooding (storm surge and wave runup) generated by hurricanes. The Federal Emergency Management Agency used the results from the U.S. Army Corps of Engineers' 1985 report titled "Hurricane Vulnerability Study for Honolulu, Hawaii and Vicinity, Volume 2, Determination of Coastal Inundation Limits for Southern Oahu from Barbers Point to Koko Head," to designate coastal Zone A areas shown on the current FIRM.

In addition, this property is considered to be within the City and County of Honolulu's flood fringe district. Building requirements should conform to standards defined in the City and County of Honolulu's Land Use Ordinance, which is available for review at the Department of Planning and Permitting (telephone: 768-8098).

This letter acknowledges receipt of your $105.00 payment for the information provided. Should you have any questions, please call Ms. Jessie Dobinchick of my staff at 438-8876.

Sincerely,

Steven H. Yamamoto, P.E.
Chief, Civil Works Technical Branch

Enclosures

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0370F

FIRM

FLOOD INSURANCE RATE MAP

CITY AND COUNTY
OF HONOLULU,
HAWAII

PANEL 370 OF 395

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HONOLULU, CITY AND COUNTY OF	150001	0370	F

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
15003C0370F

MAP REVISED
SEPTEMBER 30, 2004

Federal Emergency Management Agency

LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A No Base Flood Elevations determined.

ZONE AE Base Flood Elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE AR Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.

ZONE A99 Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.

ZONE V Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.

ZONE VE Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513 — Base Flood Elevation line and value; elevation in feet*

(EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

*Referenced to the National Geodetic Vertical Datum of 1929

A — A — Cross section line

23 — 23 — Transect line

97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere

4276000 M — 1000-meter Universal Transverse Mercator grid tick values, zone 4

600000 FT — 5000-foot grid tick values: Hawaii State Plane coordinate system, zone 3 (FIPSZONE 5103), Transverse Mercator projection

DX5510 X — Bench mark (see explanation in Notes to Users section of this FIRM panel)

M 2 — Coastal Mile marker

MAP REPOSITORY

Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP

November 20, 2000

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

September 30, 2004 - to change Special Flood Hazard Areas, to update map format, to reflect revised shoreline and to incorporate previously issued Letters of Map Revision.

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 1000'

500 0 1000 2000 FEET

300 0 300 600 METERS

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles, Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' National Geodetic Vertical Datum of 1929 (NGVD 29). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations tables in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations tables should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures in this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 4. The **horizontal datum** was NAD 83, GRS80 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the National Geodetic Vertical Datum of 1929. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic at the following address:

Spatial Reference System Division
National Geodetic Survey, NOAA
Silver Spring Metro Center
1315 East-West Highway
Silver Spring, Maryland 20910
(301) 713-3191

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit their website at http://www.ngs.noaa.gov/

Base map information shown on this FIRM was provided in digital format by the City and County of Honolulu Department of Planning and Permitting, Honolulu Land Information System (HoLIS), (www.honoluludpp.org). Imagery was derived from U. S. Geological Survey Digital Orthophoto Quadrangles produced at a scale of 1:12,000 from photography dated 2001 or later. Street centerlines and surface water features were compiled at a scale of 1:4,800 from orthophotography dated 2001.

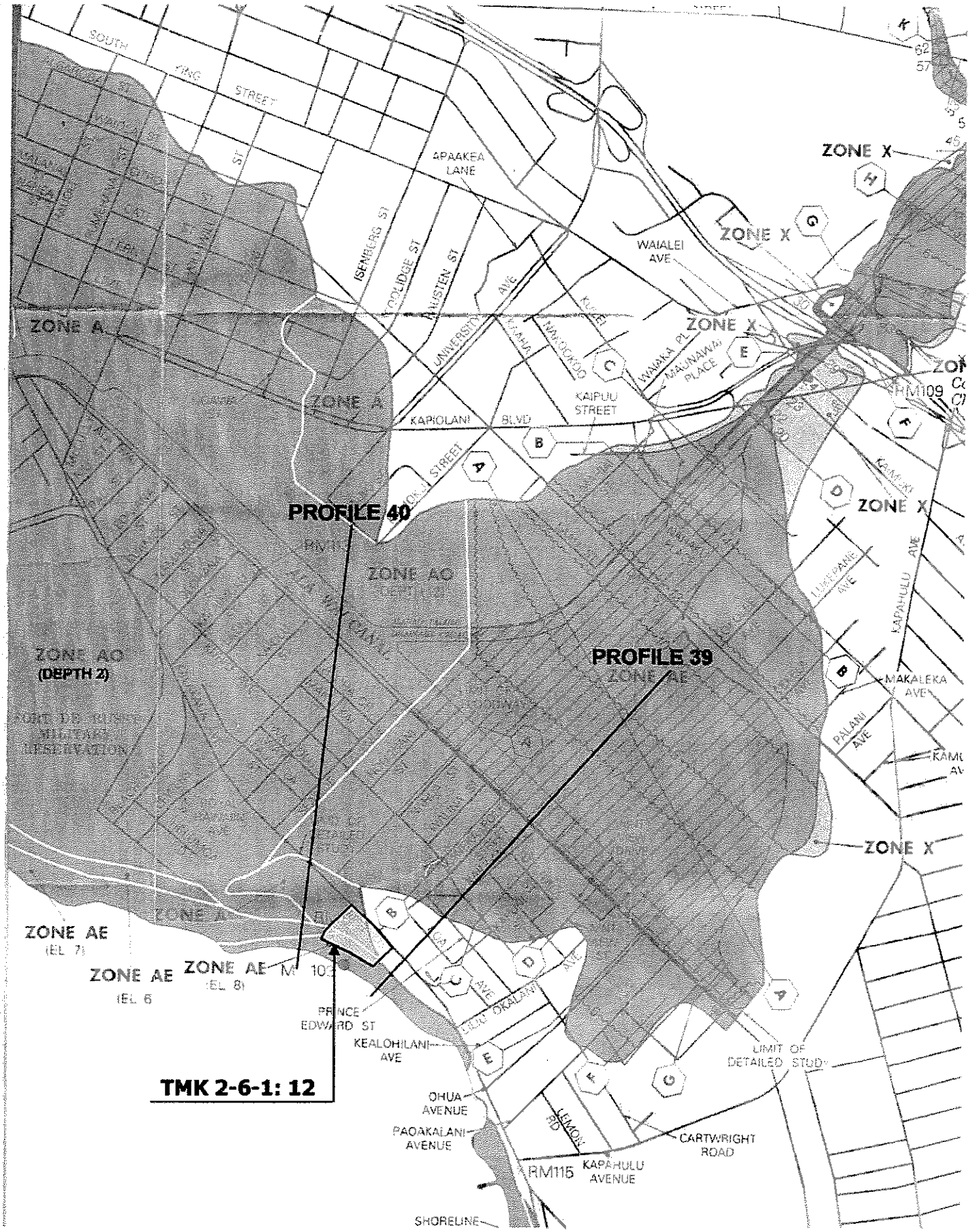
This map reflects more detailed and up-to-date **stream channel and shoreline configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel and shoreline configurations. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and their website at http://www.msc.fema.gov/

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov/


PROFILE 40
PROFILE 39
TMK 2-6-1: 12
ZONE A
ZONE AO
(DEPTH 2)
ZONE AE
(EL 7)
ZONE AE
(EL 6
ZONE AE
(EL 8)
ZONE X
ZONE X
ZONE X
ZONE X
ZONE X
ZONE X
APAAKEA LANE
WAIALEI AVE
ISENBERG ST
COOLIDGE ST
AUSTEN ST
UNIVERSITY AVE
KAIPUU STREET
KAPIOLANI BLVD
MAKALEKA AVE
PALANI AVE
KAPAHULU AVE
PRINCE EDWARD ST
KEALOHILANI AVE
OHUA AVENUE
PAOAKALANI AVENUE
CARTWRIGHT ROAD
KAPAHULU AVENUE
LIMIT OF DETAILED STUDY
SHORELINE
RM115
RM109

HURRICANE VULNERABILITY STUDY
FOR HONOLULU, HAWAII, AND VICINITY

VOLUME 2
DETERMINATION OF COASTAL INUNDATION LIMITS FOR SOUTHERN OAHU FROM BARBERS POINT TO KOKO HEAD

PREPARED FOR THE
STATE OF HAWAII
DEPARTMENT OF DEFENSE

May 1985

US ARMY CORPS
OF ENGINEERS
Pacific Ocean Division

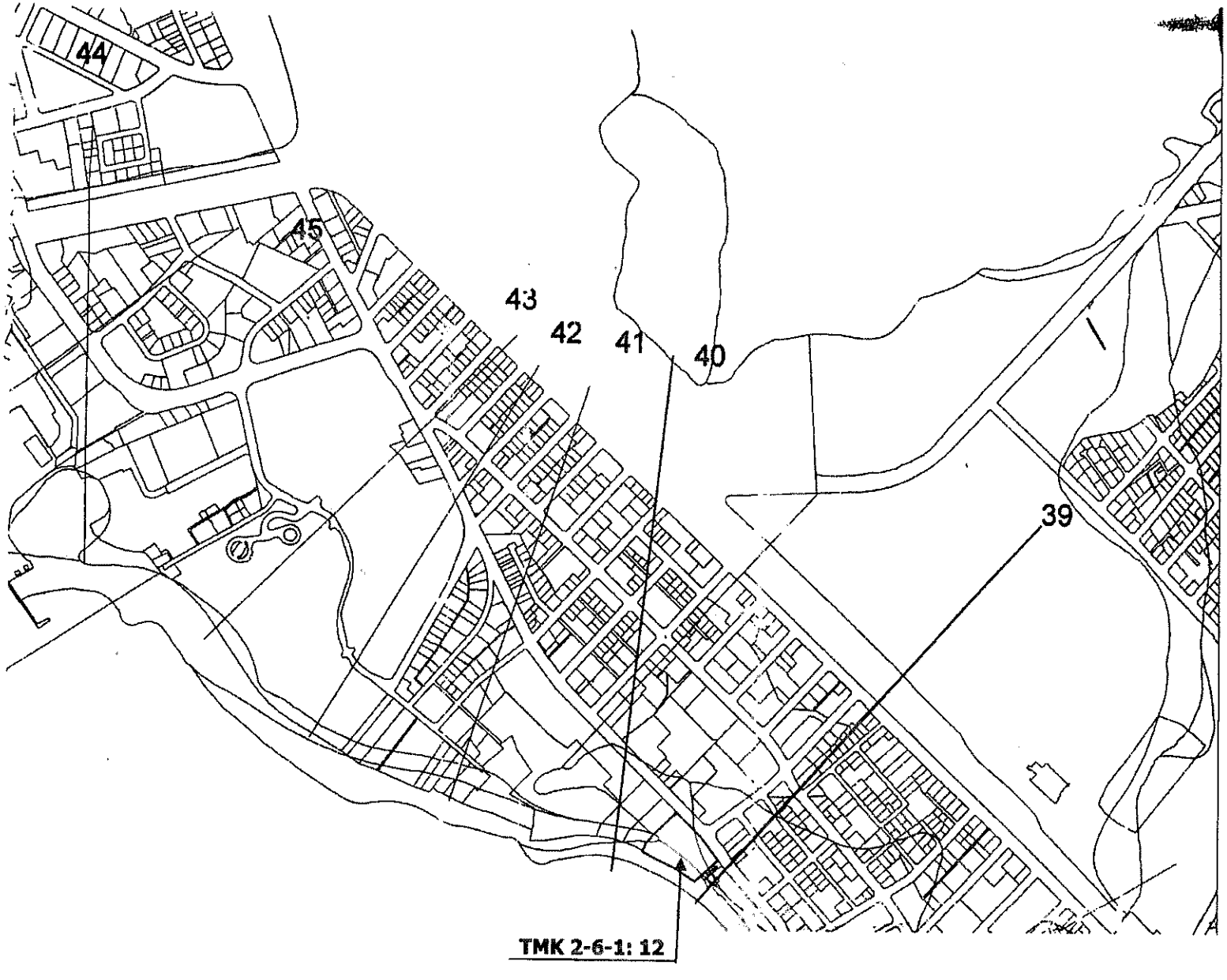

44
45
43
42
41
40
39
TMK 2-6-1: 12

Table 6-4

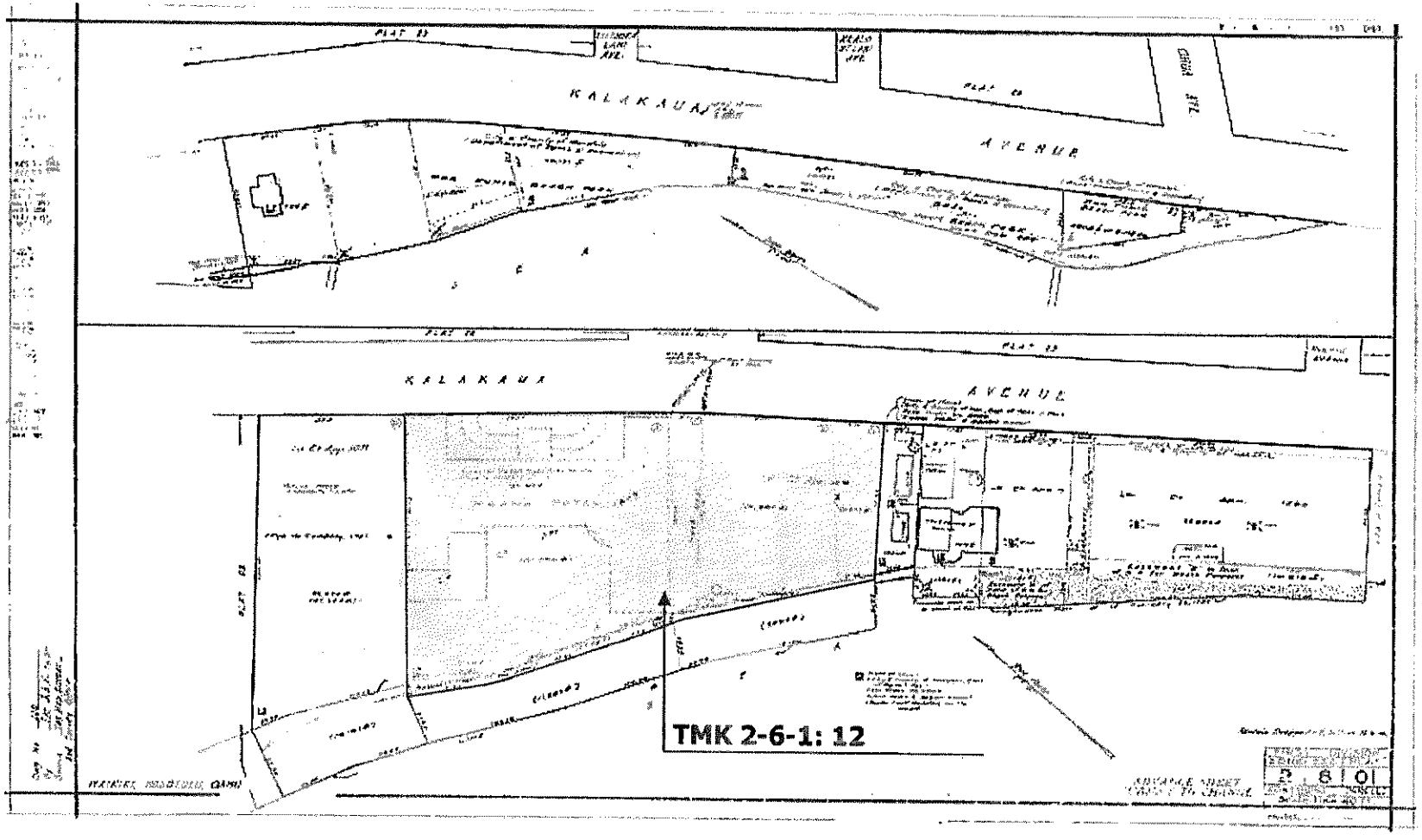
SUMMARY OF RUN-UP AND FLOOD LIMITS

RUN-UP/INUNDATION LIMITS
(Dimensions - feet)

SCENARIO #3: (SW Model)

Profile	Distance	*Elevation (MLLW)	Profile	Distance	*Elevation (MLLW)
1	66	15.0	37	256	8.6
2	70	15.0	38	242	8.5
3	75	10.3	39	212	8.6
4	397	7.4	40	5400	8.6
5	520	7.2	41	4700	7.5
6	1650	6.6	42	4700	7.4
7	708	7.1	43	5100	7.4
8	1200	6.0	44	4200	7.7
9	727	6.9	45	5400	7.9
10	2400	7.0	46	5000	8.2
11	721	8.3	47	3000	7.5
12	313	6.8	48	1000	5.3
13	300	7.1	49	25	15.0
14	67	9.3	50	17	14.7
15	980	7.1	51	500	7.5
16	400	9.0	52	800	8.6
17	203	8.1	53	2500	6.7
18	153	7.8	54	800	6.3
19	137	9.1	55	16	10.6
20	1755	8.0	56	19	12.8
21	1380	7.8	57	28	18.8
22	1300	7.2	57a	2200	5.8
23	149	7.7	57b	2350	5.3
24	58	10.2	58	180	6.0
25	43	10.8	59	3000	10.7
26	29	11.2	60	800	5.0
27	40	14.9	61	1200	6.5
28	110	9.0	62	1350	6.2
29	64	10.2	63	54	10.6
30	66	11.8	64	88	10.6
31	66	11.5	65	900	7.6
32	57	11.1	66	710	7.3
33	167	8.6	67	53	9.2
34	266	8.2	68	84	9.6
35	237	8.1	69	144	11.6
36	200	9.5	70	50	10.8
			71	82	9.1

*Subtract 0.8 to obtain MSL


KALAKAUA AVENUE
KALAKAUA AVENUE
TMK 2-6-1: 12

DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 223
FORT SHAFTER, HAWAII 96858-5440

RECEIVED
2007 MAY 25 PM 1:49
BELT COLLINS HAWAII

REPLY TO
ATTENTION OF: CEPOH-EC-T

May 24, 2007

Civil Works Technical Branch

Mapes, A.
Terry, M.
Agena, L.
Palesh, C.
Ancheta, C.
Billingsley, W.
Chan, V.
✓ Chung, J.
Cunningham, B.
Grilho, K.
Hamura, S.
Kato, A.
Kondo, C.
Lee, L.
Len, C.
Matsunaga, R.
Miyashiro, E.
Onuma, T.
Rivera, A.
Tamashiro, E.
Young, J.

Job No.

Mr. John Chung
Belt Collins Hawaii
2153 North King Street, Suite 200
Honolulu, Hawaii 96813

Dear Mr. Chung:

As requested on May 22, 2007, I am enclosing flood hazard information for properties located at 2340 to 2358 and 2360 to 2370 Kalakaua Avenue, Honolulu, Oahu (TMK 2-6-22: 1 and 41). A copy of the Flood Plain Management Services Checklist is also provided for your information.

According to the Flood Insurance Rate Map (FIRM), Panel No. 15003C0370, dated November 20, 2000, the parcels are located in the following special flood hazard zones:

a. TMK 2-6-22: 1.

- Zone X (unshaded). These are areas that are outside of the 500-year floodplain.

- Zone AE. These are areas that are inundated by the 100-year flood and subject to both stream and tsunami flooding. The base flood elevation for this area is 6 feet above mean sea level. The 6-foot flood level is in the floodplain of Manoa Stream.

b. TMK 2-6-22: 41.

- Zone X (unshaded). Same as Parcel 1.

- Zone AE. Same as Parcel 1.

- Zone A. Areas inundated by the 100-year flood where base flood elevations and flood hazard factors have not been determined. The base flood elevation determination is provided below.

The Zone A designation of the project parcel was determined from coastal flooding (storm surge and wave runup) generated by hurricanes. The Federal Emergency Management Agency used the results from the U.S. Army Corps of Engineers' 1985 report titled "Hurricane Vulnerability Study for Honolulu, Hawaii and Vicinity, Volume 2, Determination of Coastal Inundation Limits for Southern Oahu from Barbers Point to Koko Head," to designate coastal Zone A areas shown on the current FIRM. The subject parcel is located between Profile #39 and #40 where the approximate base flood elevation is estimated to be 7.8 feet above mean sea level datum.

In addition, this property is considered to be within the City and County of Honolulu's flood fringe district. Building requirements should conform to standards defined in the City and County of Honolulu's Land Use Ordinance, which is available for review at the Department of Planning and Permitting (telephone: 523-4247).

We have enclosed site specific information required for filling out Section B (Flood Insurance Rate Map Information) of the Elevation Certificate (FEMA Form 81-31 January 2003).

This letter acknowledges receipt of your $105.00 payment for the information provided. Should you have any questions, please call Ms. Jessie Dobinchick of my staff at 438-8876 or Mr. Michael Wong at 438-8866.

Sincerely,

Thomas D. Smith, P.E.
Acting Chief
Civil Works Technical Branch

Enclosures

FEDERAL EMERGENCY MANAGEMENT AGENCY
NATIONAL FLOOD INSURANCE PROGRAM

ELEVATION CERTIFICATE

O.M.B. No. 3067-0077
Expires December 31, 2005

Important: Read the Instructions on pages 1 - 7.

SECTION A - PROPERTY OWNER INFORMATION

	For Insurance Company Use:
BUILDING OWNER'S NAME	Policy Number
BUILDING STREET ADDRESS (Including Apt., Unit, Suite, and/or Bldg. No.) OR P.O. ROUTE AND BOX NO.	Company NAIC Number
CITY STATE ZIP CODE	

PROPERTY DESCRIPTION (Lot and Block Numbers, Tax Parcel Number, Legal Description, etc.)

BUILDING USE (e.g., Residential, Non-residential, Addition, Accessory, etc. Use a Comments area, if necessary.)

LATITUDE/LONGITUDE (OPTIONAL) (##° - ##' - ##.##" or ##.######°) HORIZONTAL DATUM: [ ] NAD 1927 [ ] NAD 1983 SOURCE: [ ] GPS (Type): [ ] USGS Quad Map [ ] Other

SECTION B - FLOOD INSURANCE RATE MAP (FIRM) INFORMATION

B1. NFIP COMMUNITY NAME & COMMUNITY NUMBER	B2. COUNTY NAME	B3. STATE
150001	C&C of Honolulu	Hawaii

B4. MAP AND PANEL NUMBER	B5. SUFFIX	B6. FIRM INDEX DATE	B7. FIRM PANEL EFFECTIVE/REVISED DATE	B8. FLOOD ZONE(S)	B9. BASE FLOOD ELEVATION(S) (Zone AO, use depth of flooding)
15003C0370	E	20 Nov 2000	20 Nov 2000	X (uns); A;AE	A = 7.8';AE= 6.0' msl

B10. Indicate the source of the Base Flood Elevation (BFE) data or base flood depth entered in B9.
[ ] FIS Profile [X] FIRM [ ] Community Determined [ ] Other (Describe): _____

B11. Indicate the elevation datum used for the BFE in B9: [X] NGVD 1929 [ ] NAVD 1988 [ ] Other (Describe): _____

B12. Is the building located in a Coastal Barrier Resources System (CBRS) area or Otherwise Protected Area (OPA)? [ ] Yes [X] No
Designation Date: _____

SECTION C - BUILDING ELEVATION INFORMATION (SURVEY REQUIRED)

C1. Building elevations are based on: [ ] Construction Drawings* [ ] Building Under Construction* [ ] Finished Construction
*A new Elevation Certificate will be required when construction of the building is complete.

C2. Building Diagram Number _____ (Select the building diagram most similar to the building for which this certificate is being completed - see pages 6 and 7. If no diagram accurately represents the building, provide a sketch or photograph.)

C3. Elevations – Zones A1-A30, AE, AH, A (with BFE), VE, V1-V30, V (with BFE), AR, AR/A, AR/AE, AR/A1-A30, AR/AH, AR/AO
Complete Items C3.a-i below according to the building diagram specified in Item C2. State the datum used. If the datum is different from the datum used for the BFE in Section B, convert the datum to that used for the BFE. Show field measurements and datum conversion calculation. Use the space provided or the Comments area of Section D or Section G, as appropriate, to document the datum conversion.
Datum _____ Conversion/Comments _____
Elevation reference mark used _____ Does the elevation reference mark used appear on the FIRM? [ ] Yes [ ] No

- a) Top of bottom floor (including basement or enclosure) _____ . ___ ft.(m)
- b) Top of next higher floor _____ . ___ ft.(m)
- c) Bottom of lowest horizontal structural member (V zones only) _____ . ___ ft.(m)
- d) Attached garage (top of slab) _____ . ___ ft.(m)
- e) Lowest elevation of machinery and/or equipment servicing the building (Describe in a Comments area.) _____ . ___ ft.(m)
- f) Lowest adjacent (finished) grade (LAG) _____ . ___ ft.(m)
- g) Highest adjacent (finished) grade (HAG) _____ . ___ ft.(m)
- h) No. of permanent openings (flood vents) within 1 ft. above adjacent grade _____
- i) Total area of all permanent openings (flood vents) in C3.h _____ sq. in. (sq. cm)

License Number, Embossed Seal, Signature, and Date

SECTION D - SURVEYOR, ENGINEER, OR ARCHITECT CERTIFICATION

This certification is to be signed and sealed by a land surveyor, engineer, or architect authorized by law to certify elevation information.
I certify that the information in Sections A, B, and C on this certificate represents my best efforts to interpret the data available.
I understand that any false statement may be punishable by fine or imprisonment under 18 U.S. Code, Section 1001.

CERTIFIER'S NAME LICENSE NUMBER

TITLE COMPANY NAME

ADDRESS CITY STATE ZIP CODE

SIGNATURE DATE TELEPHONE

HURRICANE VULNERABILITY STUDY
FOR HONOLULU, HAWAII, AND VICINITY

VOLUME 2
DETERMINATION OF COASTAL INUNDATION LIMITS FOR SOUTHERN OAHU FROM BARBERS POINT TO KOKO HEAD

PREPARED FOR THE
STATE OF HAWAII
DEPARTMENT OF DEFENSE

May 1985

US ARMY CORPS
OF ENGINEERS
Pacific Ocean Division

Table 6-4

SUMMARY OF RUN-UP AND FLOOD LIMITS

RUN-UP/INUNDATION LIMITS
(Dimensions - feet)

SCENARIO #3: (SW Model)

Profile	Distance	*Elevation (MLLW)	Profile	Distance	*Elevation (MLLW)
1	66	15.0	37	256	8.6
2	70	15.0	38	242	8.5
3	75	10.3	39	212	8.6
4	397	7.4	40	5400	8.6
5	520	7.2	41	4700	7.5
6	1650	6.6	42	4700	7.4
7	708	7.1	43	5100	7.4
8	1200	6.0	44	4200	7.7
9	727	6.9	45	5400	7.9
10	2400	7.0	46	5000	8.2
11	721	8.3	47	3000	7.5
12	313	6.8	48	1000	5.3
13	300	7.1	49	25	15.0
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15	980	7.1	51	500	7.5
16	400	9.0	52	800	8.6
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21	1380	7.8	57	28	18.8
22	1300	7.2	57a	2200	5.8
23	149	7.7	57b	2350	5.3
24	58	10.2	58	180	6.0
25	43	10.8	59	3000	10.7
26	29	11.2	60	800	5.0
27	40	14.9	61	1200	6.5
28	110	9.0	62	1350	6.2
29	64	10.2	63	54	10.6
30	66	11.8	64	88	10.6
31	66	11.5	65	900	7.6
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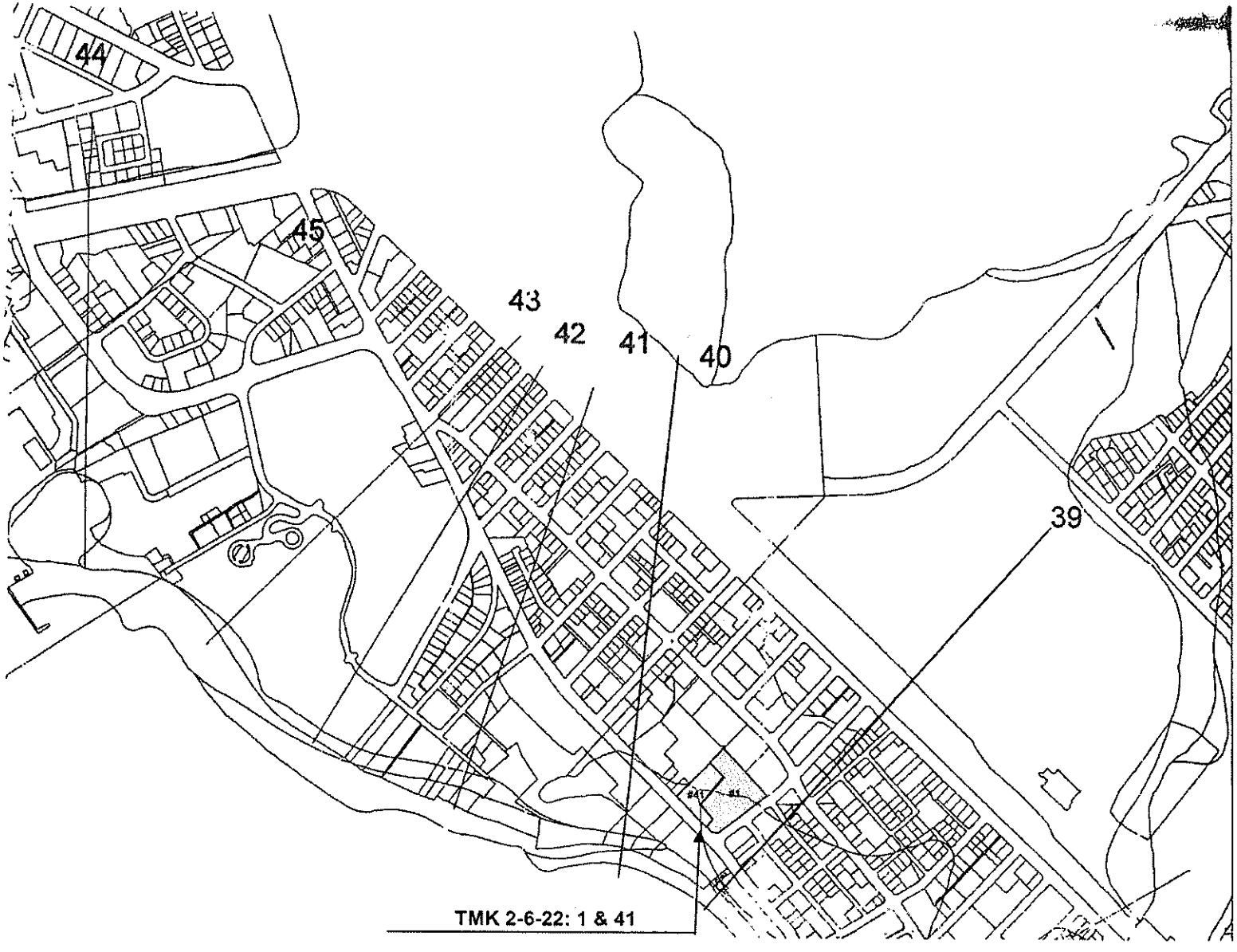
35	237	8.1	69	144	11.6
36	200	9.5	70	50	10.8
			71	82	9.1

*Subtract 0.8 to obtain MSL


44
45
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39
TMK 2-6-22: 1 & 41

NATIONAL FLOOD INSURANCE PROGRAM

FIRM

FLOOD INSURANCE RATE MAP

CITY AND COUNTY
OF HONOLULU,
HAWAII

PANEL 370 OF 395

(SEE MAP INDEX FOR PANELS NOT PRINTED)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
HONOLULU, CITY AND COUNTY OF	150001	0370	E

MAP NUMBER
15003C0370 E

EFFECTIVE MAP:
NOVEMBER 20, 2000

Federal Emergency Management Agency

LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

ZONE A No base flood elevations determined.

ZONE AE Base flood elevations determined.

ZONE AH Flood depths of 1 to 3 feet (usually areas of ponding); base flood elevations determined.

ZONE AO Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.

ZONE A99 To be protected from 100-year flood by Federal flood protection system under construction ; no base flood elevations determined.

ZONE V Coastal flood with velocity hazard (wave action); no base flood elevations determined.

ZONE VE Coastal flood with velocity hazard (wave action); base flood elevations determined.

FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

ZONE X Areas of 500-year flood; areas of 100-year flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 100-year flood.

OTHER AREAS

ZONE X Areas determined to be outside 500-year floodplain.

ZONE D Areas in which flood hazards are undetermined.

UNDEVELOPED COASTAL BARRIERS

Identified 1983 | Identified 1990 | Otherwise Protected Areas

Coastal barrier areas are normally located within or adjacent to Special Flood Hazard Areas.

Floodplain Boundary

Floodway Boundary

Zone D Boundary

Boundary Dividing Special Flood Hazard Zones, and Boundary Dividing Areas of Different Coastal Base Flood Elevations Within Special Flood Hazard Zones.

513 — Base Flood Elevation Line; Elevation in Feet. See Map Index for Elevation Datum.

D — D — Cross Section Line

(EL 987) — Base Flood Elevation in Feet Where Uniform Within Zone. See Map Index for Elevation Datum.

RM7 — Elevation Reference Mark

M2 — River Mile

NOTES

This map is for use in administering the National Flood Insurance Program; it does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size, or all planimetric features outside Special Flood Hazard Areas. The community map repository should be consulted for more detailed data on BFE's, and for any information on floodway delineations, prior to use of this map for property purchase or construction purposes.

Areas of Special Flood Hazard (100-year flood) include Zones A, AE, A1-A30, AH, AO, A99, V, VE and V1-V30.

Certain areas not in Special Flood Hazard Areas may be protected by flood control structures.

Boundaries of the floodways were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the Federal Emergency Management Agency.

Floodway widths in some areas may be too narrow to show to scale. Refer to Floodway Data Table where floodway width is shown at 1/20 inch.

Coastal base flood elevations apply only landward of 0.0 NGVD, and include the effects of wave action; these elevations may also differ significantly from those developed by the National Weather Service for hurricane evacuation planning.

Corporate limits shown are current as of the date of this map. The user should contact appropriate community officials to determine if corporate limits have changed subsequent to the issuance of this map.

This map may incorporate approximate boundaries of Coastal Barrier Resource System Units and /or Otherwise Protected Areas established under the Coastal Barrier Improvement Act of 1990 (PL 101-591).

For community map revision history prior to countywide mapping, see Section 6.0 of the Flood Insurance Study Report.

For adjoining map panels and base map source see separately printed Map Index.

MAP REPOSITORY

Refer to Repository Listing on Map Index

EFFECTIVE DATE OF COUNTYWIDE FLOOD INSURANCE RATE MAP:

NOVEMBER 20, 2000

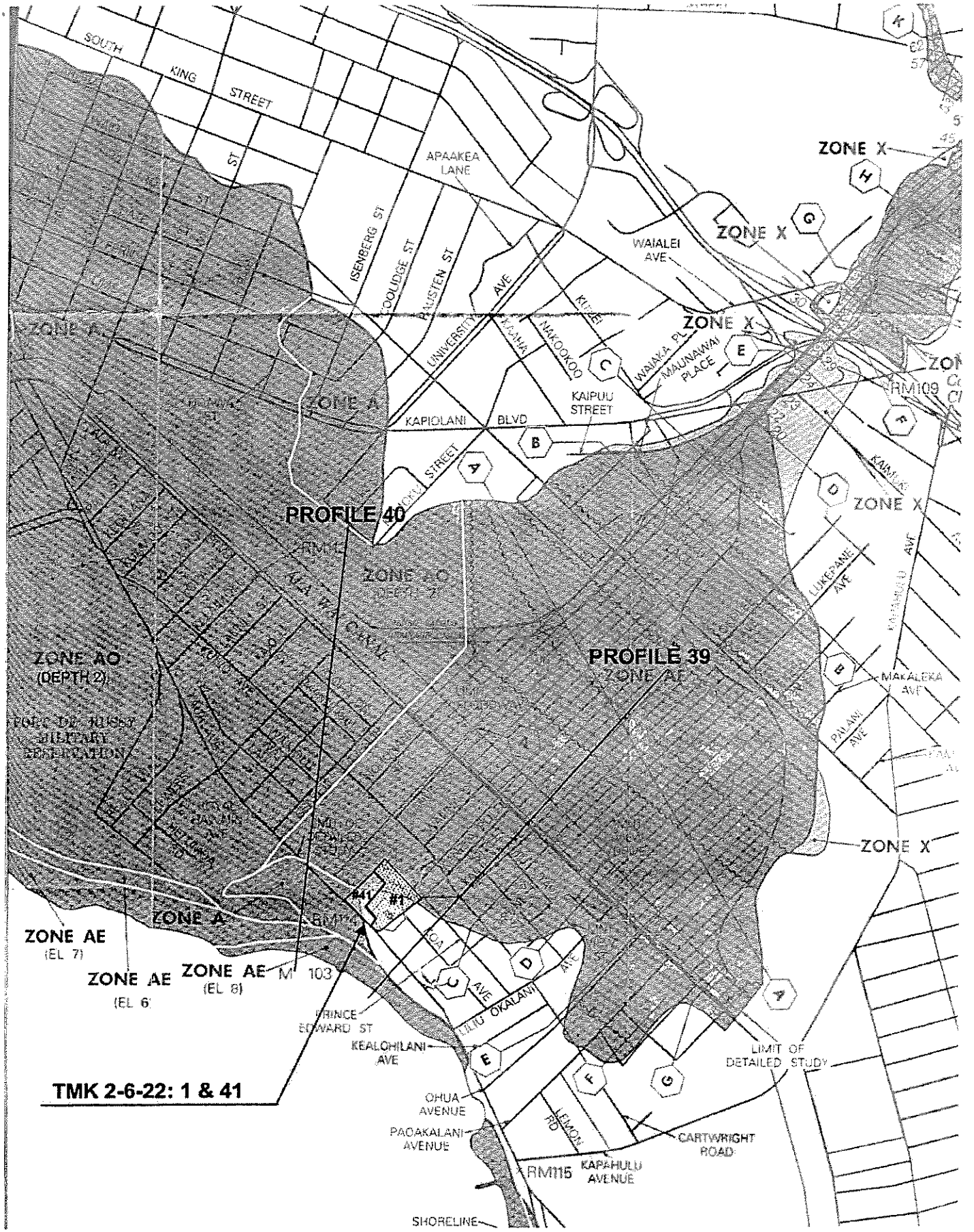
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL:

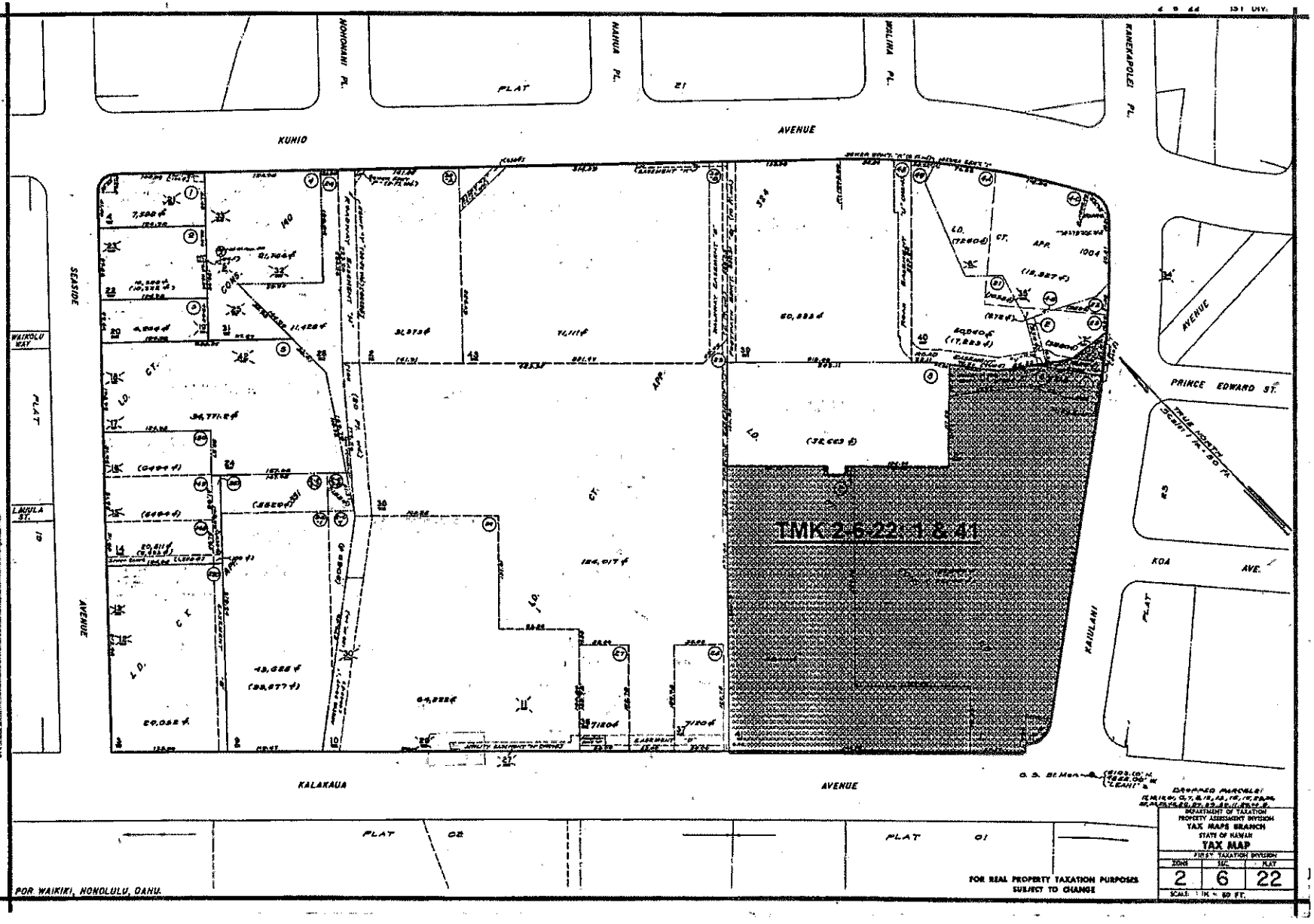
Refer to the FLOOD INSURANCE RATE MAP EFFECTIVE DATE shown on this map to determine when actuarial rates apply to structures in zones where elevations or depths have been established.

To determine if flood insurance is available, contact an insurance agent or call the National Flood Insurance Program at (800) 638-6620.

APPROXIMATE SCALE IN FEET

1000 0 1000


SOUTH KING STREET
APAAKEA LANE
ISENBERG ST
COOLIDGE ST
BAUSTEN ST
UNIVERSITY AVE
KUMU
WAIALEI AVE
ZONE X
ZONE A
NAKOOKOO
WAIAKA PL
MAUNAWAI PLACE
KAIPUU STREET
KAPIOLANI BLVD
PIKOI STREET
KAMAKE
PROFILE 40
PROFILE 39
ZONE AO
(DEPTH 2)
ZONE AE
(EL 7)
ZONE AE
(EL 6)
ZONE AE
(EL 8)
M 103
#41
#1
PRINCE EDWARD ST
KEALOHILANI AVE
LILIU
OKALANI AVE
LUKEPANE AVE
MAKALEKA AVE
PALAMA AVE
LIMIT OF DETAILED STUDY
OHUA AVENUE
PAOAKALANI AVENUE
LEMON RD
CARTWRIGHT ROAD
RM115
KAPAHULU AVENUE
SHORELINE
TMK 2-6-22: 1 & 41



DEPARTMENT OF TAXATION
PROPERTY ASSESSMENT DIVISION
TAX MAPS BRANCH
STATE OF HAWAII

TAX MAP

FIRST TAXATION DIVISION

ZONE	SEC.	PLAT
2	6	22

SCALE: 1 IN. = 50 FT.

FOR REAL PROPERTY TAXATION PURPOSES
SUBJECT TO CHANGE

POR. WAIKIKI, HONOLULU, OAHU.

APPENDIX 9

Pedestrian Wind Assessment dated July 28, 2009 prepared by RWDI

FINAL REPORT

PEDESTRIAN WIND ASSESSMENT
PRINCESS KA'IULANI HOTEL
HONOLULU, HAWAII

Project Number: #0910129 **July 28, 2009**

SUBMITTED TO: **Larry Cunha, Vice President & Principal**
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Project Manager: Jordan Gilmour, P.Eng.
Project Director: Hanqing Wu, Ph.D., P.Eng.

RWDI
CONSULTING ENGINEERS & SCIENTISTS

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1. INTRODUCTION

RWDI was retained by WCIT Architecture, Inc. to conduct a pedestrian wind assessment for the redevelopment of the Princess Ka'iulani Hotel, in Honolulu, Hawaii. The proposed redevelopment consists of: a renovation of the existing 'Āinahau Tower, a proposed podium building with two pool areas, and the addition of the new high-rise residential Pīkake Tower with a mid-level pool deck. The 'Āinahau Tower consists of 28 levels and is approximately 280 ft high, and the Pīkake Tower will consist of 33 levels and will be approximately 350 ft high. The objective of this study is to provide a preliminary assessment of the pedestrian wind comfort conditions on and around the proposed buildings. Using the 3D architectural model received by RWDI on November 25, and updated design plans received on December 9, 2008, the current assessment is based on:

- A review of long-term regional meteorological data and surrounding information for the study site;
- Our extensive experience with numerous wind tunnel tested projects, including developments in the Honolulu area;
- Our engineering judgment and knowledge of wind flows around buildings;
- Use of software developed by RWDI (*WindEstimator*)[1,2] for estimating the potential wind comfort around generalized building forms; and,
- Use of RWDI's propriety Computational Fluid Dynamics (CFD) software *Virtualwind*, for visualizing wind flow patterns.

This numerical approach provides a screening-level estimation of potential wind comfort conditions for the proposed building massing. To quantify the wind comfort conditions or refine any conceptual wind control measures, physical scale model tests in a boundary layer wind tunnel facility would be required and are planned for the future stages of the project. Note that

[1] H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004). "Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions". ASCE Structure Congress 2004. Nashville, Tennessee.

[2] C.J. Williams, H. Wu, W.F. Waechter and H.A. Baker (1999). "Experience with Remedial Solutions to Control Pedestrian Wind Problems". *10th International Conference on Wind Engineering*. Copenhagen, Denmark.

other wind issues, such as those relating to door pressures, stack effect, exhaust re-entrainment, etc. are not considered in the scope of this assessment.

2. SITE INFORMATION

Images in Figures 1a and 1b show the 3D models of the existing and proposed developments. The images also indicate the existing buildings and proposed buildings around the study site. The white colored buildings are existing off-site structures. Future proposed building's are shown as grey. Figure 2 presents a site plan of the proposed development. As shown in Figure 2, the study site is located north of Kalākaua Avenue and west of Ka'iulani Avenue. The buildings in the immediate vicinity of the development site are generally of a similar height or lower than the towers of the proposed development. The largest building immediately surrounding the development is the Hyatt Waikiki Hotel with its two octagonal-shaped towers, each approximately 360 ft in height. Several other towers of lesser height are present to the north and south, including the proposed Diamond Head Tower to the south, with a height of approximately 270 ft. Beyond the immediate surroundings, the terrain around the study site is classified as mixed suburban to open terrain, consisting of some high- rise and low-rise buildings with wooded areas and mountains to the east through north, and water to the west through southeast.

The primary pedestrian areas of interest on and around the proposed site include: ground level entrances, sidewalks and retail promenades along Ka'iulani Avenue (Area A); ground level entrances, sidewalks and retail promenades along Kalākaua Avenue (Area B); balconies on the adjacent Hyatt Waikiki tower (Area C), the Auto Court with water feature (Area D), the Lobby Lounge and Outdoor Dining areas west of the 'Āinahau Tower (Area E), the Hotel Pool Deck (Area F), the Suites Pool Deck (Area G), and the Level 21 Pool Deck on the Pīkake Tower (Area H). These pedestrian areas are referenced in Figure 2.

3. METEOROLOGICAL DATA

Wind statistics recorded at the Honolulu International Airport between 1949 and 2004 were analysed for the Summer (May through October) and Winter (November through April) seasons. Figure 3 graphically depicts the distribution of wind frequency and directionality for these two seasons. The upper-left wind rose identifies the summer wind data while the lower-left wind rose shows the winter data. The wind flows predominantly from the east-northeast and northeast

directions annually, when all wind are considered. Calm winds occur 1.9% of the time in the summer and 4.0% of the time in the winter.

Figure 3 also depicts the directionality of strong winds (greater than 20 mph, measured at the airport anemometer at a height of 30 ft). Strong winds occur for 7.6% and 7.5% of the time during the summer and winter season, respectively. Strong winds occur from the east-northeast and northeast directions annually. Winds approaching from the northeast and east directions were considered most representative for the *Virtualwind* simulations due to the orientation of the proposed and existing building's however, winds from all directions were considered in the estimation of pedestrian wind comfort.

4. RWDI WIND COMFORT CRITERIA

The wind conditions around the proposed development are assessed by the use of a pedestrian wind comfort criteria developed at RWDI. The four comfort categories used for this review are described in general terms as follows:

- **Sitting**: Low wind speeds during which one can read a newspaper without having it blown away. These wind speeds are appropriate for outdoor cafes and other amenity spaces that promote sitting.

- **Standing**: Slightly higher wind speeds that are strong enough to rustle leaves. These wind speeds are appropriate at major building entrances, bus stops or other areas, such as a bench along a sidewalk, where people may want to linger but not necessarily sit for extended periods of time.

- **Walking**: Winds that would lift leaves, move litter, hair and loose clothing. Appropriate for sidewalks, intersections, plazas, parks or playing fields where people are more likely to be active and receptive to some wind activity.

- **Uncomfortable**: The effects of wind speeds at this level would range from small trees swaying and wind force being felt on the body to whole trees being in motion and inconvenience being felt when walking. Wind of this magnitude would be considered a nuisance for most activities.

Wind conditions are considered acceptable for sitting, standing or walking if the winds are within their specified ranges at least 80% of the time, or four in five days. An uncomfortable

designation means that the 80% criterion is not satisfied for any of the above activities**.** **Safety** is also considered by the criteria and is associated with excessive wind speeds that can adversely affect a pedestrian's balance and footing. If winds sufficient to affect a person's balance occur more than two times per summer or winter season, the wind conditions are considered severe. Wind control measures are typically required at locations where winds are rated as uncomfortable or they exceed the wind safety criterion.

5. WIND COMFORT ASSESSMENT

Predicting wind speeds and occurrence frequencies is complicated, involving building geometry, orientation, position and height of surrounding buildings, upstream terrain and the local wind climate. Over the years, RWDI has conducted thousands of wind tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge allows, in many situations, for a screening-level numerical estimation of pedestrian wind conditions without wind tunnel testing.

Figures 4 through 10 illustrate the wind flow patterns at grade and on the upper level terraces of the proposed development for prevalent winds from the northeast directions. This direction was chosen as the best representation of the wind conditions at the study site. In these figures, the color dark blue represents low wind speed areas indicating wind conditions comfortable for sitting/standing, the light blue represents low to moderate wind speeds indicating conditions comfortable for walking, yellow represents moderately high wind speed areas, and red represents high wind speed areas. The areas of moderate to high wind speeds are expected to create the most uncomfortable, and/or potentially severe wind conditions.

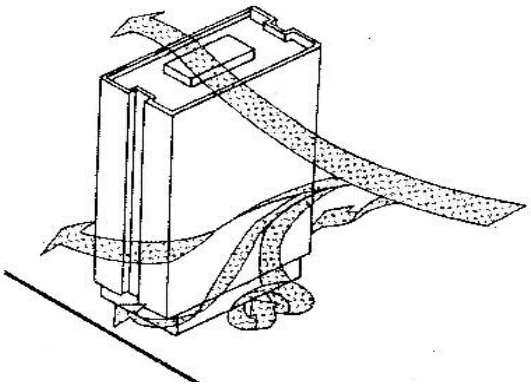
Note that these figures show the mean wind speeds over the entire development. In some cases, vector plots of mean flows are included in the figures to provide an indication of local wind directionality. Animations of wind conditions can be viewed to better understand the variable and time dependent (turbulent) nature of wind flows. Animations of wind speed contours, velocity vectors and smoke flow visualizations will accompany this report.

The wind flow images show the flow patterns for winds from the prevailing directions based on the *Virtualwind* analysis. However the pedestrian wind conditions were predicated based on the *WindEstimator*, which consider winds from all directions.

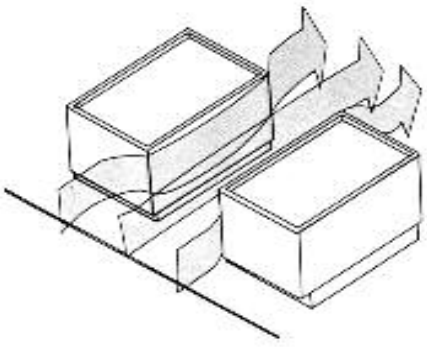
In general, wind conditions comfortable for walking are desired at sidewalks and parking lots, while lower wind speeds comfortable for standing are appropriate for entrances, drop-offs and porte-cochere. Ideally, wind speeds comfortable for sitting are desired at outdoor pool areas, terraces and plazas; however, standing comfort conditions are generally accepted by users as a breeze is often considered pleasant in a warmer climate such as that found in Hawaii.

Figure 11 illustrates wind comfort rating estimates for ground level and podium locations for the proposed configuration. Both project north and true north are shown in the figure. Wind directions are referenced to true north, so the prevailing winds from the northeast and east-northeast will tend to be roughly parallel to Ka'iulani Avenue. The following is a description of wind conditions on and around the proposed development.

Large buildings tend to intercept the stronger winds at higher elevations and redirect them to ground level. Such a *Downwashing Flow* is the main cause for wind acceleration at the pedestrian level. There is also increased wind acceleration at the corners of tall buildings as the downwashed wind flows around the edges of the building. When two buildings are situated side by side, wind flow tends to accelerate through the gap between the buildings due to a *Channelling Effect*. If these buildings/wind combinations occur for prevailing winds, there is an increased potential for even higher wind speeds.



Downwashing Flow



Channeling Effect

5.1 ENTRANCES AND SIDEWALKS ALONG KA'IULANI AVENUE (AREA A)

Figure 4 illustrates the wind conditions expected at grade level for winds from the northeast, for the Existing (upper image) and Proposed (lower image) Configurations. Ka'iulani Avenue is located east of the development. The existing Hyatt Waikiki is across Ka'iulani Avenue, further to the east.

As indicated in Figure 11, wind conditions for entrance areas and the retail promenade on the west side of Ka'iulani Avenue are expected to be comfortable for standing in both the summer and winter seasons, in the Proposed Configuration. Most of the sidewalk areas are expected to be comfortable for walking throughout the year. These wind conditions are considered appropriate for the intended usage.

However, uncomfortable wind conditions are possible along Ka'iulani Avenue, between the Hyatt Waikiki and the Pīkake Tower. These potentially uncomfortable wind conditions between the two towers are expected to be slightly stronger than the existing conditions, which are also possibly uncomfortable, as seen in comparing the images in Figure 4. The increase can be attributed to the channelling effect between the two towers. However, the Pīkake Tower has been set back from Ka'iulani Avenue which reduced the impact of the proposed development on the wind conditions along Kaiulani Avenue. To reduce the wind speeds in this area, additional trees could be added along the sidewalk.

Regarding pedestrian wind safety, no wind safety failures are expected along Ka'iulani Avenue.

5.2 ENTRANCES AND SIDEWALKS ALONG KALAKAUA AVENUE (AREA B)

Kalakaua Avenue is located along the south side of the development. The entrance areas and retail promenades immediately adjacent to the buildings on the north side of Kalakaua Avenue are expected to be protected from the northeasterly prevailing winds, as seen in Figure 4. Figure 11 indicates that wind conditions in this area will be comfortable for standing or sitting throughout the year (as indicated by the light blue and dark blue areas), which is appropriate for the intended usage. Likewise, wind comfort conditions along the sidewalk areas on both sides of Kalakaua Avenue are expected to be acceptable for walking for both the existing and proposed configurations throughout the year, as seen in Figure 4. No significant increase in wind speeds are anticipated with the proposed redevelopment in this area.

Regarding pedestrian wind safety, no wind safety failures are expected along Kalakaua Avenue.

5.3 BALCONIES ON ADJACENT HYATT WAIKIKI TOWER (AREA C)

Wind conditions on the balconies of the existing Hyatt Waikiki Tower were evaluated to see if the proposed development increased winds at these locations. As shown in Figure 5, the wind conditions along the Hyatt Waikiki balconies are expected to remain similar to the Existing Configuration. Figure 11 shows estimated wind comfort conditions at the balconies. The northwest side of the tower (facing true north) is presently experiencing stronger winds (as indicated by the red and yellow arrows in Figure 5 and the uncomfortable rating in Figure 11) as are commonly found at elevated balconies on taller buildings. Balconies on the west side and the southwest side are currently protected from the prevailing northeasterly winds and are expected to remain protected. Wind comfort conditions will be milder on these two sides.

5.4 AUTO COURT (AREA D)

The Auto Court will be centrally located within the development and will have a water feature. As shown in Figures 6 and 11, winds within the western and central portions of the Auto Court are expected to be suitable for standing or sitting throughout the year, being protected from the prevailing winds by the north pool area. The conditions are considered appropriate for the intended usage as an entrance area. The eastern portion may have wind conditions comfortable for walking, as indicated by the green arrows in Figure 6, which is still appropriate for the intended usage of that area.

5.5 LOBBY LOUNGE AND OUTDOOR DINING (AREA E)

The Lobby Lounge and Outdoor Dining terrace will be located west of the ʻĀinahau Tower, which will protect the area from the prevailing northeasterly winds. As shown in Figures 7 and Figure 11, winds within these areas are expected to be suitable for sitting throughout the year and appropriate for the intended usage as seated areas.

5.6 HOTEL POOL DECK (AREA F)

The Hotel Pool Deck will be located on the north side of the development on a podium roof. As shown in Figures 8 and Figure 11, wind conditions within this area are expected to be suitable for sitting or standing throughout the year, which will be acceptable for the intended usage as a pool deck in a warm climate. This area is partly sheltered by the adjacent buildings to the northeast.

5.7 SUITES POOL DECK (AREA G)

The Suites Pool Deck will be located between the ʻĀinahau Tower and the Pīkake Tower on the podium roof. As shown in Figures 9 and 11, winds within these areas are expected to be stronger than other amenities areas due to the channelling of the prevailing northeasterly winds between the two towers and also due to some downwash around the north end of the Pīkake Tower. Figure 8 shows some areas with yellow and green vectors, indicating potential uncomfortable conditions or conditions suitable for a walkway, which are not appropriate for the intended usage as a pool deck. Considerable localized protection in the form of screen walls and increased vegetation is recommended to reduce the wind speeds in this area. Overhead trellises may also be needed to reduce the downwashing winds from the Pīkake Tower. Further examination with wind tunnel testing is also recommended.

5.8 UPPER TERRACE ON THE PĪKAKE TOWER (AREA H)

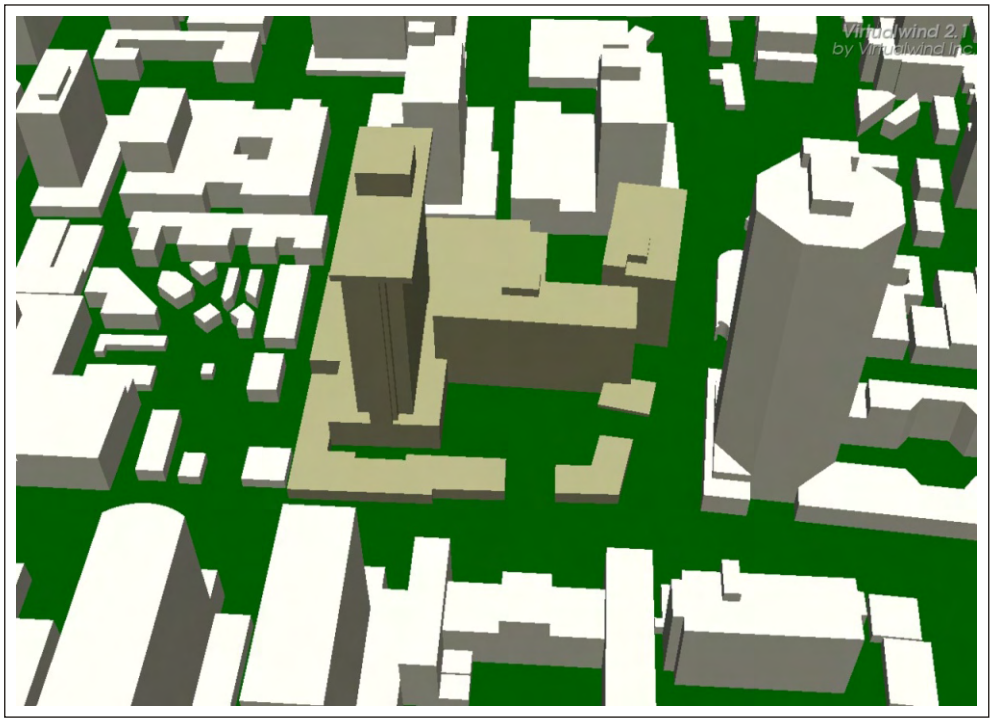
The Upper Terrace on the Pīkake Tower will be located on Level 21 on the south side of the tower. As shown in Figure 10 winds within these areas are expected to be stronger on the outer areas of the terrace compared to other amenities areas, due to the relative height and exposure of the upper terrace. Some areas may have uncomfortable wind conditions for both summer and winter seasons, and perhaps wind safety failures without adequate protection from the prevailing winds. This situation is common for elevated decks on high-rise towers, due to the normal wind speed increase with elevation above grade. Some localized protection, such as screen walls, parapets or increased vegetation in planters, is recommended for the exposed areas along the east and south sides of the terrace. Further examination with wind tunnel modeling is also recommended.

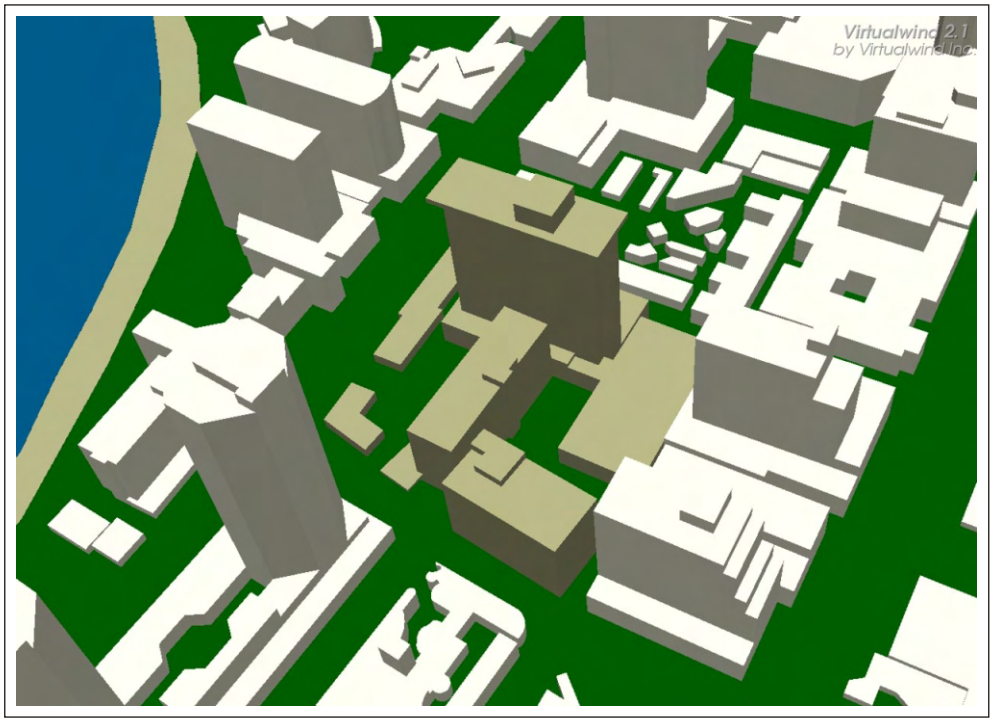
6. SUMMARY

With the Proposed Configuration, wind conditions at street levels and the balconies on the Hyatt Waikiki are expected to be similar to the Existing Configuration. The exception was slightly increased wind speeds along Ka'iulani Avenue between the Hyatt Waikiki and the Pīkake Tower. Uncomfortable wind conditions are possible during high wind events in this street area for both the Existing and Proposed Configurations. Wind conditions on the Hyatt Waikiki balconies are expected to be similar to existing conditions. No wind safety issues at street levels are expected with the new development in place.

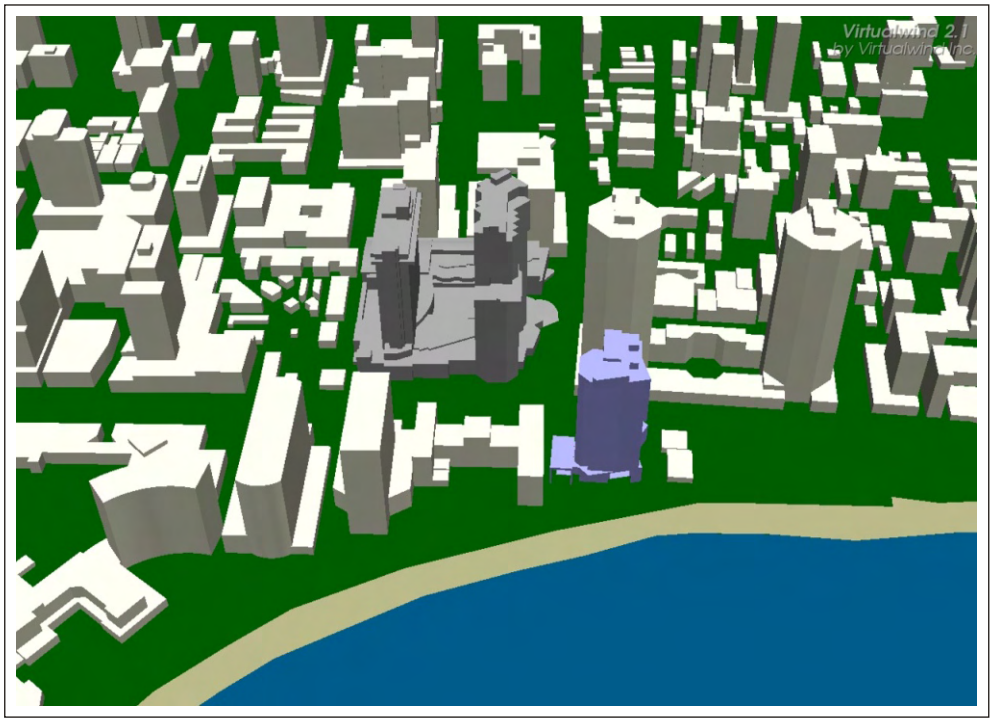
For the proposed development itself, wind conditions comfortable for intended usages are expected in many grade level and podium areas throughout the year. However, uncomfortable wind conditions will likely occur at the Suites Pool Deck and the Upper Terrace on the Pīkake Tower. Wind safety failures are also possible on the outer areas of the Upper Terrace. Wind control measures are recommended and have been described to reduce wind activity at these areas.

FIGURES





3D View of Wind Simulation Model **Existing Configuration** Princess Ka'iulani - Honolulu, Hawaii	Project #0910129	Figure: 1a Date: January 12, 2008	RWDI



3D View of Wind Simulation Model
Proposed Configuration

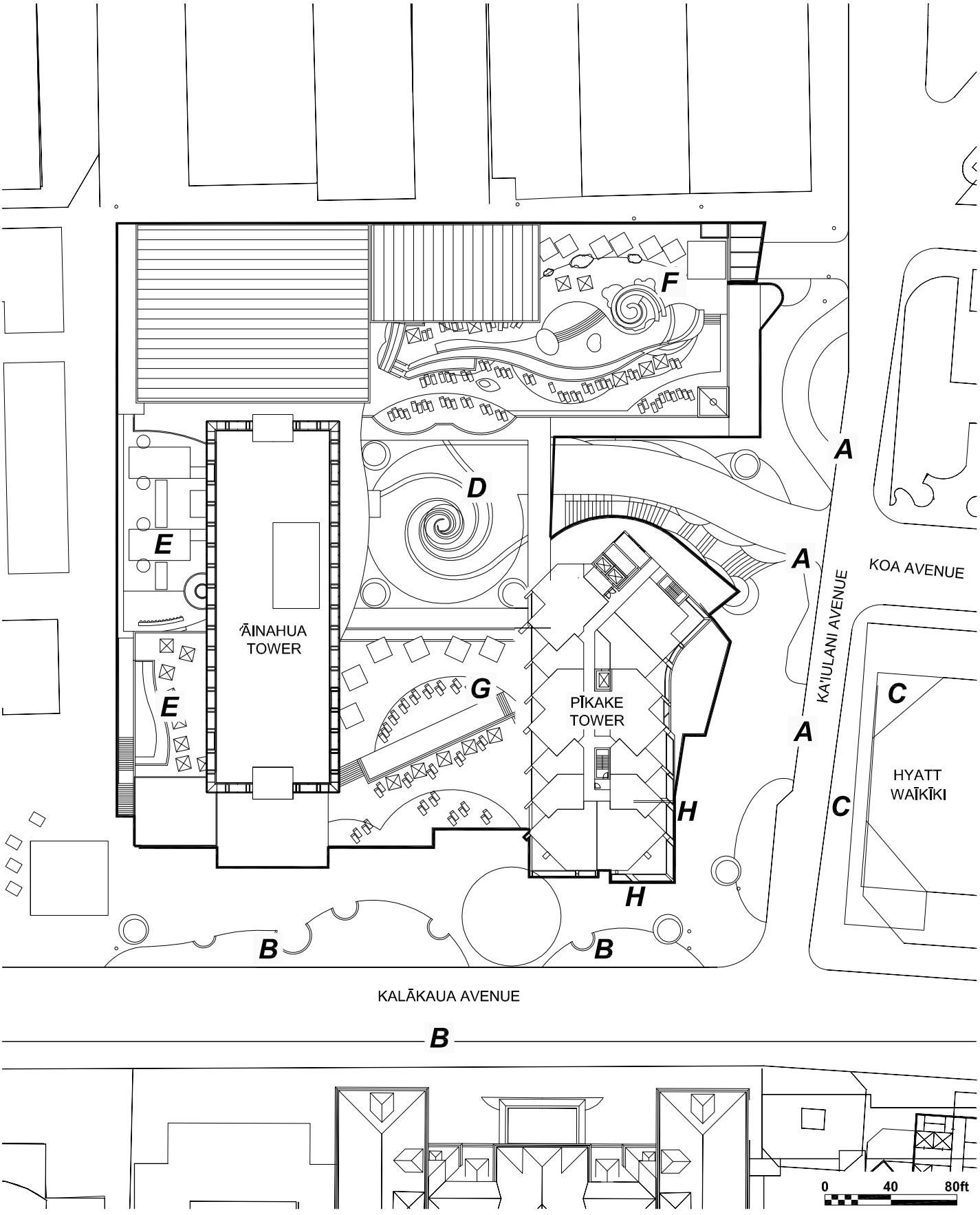
Princess Ka'iulani - Honolulu, Hawaii

Project #0910129

Figure: 1b

Date: January 12, 2008

RWDI



Site Plan

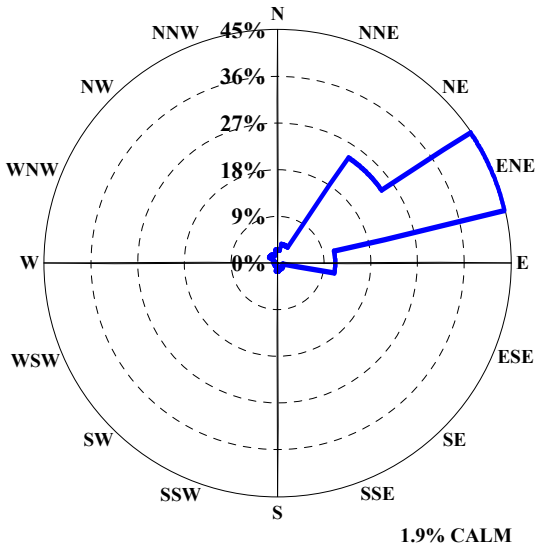
Project North True North

Princess Ka'iulani - Honolulu, Hawaii

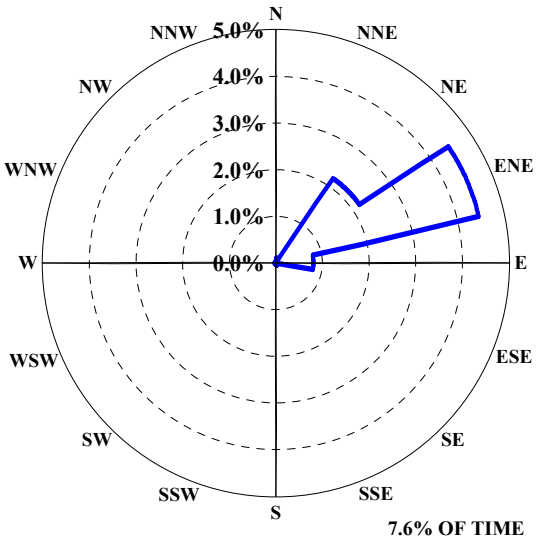
Project #0910129

Drawn by:	AA	Figure:	2
Approx. Scale:			1"=80'
Date Revised:			Jan. 12, 2009

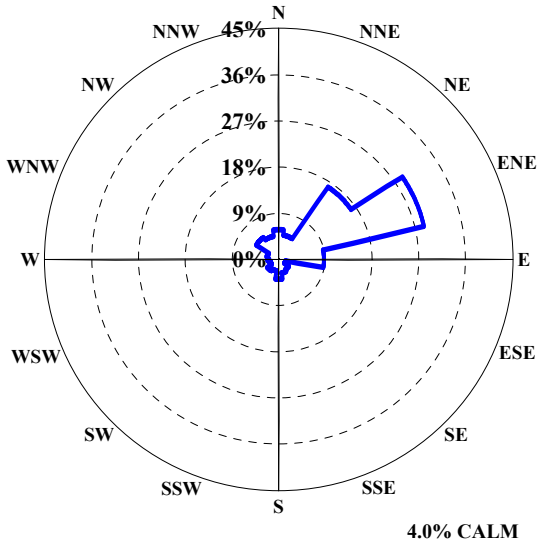
RWDI



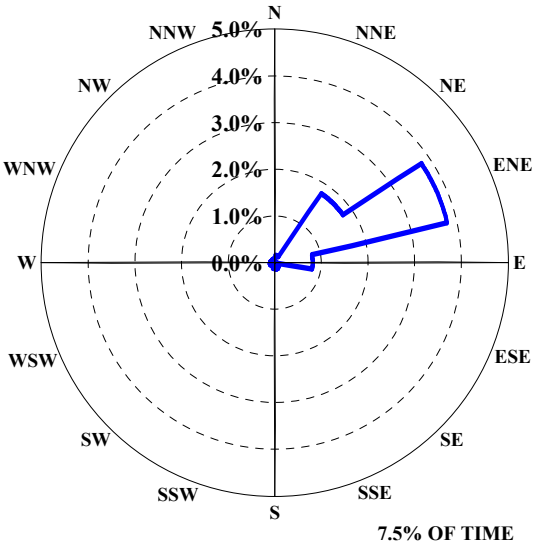
ALL SUMMER WINDS



SUMMER WINDS EXCEEDING 20 mph

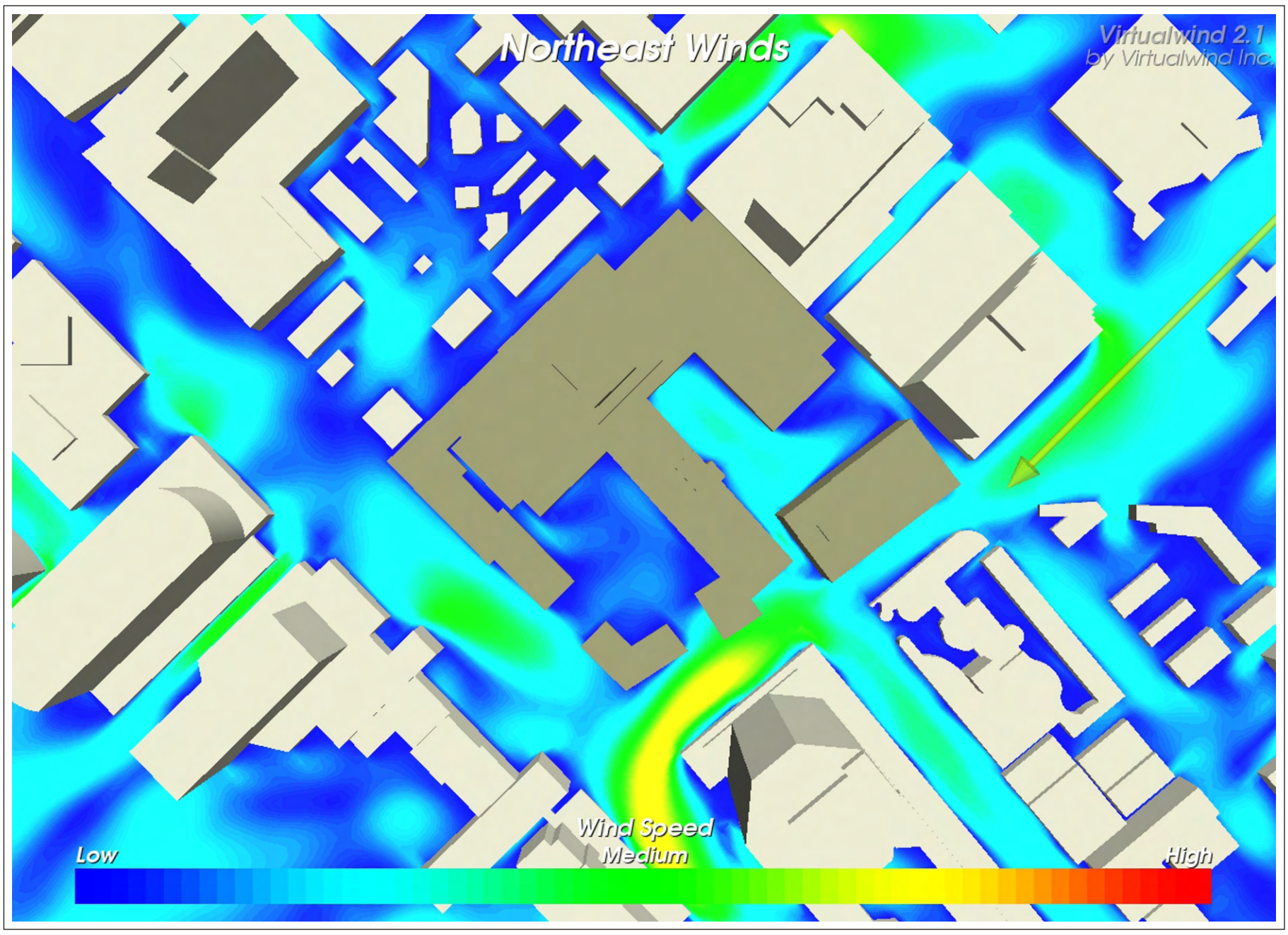


ALL WINTER WINDS



WINTER WINDS EXCEEDING 20 mph

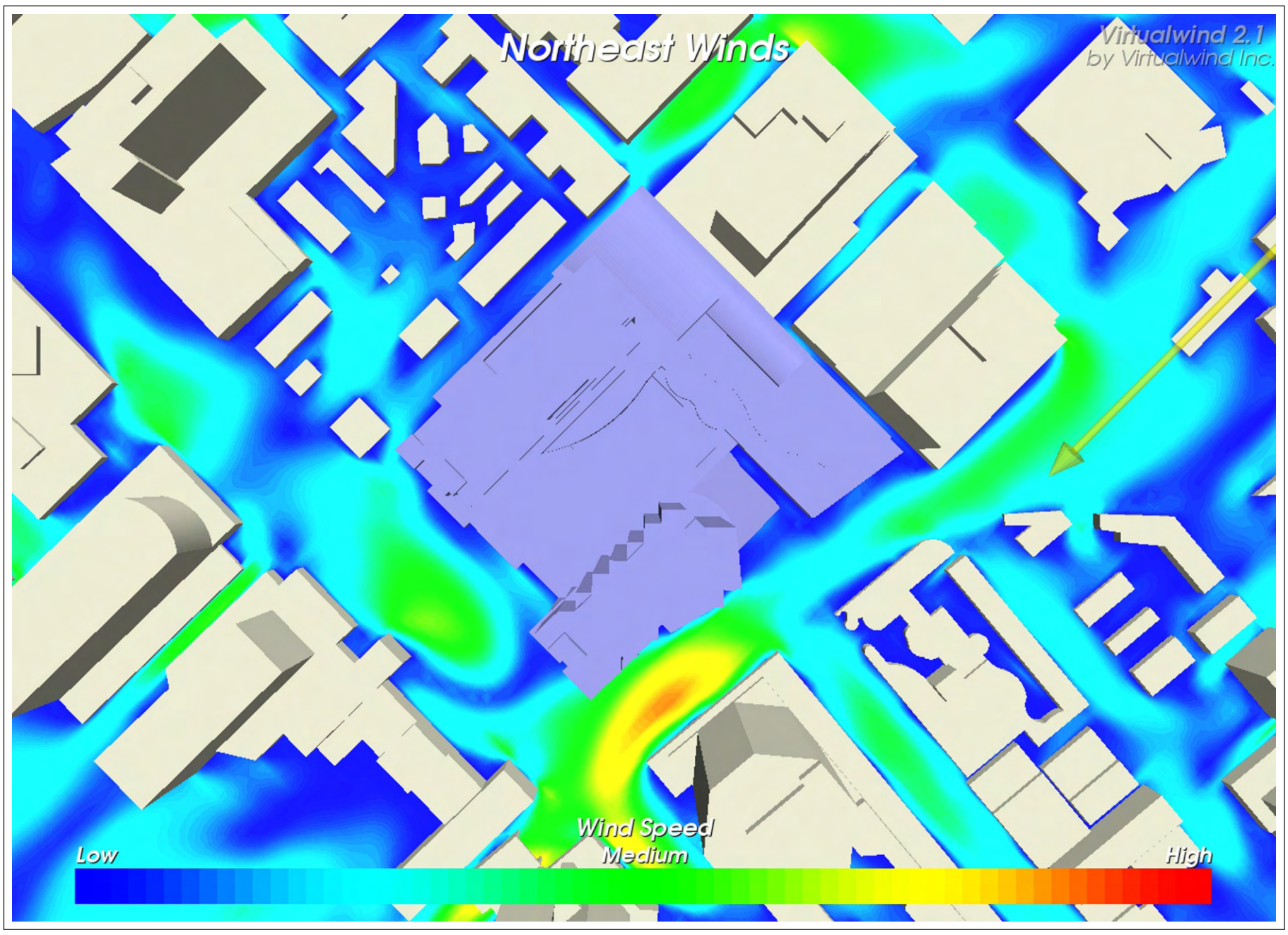
Directional Distribution (%) of Winds (Blowing From) **Station: Honolulu International Airport, HI (1949 - 2004)**	Figure: **3**	RWDI
Princess Ka'iulani Project #: 09-100129	Date: January 12, 2009	



Existing Configuration

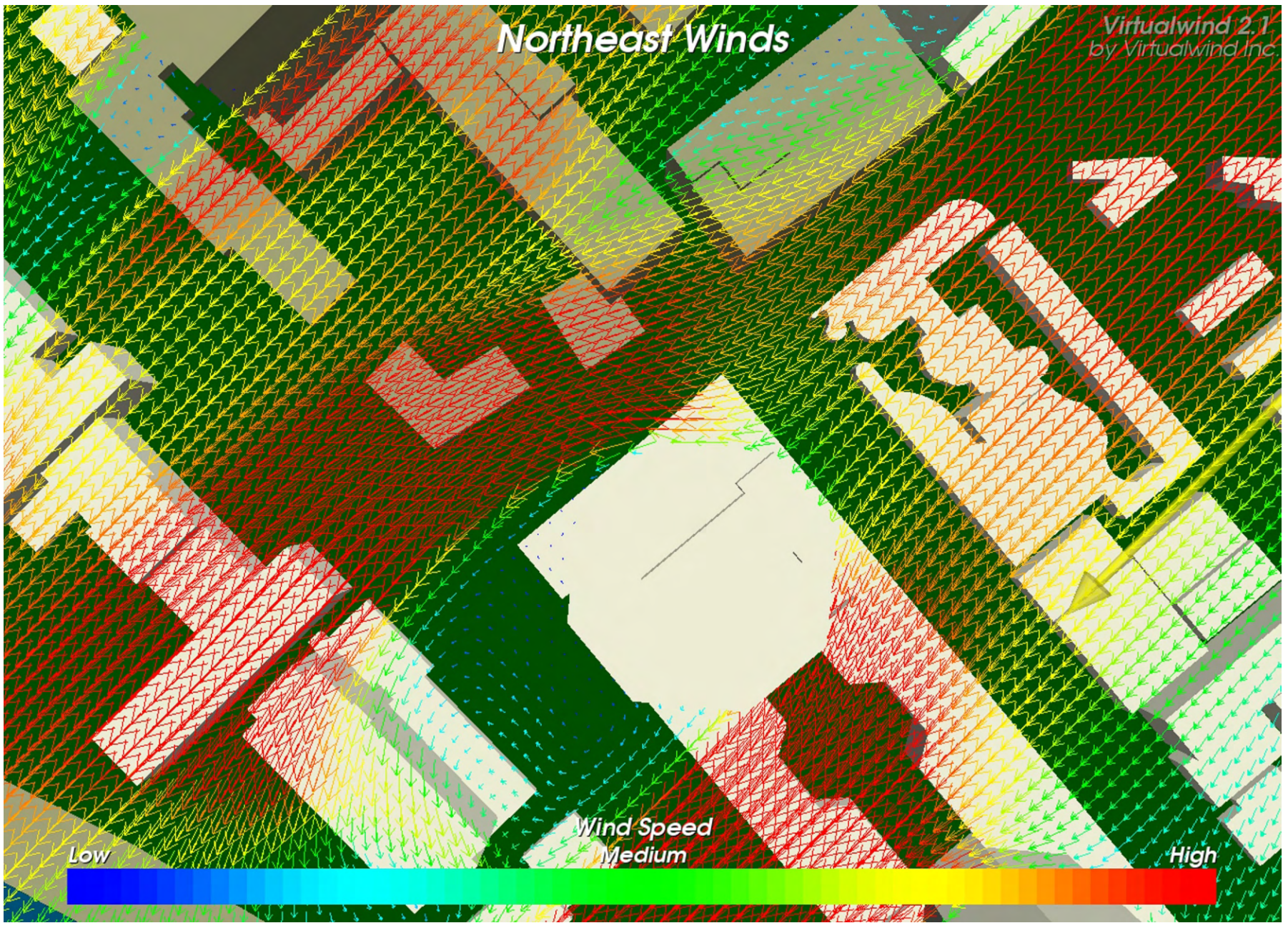
Low — High

Wind Speed



Proposed Configuration

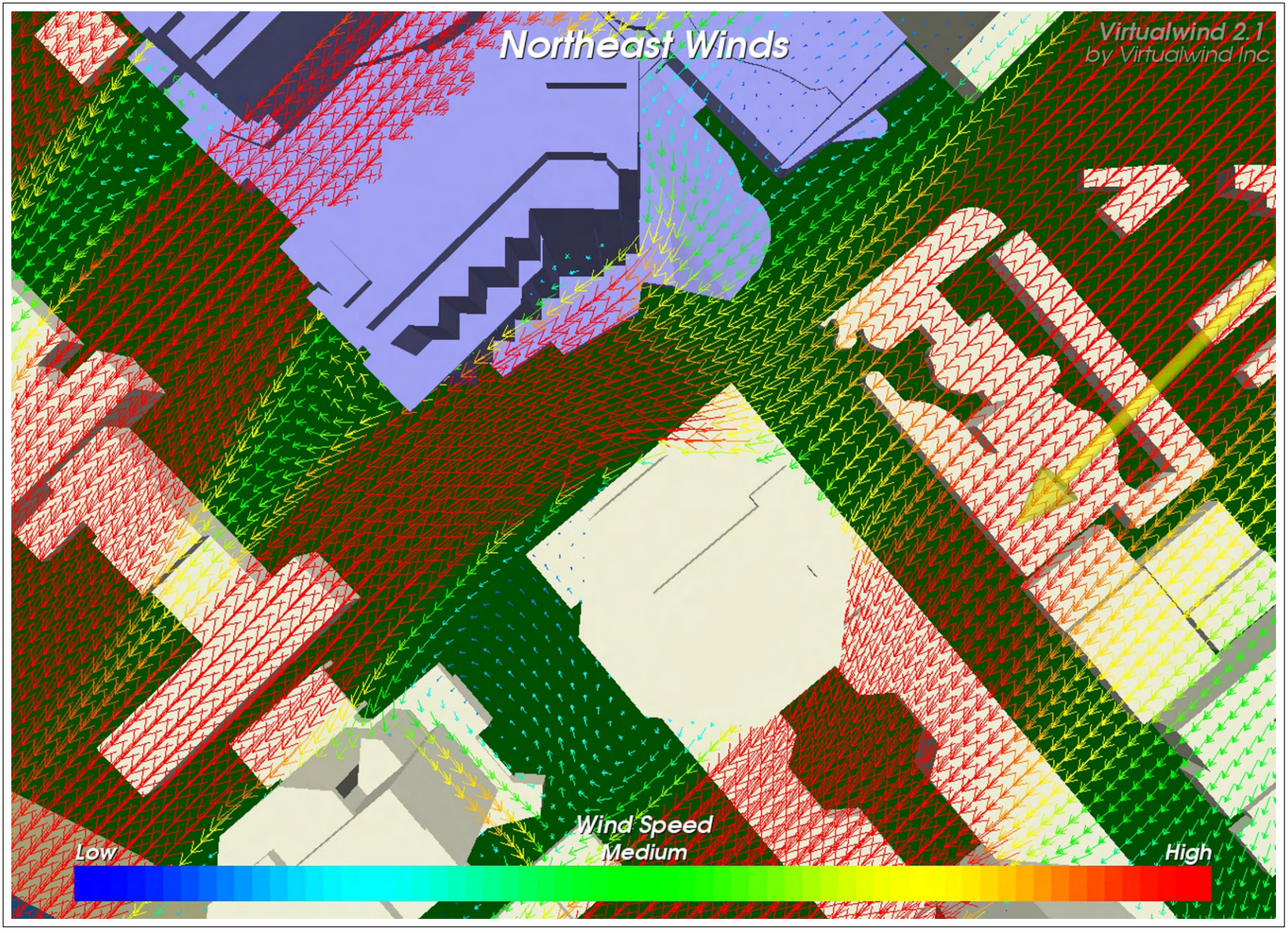
Wind Flow Simulation Results **Grade Level - Wind Velocity Contours** Princess Ka'iulani - Honolulu, Hawaii	Project #0910129	Figure: 4 Produced by: AA Date Revised: January 9, 2008	RWDI



Existing Configuration

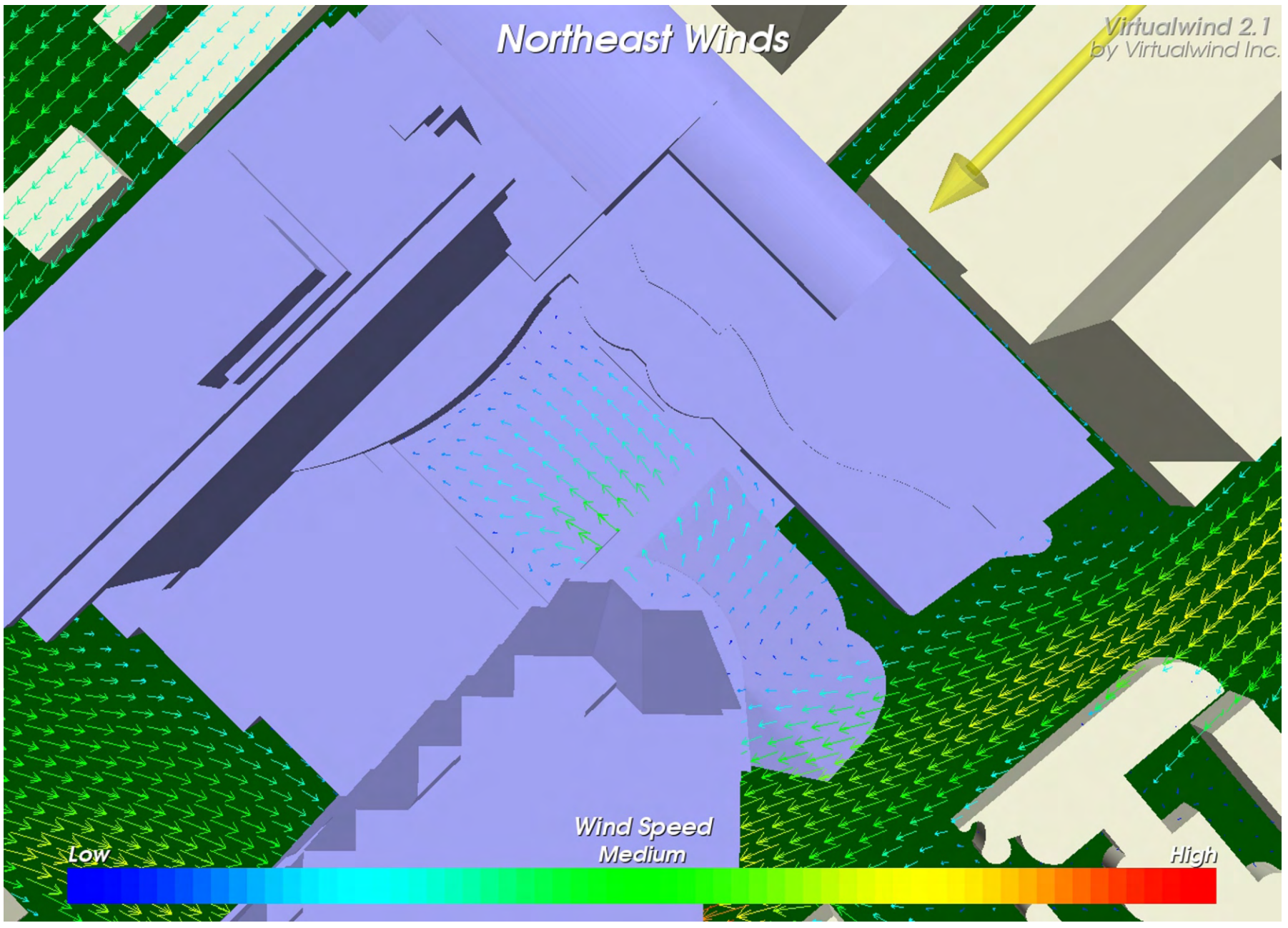
Low — High

Wind Speed



Proposed Configuration

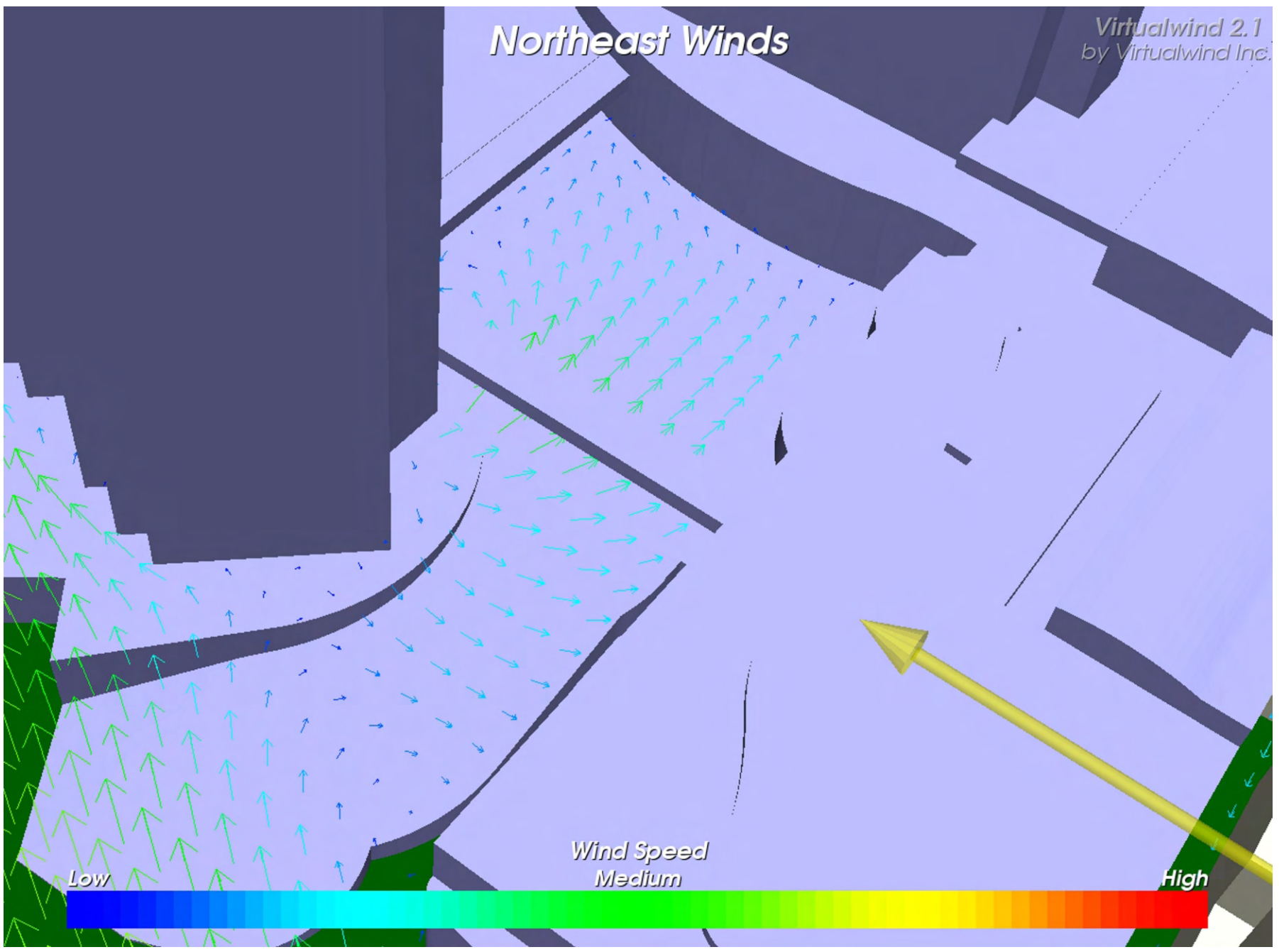
Wind Flow Simulation Results **Balconies on Adjacent Hyatt Waikiki Tower - Wind Velocity Vectors** Princess Ka'iulani - Honolulu, Hawaii	Project #0910129	Figure: 5 Produced by: AA Date Revised: January 9, 2008	RWDI



Proposed Configuration

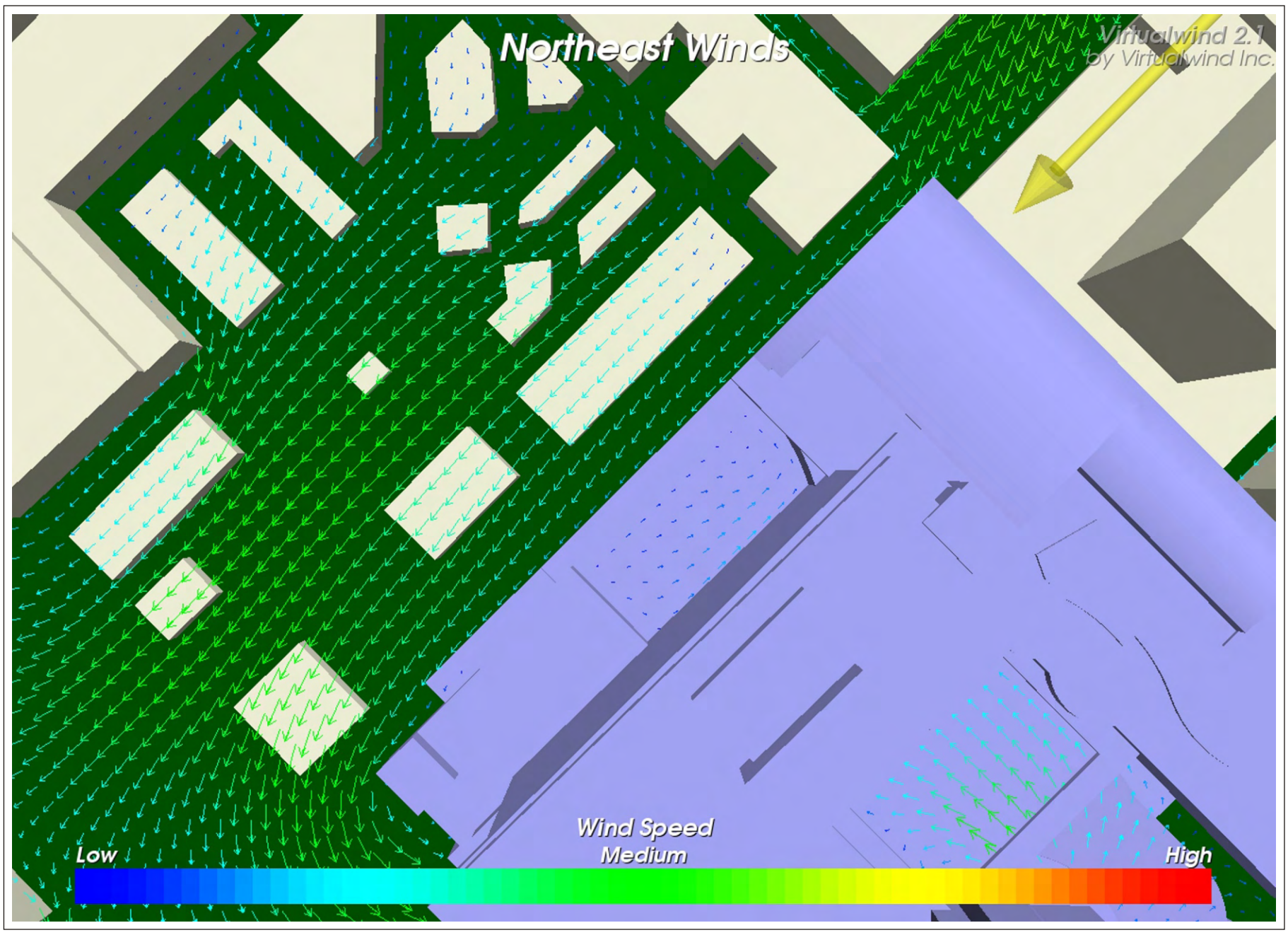
Low — High

Wind Speed



Proposed Configuration

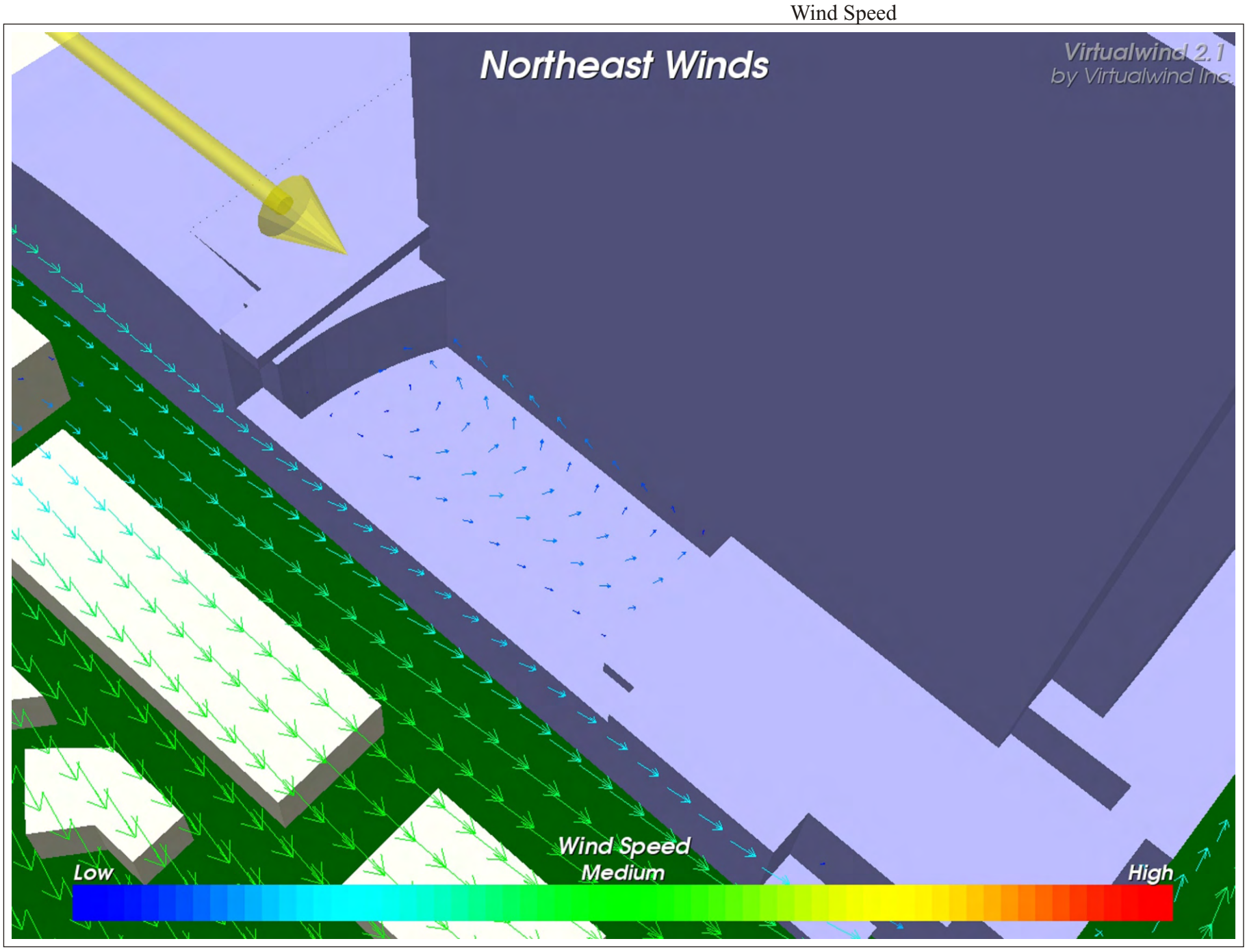
Wind Flow Simulation Results **Auto Court - Wind Velocity Vectors** Princess Ka'iulani - Honolulu, Hawaii	Project #0910129	Figure: 6 Produced by: AA Date Revised: January 9, 2008	RWDI



Proposed Configuration

Low — High

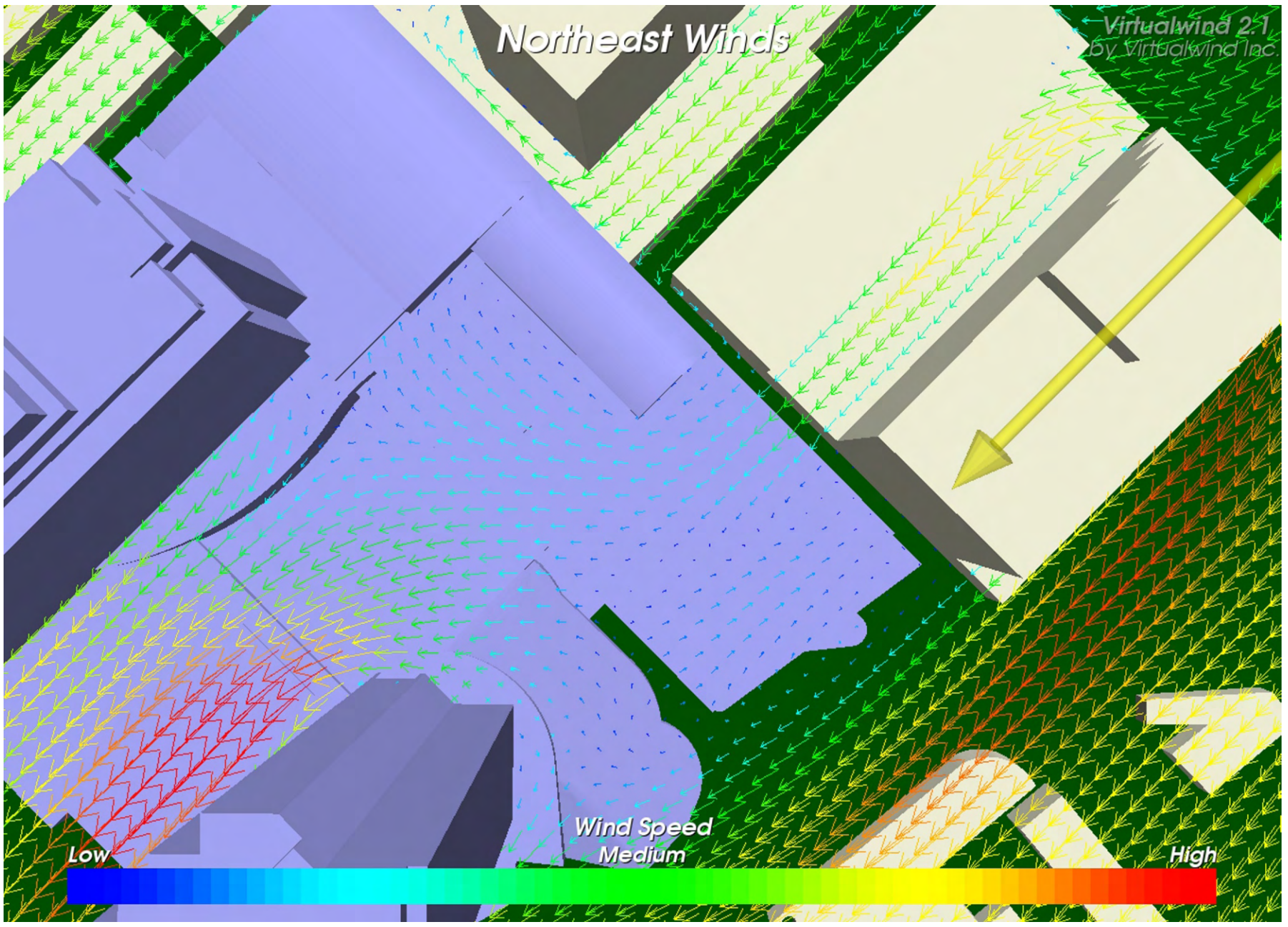
Wind Speed



Proposed Configuration

Wind Flow Simulation Results **Lobby Lounge - Wind Velocity Vectors**		Figure:	7
		Produced by:	AA
Princess Ka'iulani - Honolulu, Hawaii	Project #0910129	Date Revised:	January 9, 2008

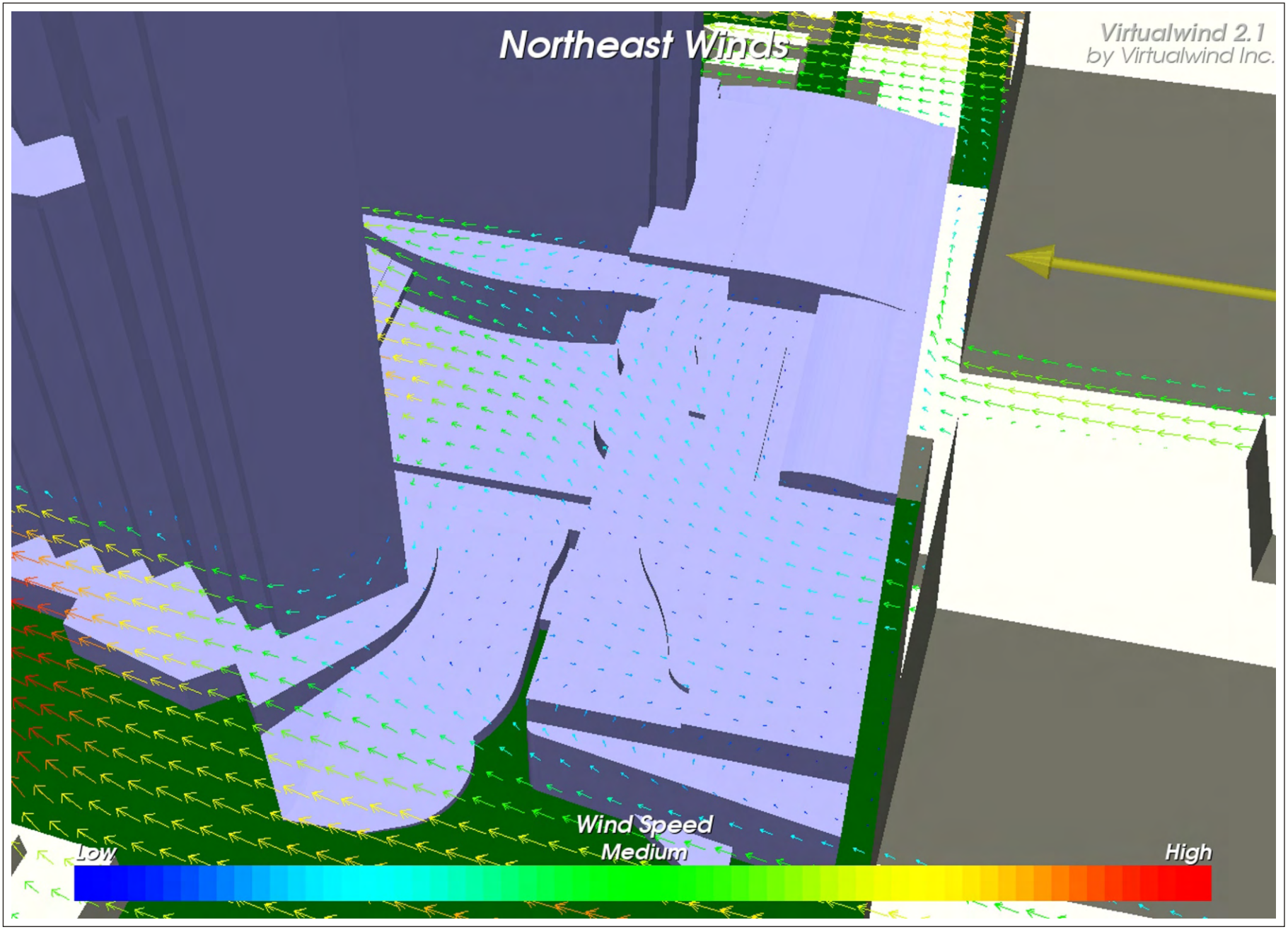
RWDI



Proposed Configuration

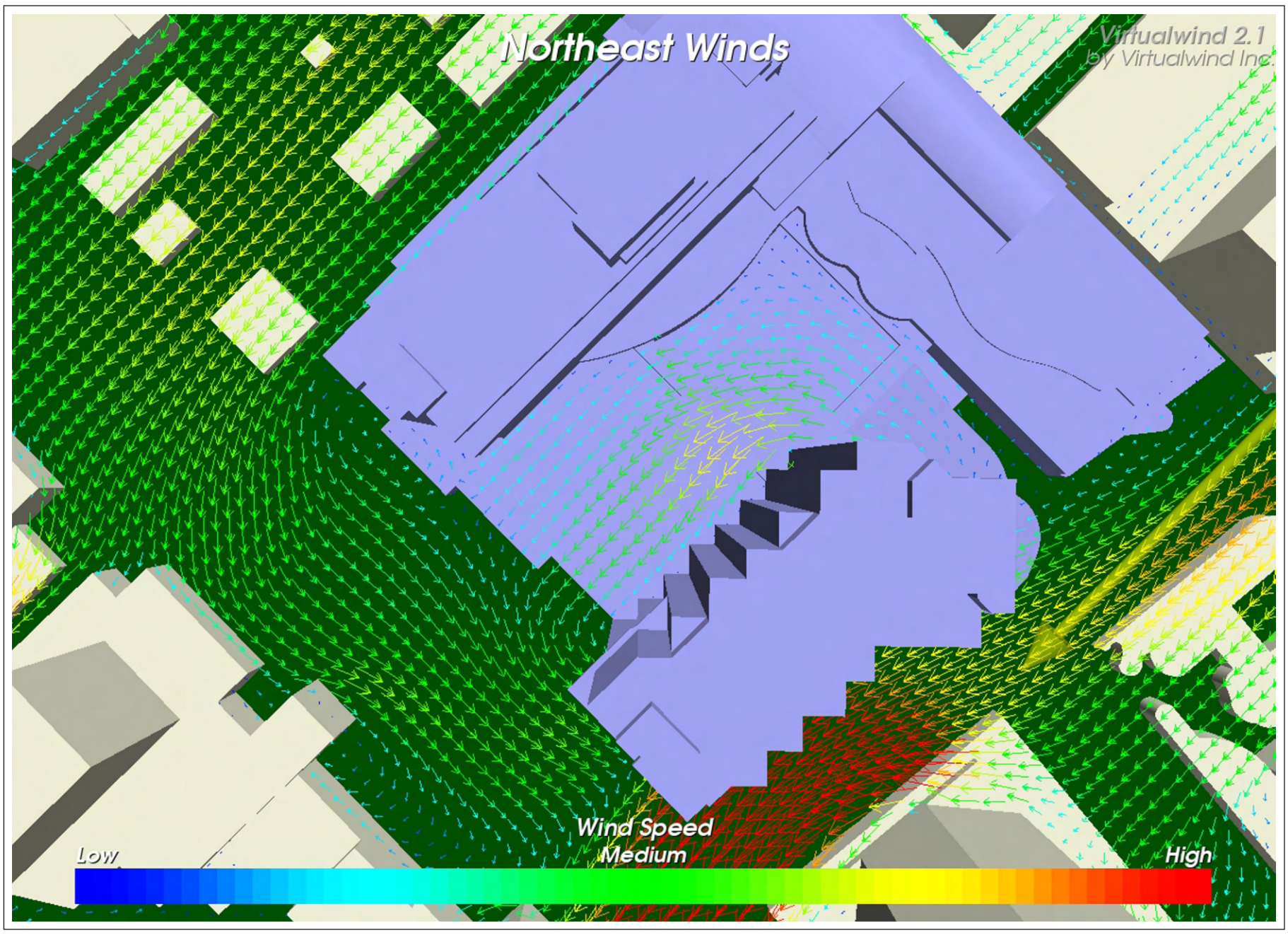
Low — High

Wind Speed



Proposed Configuration

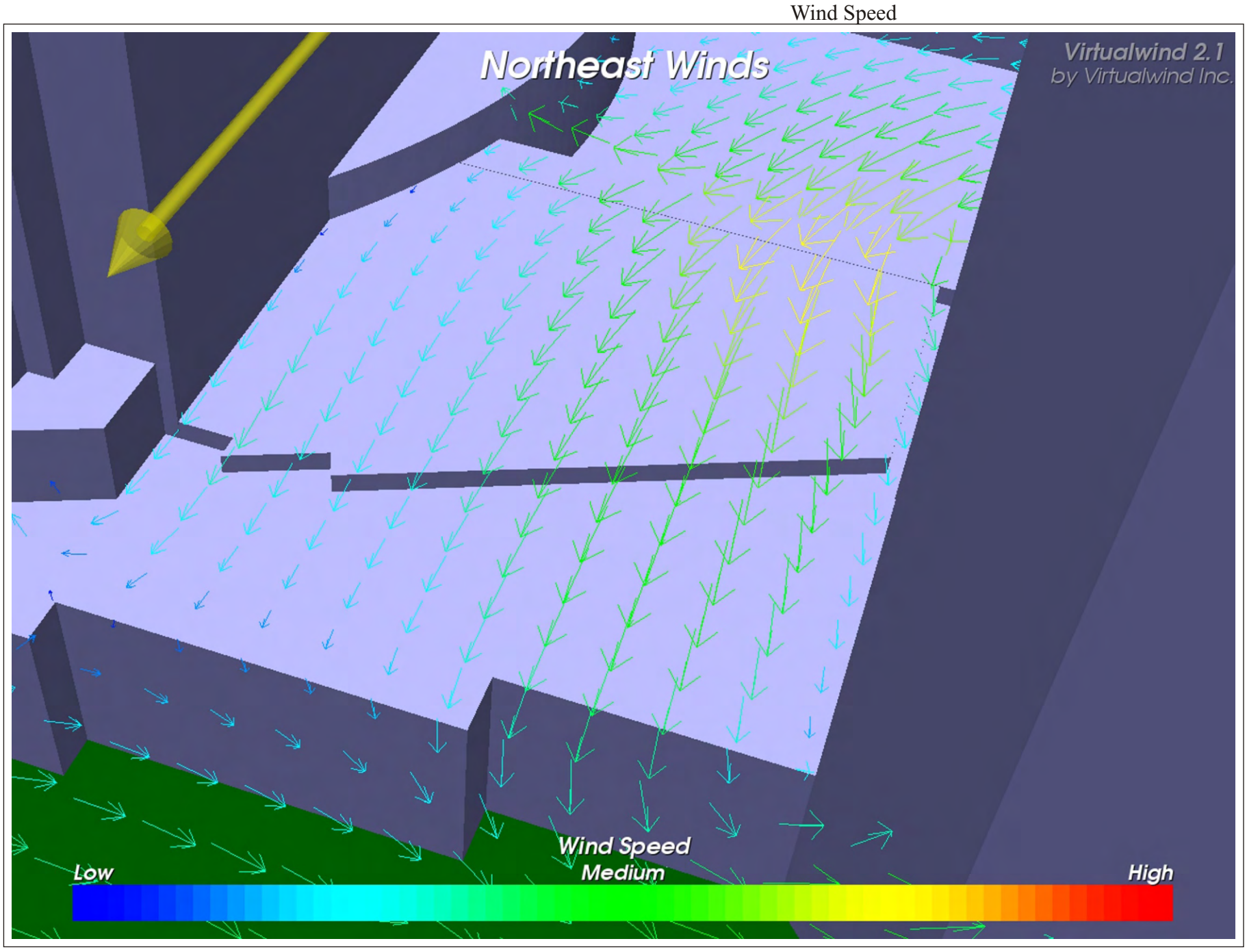
Wind Flow Simulation Results **Hotel Pool Deck - Wind Velocity Vectors** Princess Ka'iulani - Honolulu, Hawaii	Project #0910129	Figure: 8 Produced by: AA Date Revised: January 9, 2008	RWDI



Proposed Configuration

Low — High

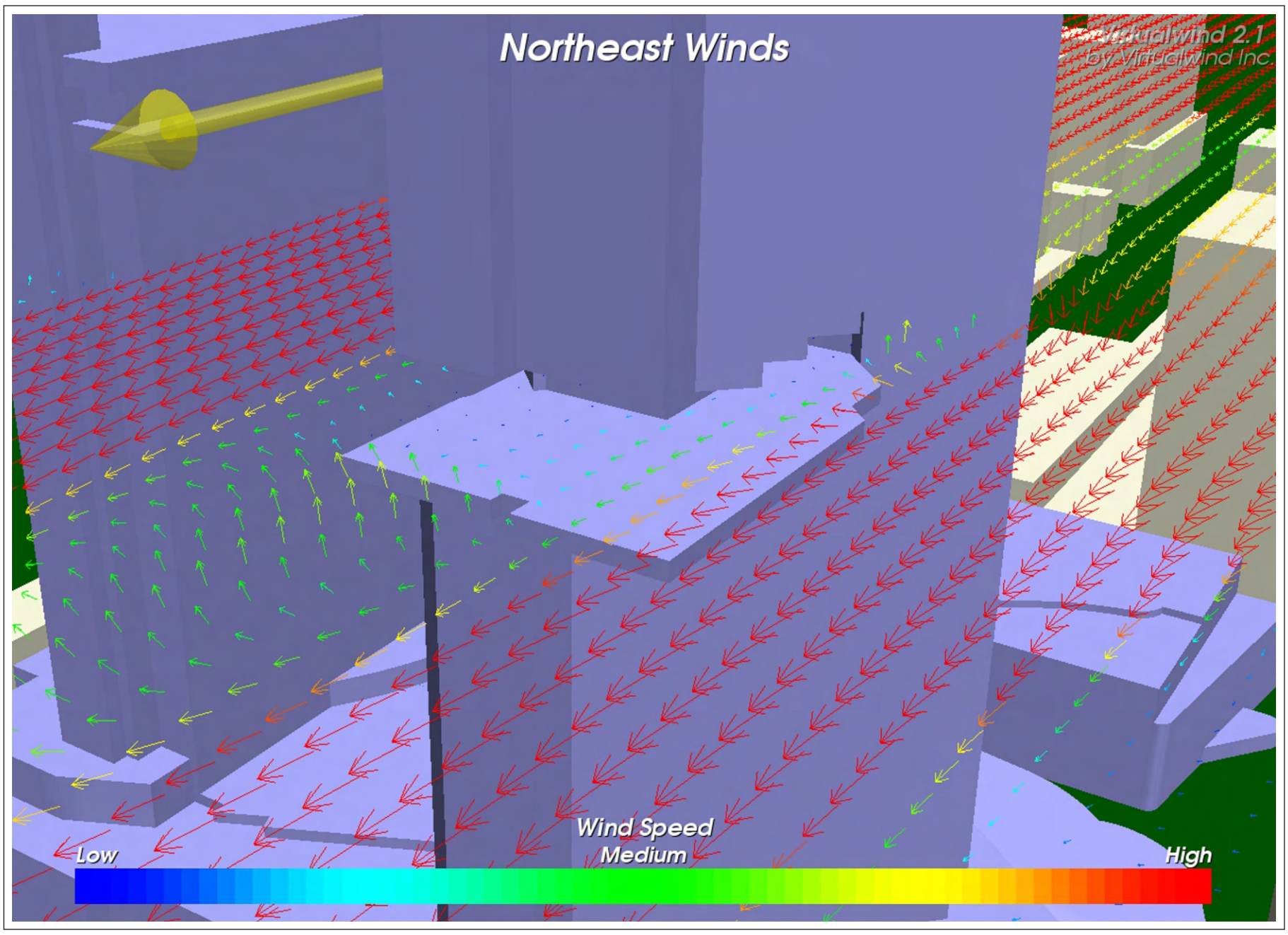
Wind Speed



Proposed Configuration

Wind Flow Simulation Results **Suites Pool Deck - Wind Velocity Vectors**		Figure:	9
		Produced by:	AA
Princess Ka'iulani - Honolulu, Hawaii	Project #0910129	Date Revised:	January 9, 2008

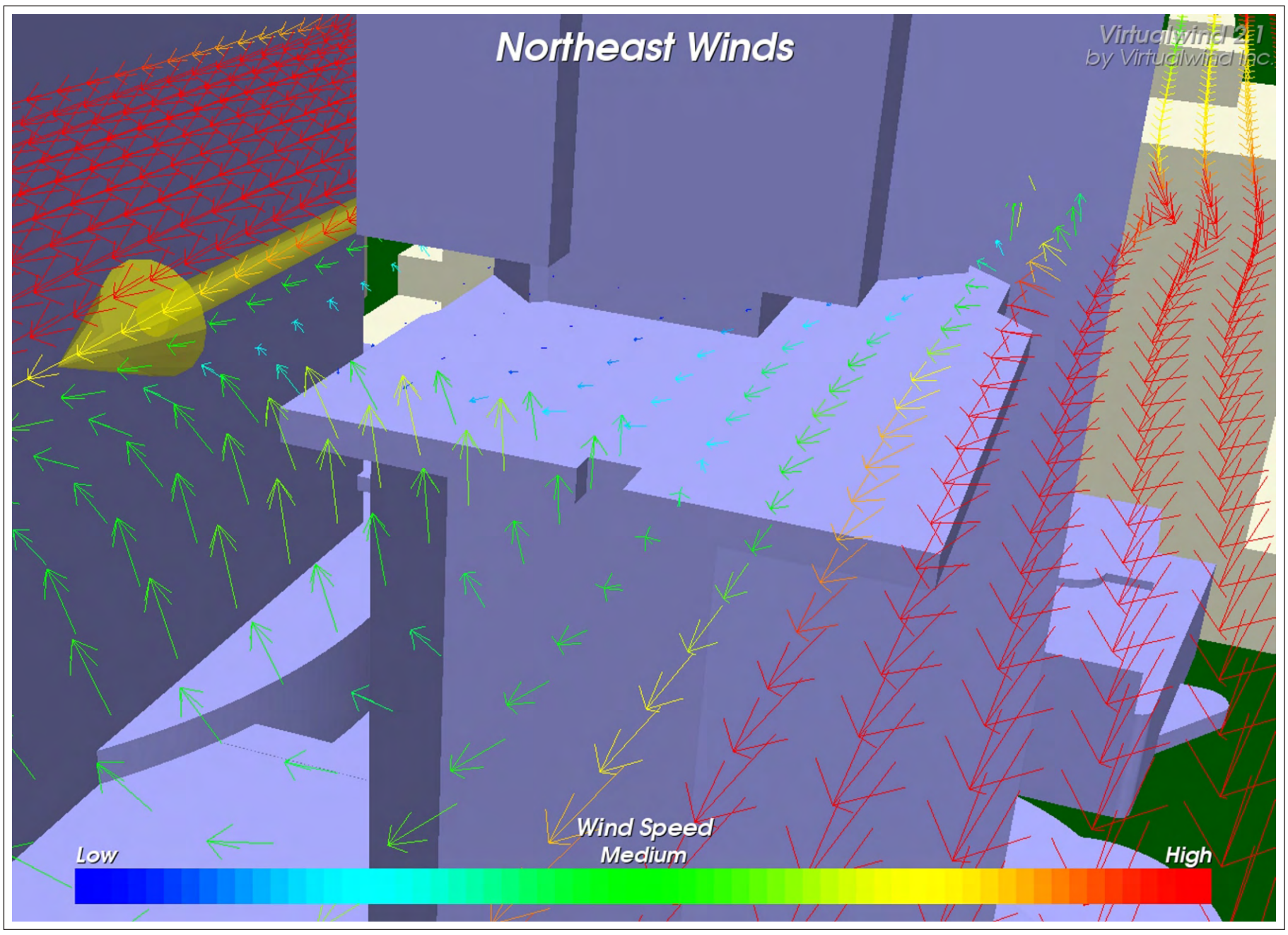
RWDI



Proposed Configuration

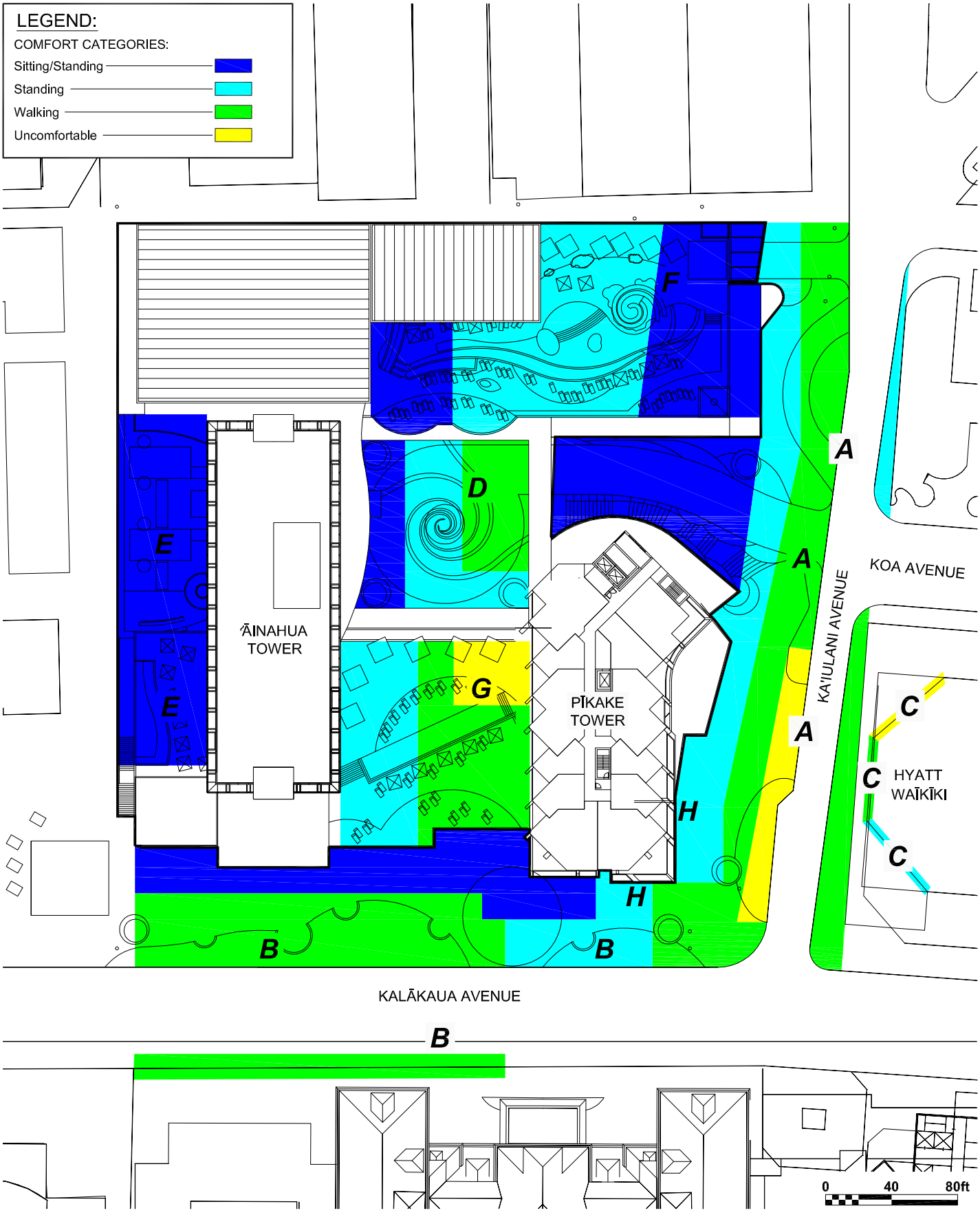
Low — High

Wind Speed



Proposed Configuration

Wind Flow Simulation Results **Upper Terrace - Wind Velocity Vectors** Princess Ka'iulani - Honolulu, Hawaii	Project #0910129	Figure: 10 Produced by: AA Date Revised: January 9, 2008	RWDI



Predicted Wind Conditions
Proposed Configuration

Project North True North

Princess Ka'iulani - Honolulu, Hawaii

Project #0910129

Drawn by:	AA	Figure:	11
Approx. Scale:		1"=80'	
Date Revised:		Jan. 16, 2009	

RWDI

FINAL REPORT

PEDESTRIAN WIND ASSESSMENT
DIAMOND HEAD TOWER
HONOLULU, HAWAII

Project Number: #0910130 **July 28, 2009**

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RWDI
CONSULTING ENGINEERS & SCIENTISTS

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1. INTRODUCTION

RWDI was retained by WCIT Architecture, Inc. to conduct a pedestrian wind assessment for the proposed Diamond Head Tower development in Honolulu, Hawaii. The proposed building consists of a 26 storey hotel tower and a two storey arrival pavillion. The objective of this study is to provide a preliminary assessment of the pedestrian wind comfort conditions on and around the proposed building. Using the 3D architectural model received by RWDI on November 17, and plans received on November 6, 2008, the current assessment is based on:

- A review of long-term regional meteorological data and surrounding information for the study site;
- Our extensive experience with numerous wind tunnel tested projects, including developments in the Honolulu area;
- Our engineering judgment and knowledge of wind flows around buildings;
- Use of software developed by RWDI (*WindEstimator*)[1,2] for estimating the potential wind comfort around generalized building forms; and,
- Use of RWDI's propriety Computational Fluid Dynamics (CFD) software *Virtualwind*, for visualizing wind flow patterns.

This numerical approach provides a screening-level estimation of potential wind comfort conditions for the proposed building massing. To quantify the wind comfort conditions or refine any conceptual wind control measures, physical scale model tests in a boundary layer wind tunnel facility would be required. Note that other wind issues, such as those relating to door pressures, stack effect, exhaust re-entrainment, etc. are not considered in the scope of this assessment.

The analysis was done for the following two configurations:

[1] H. Wu, C.J. Williams, H.A. Baker and W.F. Waechter (2004). "Knowledge-based Desk-Top Analysis of Pedestrian Wind Conditions". ASCE Structure Congress 2004. Nashville, Tennessee.

[2] C.J. Williams, H. Wu, W.F. Waechter and H.A. Baker (1999). "Experience with Remedial Solutions to Control Pedestrian Wind Problems". *10th International Conference on Wind Engineering*. Copenhagen, Denmark.

Configuration A - Existing: existing buildings without the proposed Diamond Head Tower and Princess Ka'iulani development; and,

Configuration B - Proposed: existing buildings with the proposed Diamond Head Tower and Princess Ka'iulani development.

2. SITE INFORMATION

Images in Figures 1a and 1b show the 3D models of the existing and proposed developments, respectively, which indicate the existing buildings and proposed buildings around the study site. The white buildings are existing off-site structures while the grey building is the proposed Princess Ka'iulani structure. Figure 2 presents a site plan of the proposed development. As shown in Figure 2, the study site is located to the southwest of Kalākaua Avenue between the Moana Surfrider building and the Police Sub-station building. The buildings in the immediate vicinity of the development are generally of a similar height to the proposed building. Immediately surrounding the development there is a beach to the southwest, low-rise buildings to the south, and high-rise developments to the southeast through northwest. Beyond the immediate surroundings, the terrain around the study site is classified as suburban, consisting of some high-rise and low-rise buildings with wooded areas and mountains to the east through north, with ocean to the northwest through southeast.

The primary pedestrian areas of interest include: the arrival pavillion and auto court (A_1 and A_2); breezeways under the new building (A_3 through A_5); water features, lawn terrace, beach plaza and infinity pool (A_6 through A_8); Kūhīo beach (B_1 and B_2); sidewalks (B_3 through B_5); and outdoor terraces at the 17th and 23rd floors. These pedestrian areas are referenced in Figure 2.

In the following discussions, reference to the building locations relate to the "Project North" shown in Figures 2 and 7, whereas the wind directions refer to the "True North".

3. METEOROLOGICAL DATA

Wind statistics recorded at the Honolulu International Airport between 1949 and 2004 were analysed for the Summer (May through October) and Winter (November through April) seasons. Figure 3 graphically depicts the distribution of wind frequency and directionality for these two seasons. The upper-left wind rose identifies the summer wind data while the lower-left wind rose shows the winter data. Wind flows predominantly from the east-northeast and northeast

directions in both seasons, when all winds are considered. Calm winds occur 1.9% of the time in the summer and 4.0% of the time in the winter.

Figure 3 also depicts the directionality of strong winds (greater than 20 mph, measured at the airport anemometer at a height of 30 ft). Strong winds occur for 7.6% and 7.5% of the time during the summer and winter season, respectively. Strong winds occur from the east-northeast and northeast directions annually. Winds approaching from the northeast direction were considered most representative for the *Virtualwind* simulations due to the orientation of the existing and proposed buildings; however, winds from all directions were considered in the estimation of pedestrian wind comfort.

4. RWDI WIND COMFORT CRITERIA

The wind conditions around the proposed development are assessed by the use of a pedestrian wind comfort criteria developed at RWDI. The four comfort categories used for this review are described in general terms as follows:

- **Sitting**: Low wind speeds during which one can read a newspaper without having it blown away. These wind speeds are appropriate for outdoor cafes and other amenity spaces that promote sitting.

- **Standing**: Slightly higher wind speeds that are strong enough to rustle leaves. These wind speeds are appropriate at major building entrances, bus stops or other areas, such as a bench along a sidewalk, where people may want to linger but not necessarily sit for extended periods of time.

- **Walking**: Winds that would lift leaves move litter, hair and loose clothing. Appropriate for sidewalks, intersections, plazas, parks or playing fields where people are more likely to be active and receptive to some wind activity.

- **Uncomfortable**: The effects of wind speeds at this level would range from small trees swaying and wind force being felt on the body to whole trees being in motion and inconvenience being felt when walking. Wind of this magnitude would be considered a nuisance for most activities.

Wind conditions are considered acceptable for sitting, standing or walking if the winds are within their specified ranges at least 80% of the time, or four in five days. An uncomfortable

designation means that the 80% criterion is not satisfied for any of the above activities**.** **Safety** is also considered by the criteria and is associated with excessive wind speeds that can adversely affect a pedestrian's balance and footing. If winds sufficient to affect a person's balance occur more than two times per summer or winter season, the wind conditions are considered severe. Wind control measures are typically required at locations where winds are rated as uncomfortable or they exceed the wind safety criterion.

5. PREDICTED WIND CONDITIONS

Predicting wind speeds and occurrence frequencies is complicated, involving building geometry, orientation, position and height of surrounding buildings, upstream terrain and the local wind climate. Over the years, RWDI has conducted thousands of wind tunnel model studies on pedestrian wind conditions around buildings, yielding a broad knowledge base. This knowledge allows, in many situations, for a screening-level numerical estimation of pedestrian wind conditions without wind tunnel testing.

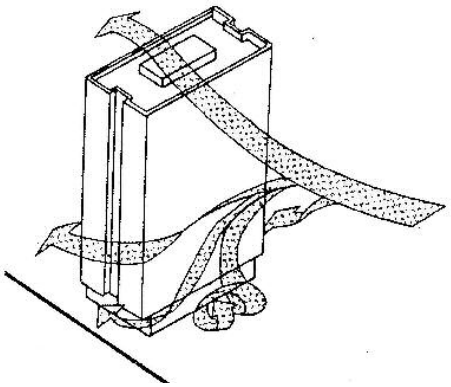
Figures 4 through 6 illustrate the wind flow patterns at grade and on the upper level terraces of the proposed development, for winds from the northeast direction. This direction was chosen as the best representation of the wind conditions at the study site. In these figures, the color blue represents low wind speed areas indicating wind conditions comfortable for sitting/standing; the green represents low to moderate wind speeds indicating conditions comfortable for walking; yellow represents moderate wind speed areas; and, red represents high wind speed areas. The areas of moderate to high wind speeds are expected to create uncomfortable, and/or potentially severe wind conditions.

Note that these figures show the mean wind speeds over the entire development. In some cases, vector plots of mean flows are included in the figures to provide an indication of local wind directionality. Animations of wind conditions can be viewed to better understand the variable and time dependent (turbulent) nature of wind flows. Animations of wind speed contours, velocity vectors and smoke flow visualizations will accompany this report.

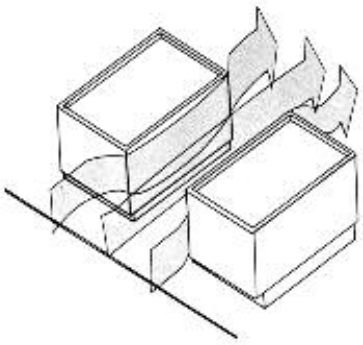
The wind flow images show the flow patterns for winds from the prevailing direction based on the *Virtualwind* analysis. However, the pedestrian wind conditions were predicated based on the *WindEstimator*, which consider winds from all directions.

In general, wind conditions comfortable for walking are desired at sidewalks and parking lots, while lower wind speeds comfortable for standing are appropriate for entrances, drop-offs and porte-cochere. Ideally, wind speeds comfortable for sitting are desired at outdoor pool areas, terraces and plazas; however, standing comfort conditions are generally accepted by users as a breeze is often considered pleasant in a warmer climate such as that found in Hawaii. The following is a description of wind conditions on and around the proposed development.

Large buildings tend to intercept the stronger winds at higher elevations and redirect them to ground level. Such a *Downwashing Flow* is the main cause for wind acceleration at the pedestrian level. There is also increased wind acceleration at the corners of tall buildings as the downwashed wind flows around the edges of the building. When two buildings are situated side by side, wind flow tends to accelerate through the gap between the buildings due to a *Channelling Effect*. If these buildings/wind combinations occur for prevailing winds, there is an increased potential for even higher wind speeds.



Downwashing Flow



Channeling Effect

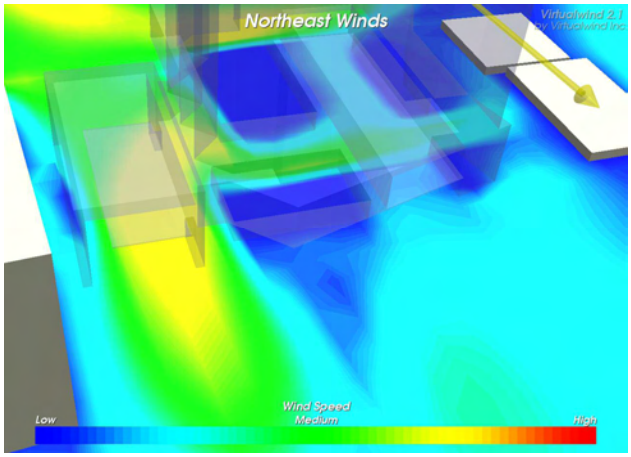
5.1 GRADE (A_1 THROUGH A_8 AND B_1 THROUGH B_5)

5.1.1 Arrival Pavillion and Auto Court (Areas A_1 and A_2)

The arrival pavilion (A_1) and auto court (A_2) are used as the drop-off and main entry point into the proposed development. There is also an exposed terrace at the second floor within the arrival pavillion. Pedestrian traffic is intended between the arrival pavillion and the lawn terrace. Due to the intended usage, wind conditions suitable for standing are desirable.

The auto court and arrival pavillion align with the existing high wind speeds accelerating off the Hyatt building to the north of the study site. These wind flows increase further with the proposed Princess Ka'iulani building in place due to channelling between the existing Hyatt and proposed Princess Ka'iulani towers (Figure 4). The winds then downwash off the proposed tower and channel into the arrival pavillion between the existing Moana Surfrider building and the proposed tower. As a result of the existing wind conditions and the proposed building configuration, the wind conditions at the arrival pavillion (A_1) are expected to be uncomfortable (Figure 4). Wind conditions at the auto court area (A_2) are expected to be suitable for walking annually. The image below shows a close-up view of the problematic wind flows at the arrival pavillion with the proposed development appearing transparent.

To improve wind conditions at the arrival pavillion, the design team should consider closing the south end of the arrival pavillion to prevent the wind flows through the pavillion on windy days. In addition, the type of landscaping at the entrance to the auto court shown in the design drawings should be modified to include dense shrubs at pedestrian height along with wind screens such that wind flows into the area are decreased. A raised parapet should be considered for the terrace within the arrival pavillion to deflect winds away from the pedestrian level. Wind tunnel testing is recommended to refine and ensure the efficacy of these proposed wind control measures

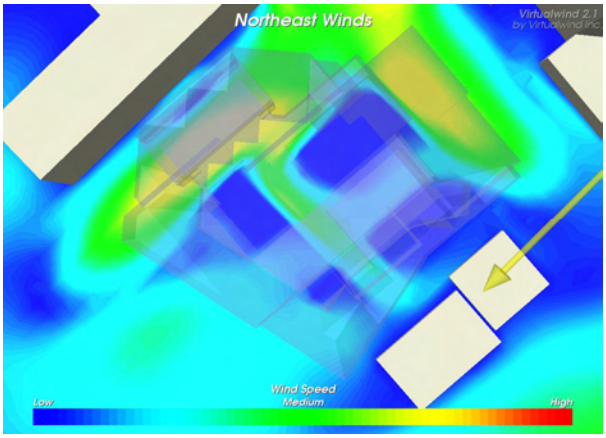


Proposed Configuration – Grade Level Contours

No wind safety failures were predicted at these areas.

5.1.2 Breezeways (Areas A_3 through A_5)

Wind conditions in the east-west breezeway (A_3) are expected to be suitable for walking on an annual basis. This may be considered acceptable depending on the intended usage. The winds along this breezeway are from the channelling flows between the Moana Surfrider building and the Diamond Head Tower dissipating into this breezeway (see adjacent image). If lower wind activity is desired, sliding doors or wind screens could be considered at the west entrance to the breezeway. The wind conditions in the north-south breezeway (A_4 and A_5) were predicted to be suitable for standing due to sheltering from the prevailing northeasterly winds by the massing of the existing Hyatt Waīkīki tower to the north. These predicted wind conditions are considered satisfactory.



Proposed Configuration – Grade Level Contours

5.1.3 Lawn Terrace (A_6 through A_8)

In the Existing Configuration, wind conditions on the lawn terrace (A_6 through A_8) were predicted to be comfortable for standing throughout the year. This is due to existing building blocking winds from the northeasterly direction.

With the massing of the new tower, the lawn terrace and infinity pool are generally sheltered from the prevailing northeasterly flows (A_6 and A_7) resulting in standing conditions. The exception to this is at the west end of the lawn terrace (A_8) which is exposed to the channelling flows accelerating through the arrival pavillion (see Figure 4). As a result of the increased wind activity at this location, the wind speeds are predicted to be potentially uncomfortable during strong northeasterly wind events. The wind conditions in this area will improve with the implementation of the mitigation recommended for the arrival pavillion.

5.1.4 Beach and Sidewalks along Kalākaua Avenue (B_1 through B_5)

With the existing building in place, wind conditions on the beach (B_1 and B_2) are expected to be suitable for standing throughout the year. Wind comfort conditions in the Existing Configuration along Kalākaua Avenue to the north of the study site (B_4) were predicted to be uncomfortable due to winds from the northeasterly directions downwashing off of the Hyatt building and the existing Diamond Head building then channelling between the two buildings (see Figure 4).

Similar wind comfort conditions are predicted with the massing of the new tower in place. To the north of the study site, along Kalākaua Avenue (B_4), wind conditions remained uncomfortable with the proposed tower in place. In both configurations, these high wind speeds are due to the northeasterly winds downwashing off of the north façade of both the existing and proposed towers. Mitigation measures for this area could include dense landscaping and wind screens along the sidewalk (B_4). Wind conditions at the sidewalk to the east of the proposed tower (B_3) are predicted to be suitable for sitting/standing, while walking conditions are predicted at the west sidewalk (B_5) throughout the year (see Figure 8).

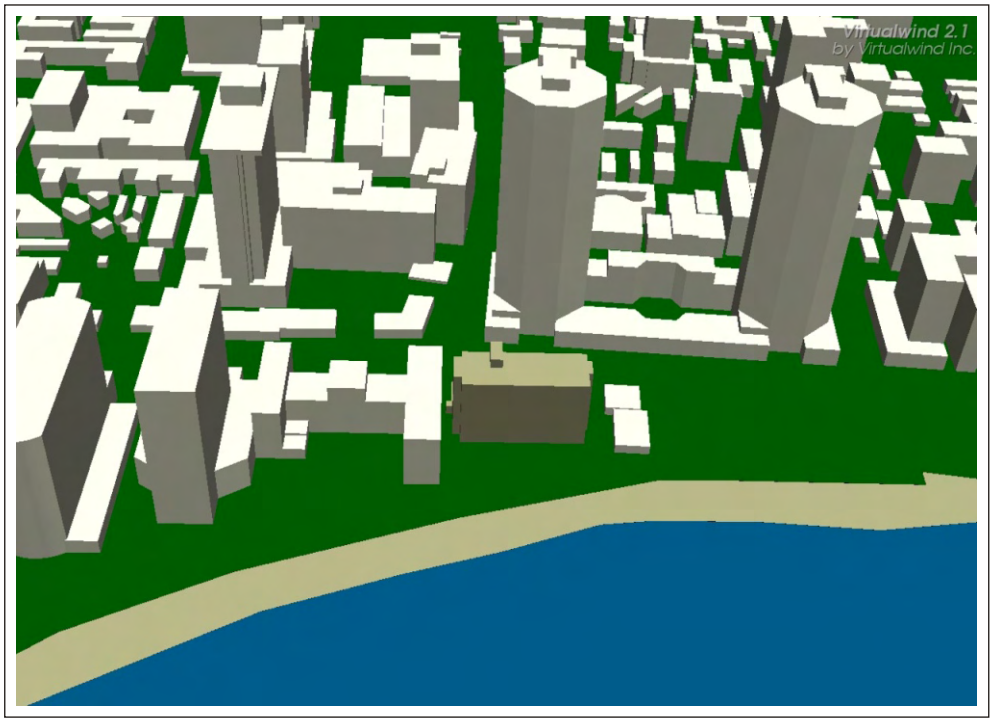
5.2 UPPER LEVEL TERRACES

The architectural drawings indicate a pool deck on the east side of the hotel tower, at the 17th floor. There are several seating areas on the deck, with the pool located centrally. As shown by the top image in Figure 5, the terrace with the pool is on the leeward side of the tower and as such, is protected from the prevailing northeasterly winds. The resulting wind speeds on the pool deck are expected to be comfortable for sitting/standing as it is sheltered. There are also terraces on the 17th floor at the northwest corner of the tower (see bottom image of Figure 5), and on the east and west sides of the tower at the 23rd floor (Figure 6). Wind conditions at the northwest terrace at the 17th floor are predicted to be suitable for standing close to the main body of the tower. However, the northern portion of the terrace is exposed to the prevailing northeasterly winds resulting in uncomfortable wind speeds. If improved wind conditions are desired in this area, mitigation measures such as raising the parapet around the terrace to a minimum of 8' could be considered, as it would deflect much of the winds above the pedestrian height. On the 23rd floor terraces, wind speeds are expected to be suitable for standing or better due to the sheltering effect provided by the existing Hyatt tower (Figure 6). These conditions are considered appropriate for the intended use.

6. SUMMARY

In general, with the proposed buildings in place, wind conditions around the development site are expected to be similar to the existing site conditions with wind speeds comfortable for standing or walking in most areas throughout the year. On the Kalākaua Avenue sidewalk to the north of the proposed tower, uncomfortable conditions are expected in both the Existing and Proposed Configurations. High wind speeds resulting in uncomfortable wind conditions are also predicted for the arrival pavillion during strong northeasterly wind events. Wind control measures have been discussed for incorporation to reduce wind activity at these areas.

FIGURES



3D View of Wind Simulation Model
Existing Configuration

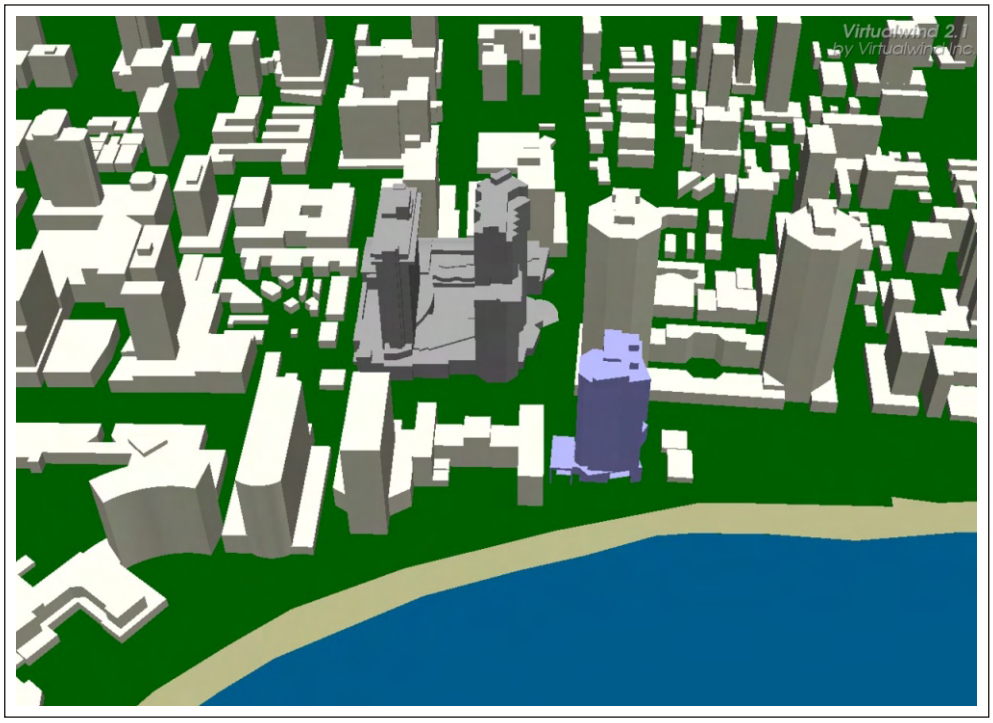
Diamond Head Tower - Honolulu, Hawaii

Project #0910130

Figure: 1a

Date: January 9, 2008

RWDI



3D View of Wind Simulation Model
Proposed Configuration

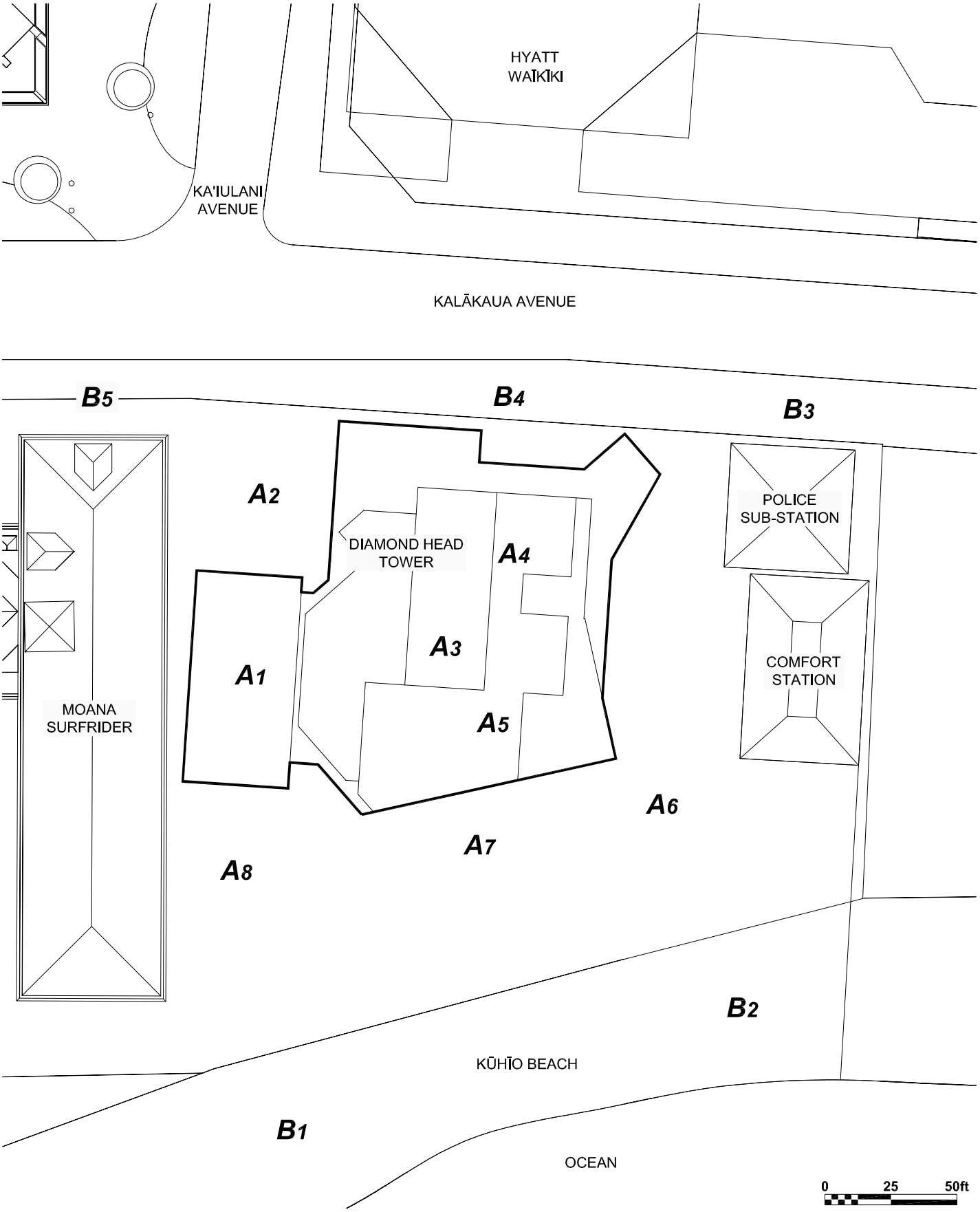
Diamond Head Tower - Honolulu, Hawaii

Project #0910130

Figure: 1b

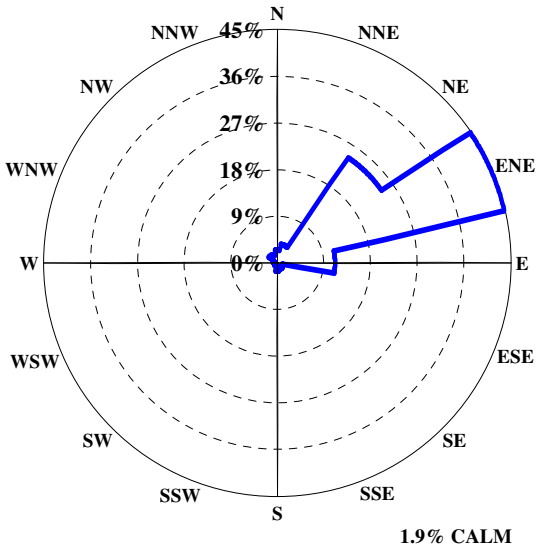
Date: January 9, 2008

RWDI

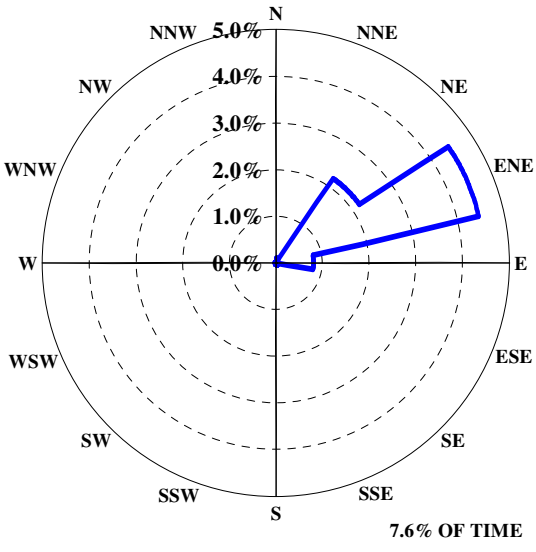


Site Plan	Project North / True North	Drawn by: AA	Figure: 2
		Approx. Scale:	1"=50'
Diamond Head Tower - Honolulu, Hawaii	Project #0910130	Date Revised:	Jan. 9, 2009

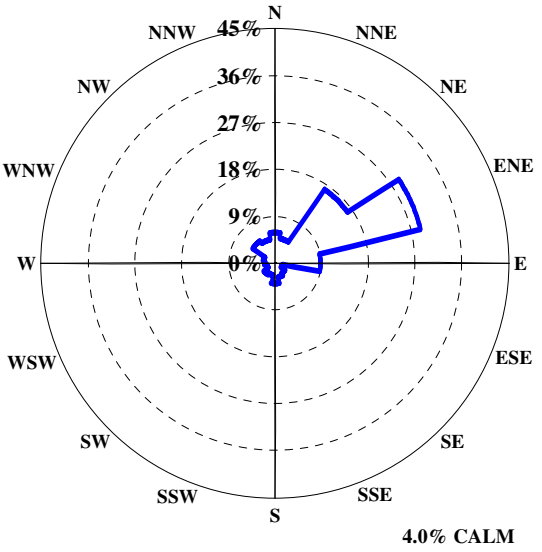
RWDI



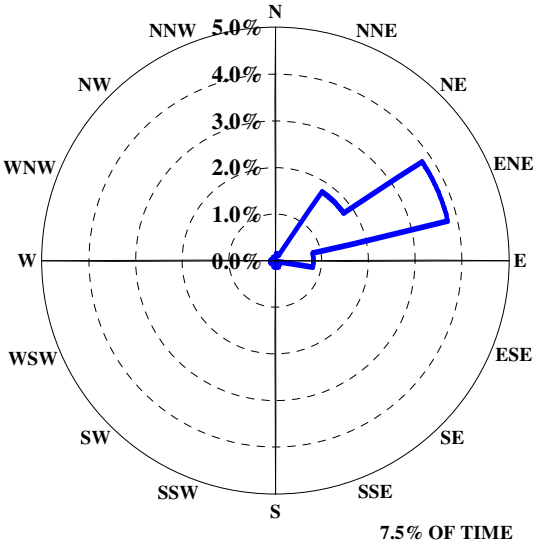
ALL SUMMER WINDS



SUMMER WINDS EXCEEDING 20 mph

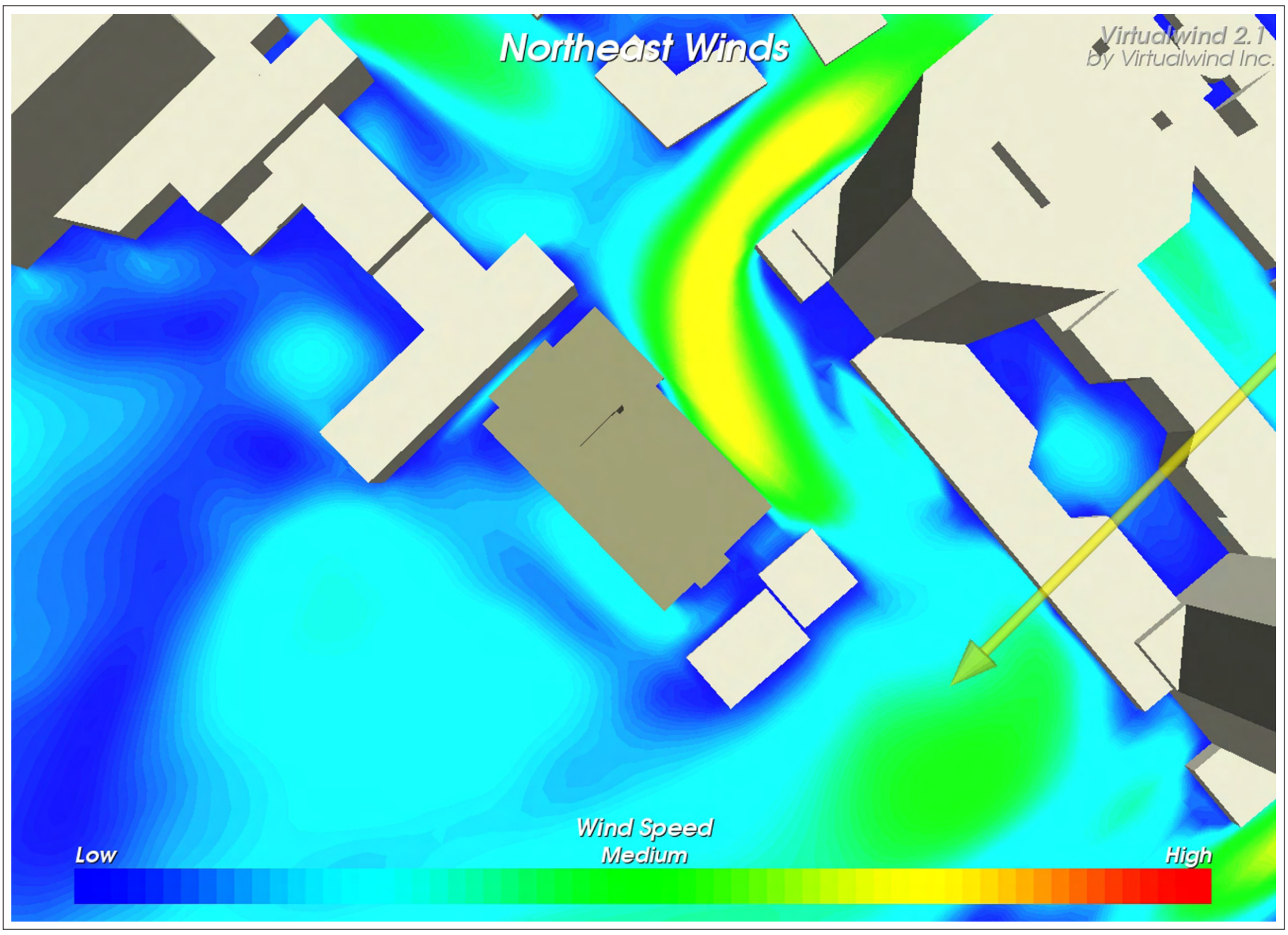


ALL WINTER WINDS



WINTER WINDS EXCEEDING 20 mph

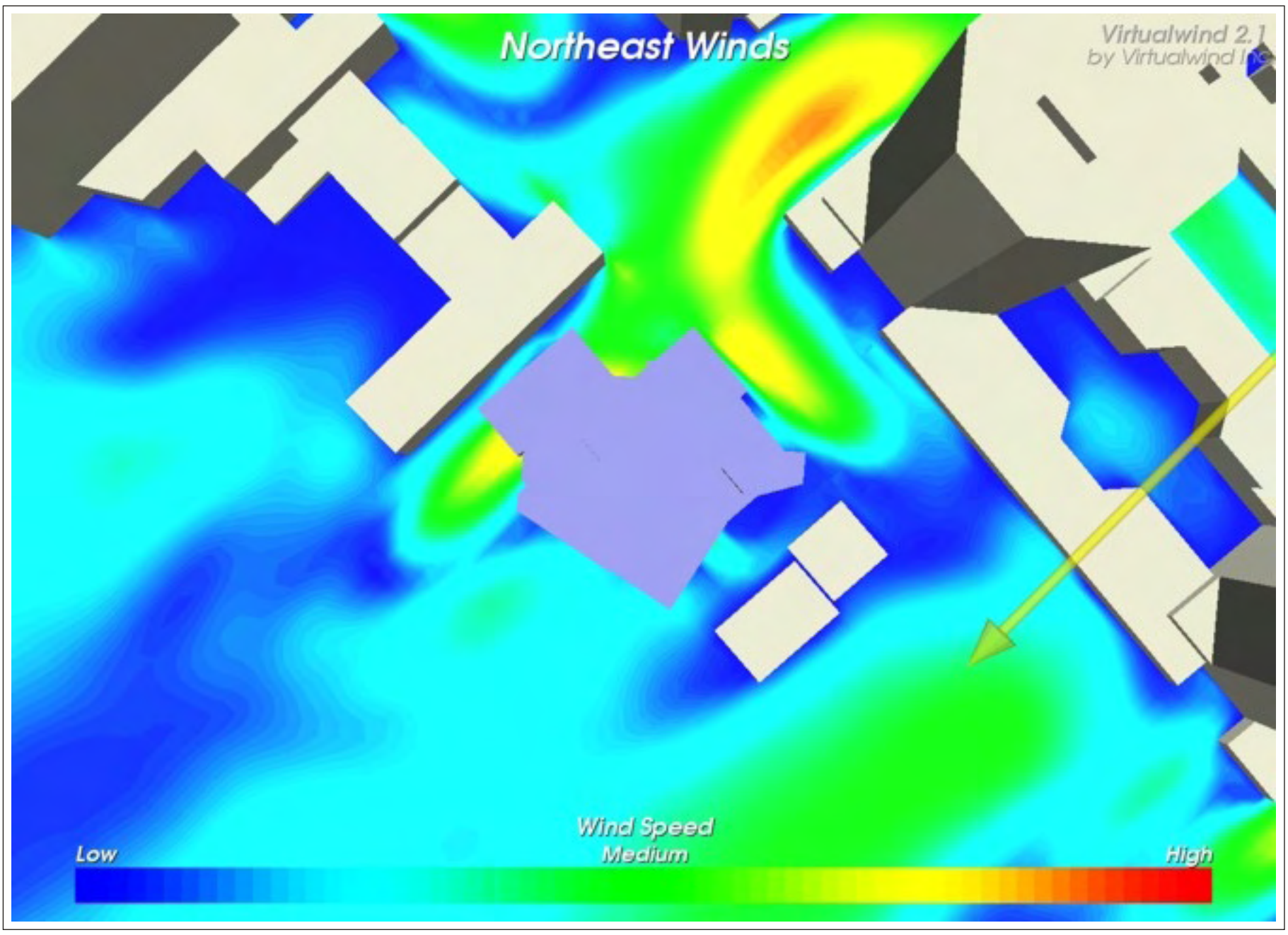
Directional Distribution (%) of Winds (Blowing From) **Station: Honolulu International Airport, HI (1949 - 2004)** Diamond Head Tower - Honolulu, Hawaii Project #: 0910130	Figure: **3** Date: January 5, 2009	RWDI



Existing Configuration

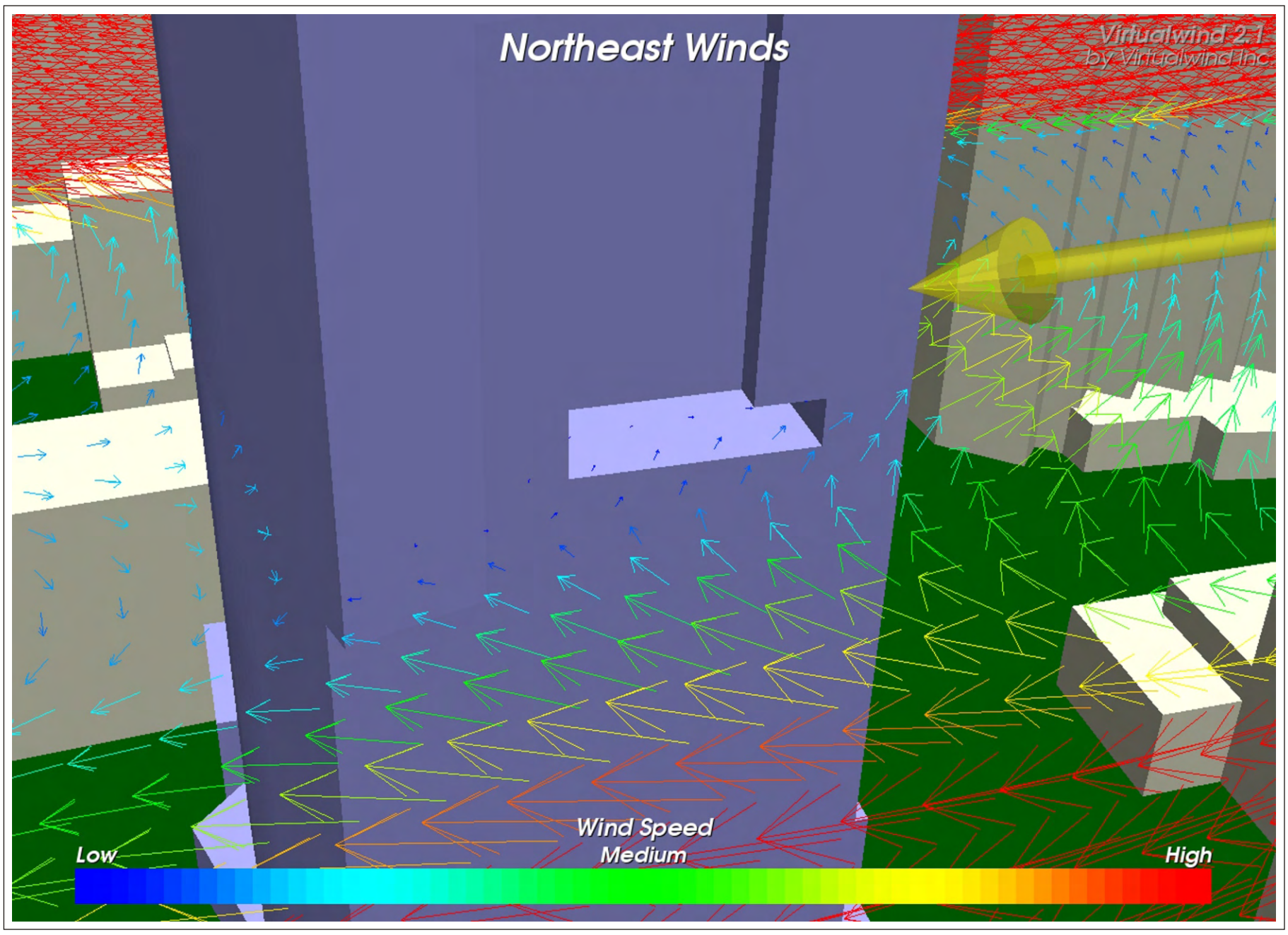
Low — High

Wind Speed



Proposed Configuration

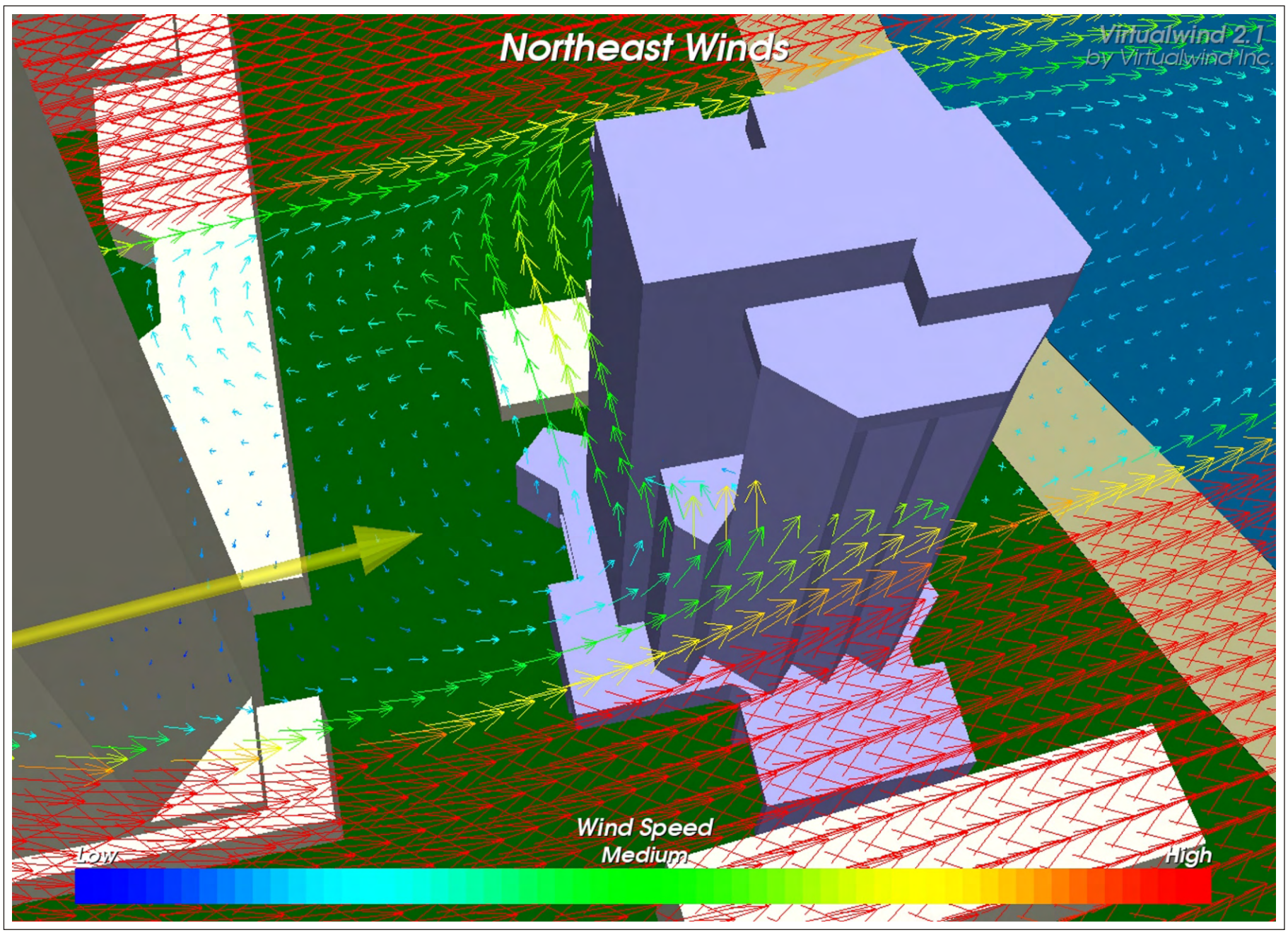
Wind Flow Simulation Results **Grade Level - Wind Velocity Contours** Diamond Head Tower - Honolulu, Hawaii	Project #0910130	Figure: 4 Produced by: AA Date Revised: January 9, 2009	RWDI



Proposed Configuration

Low — High

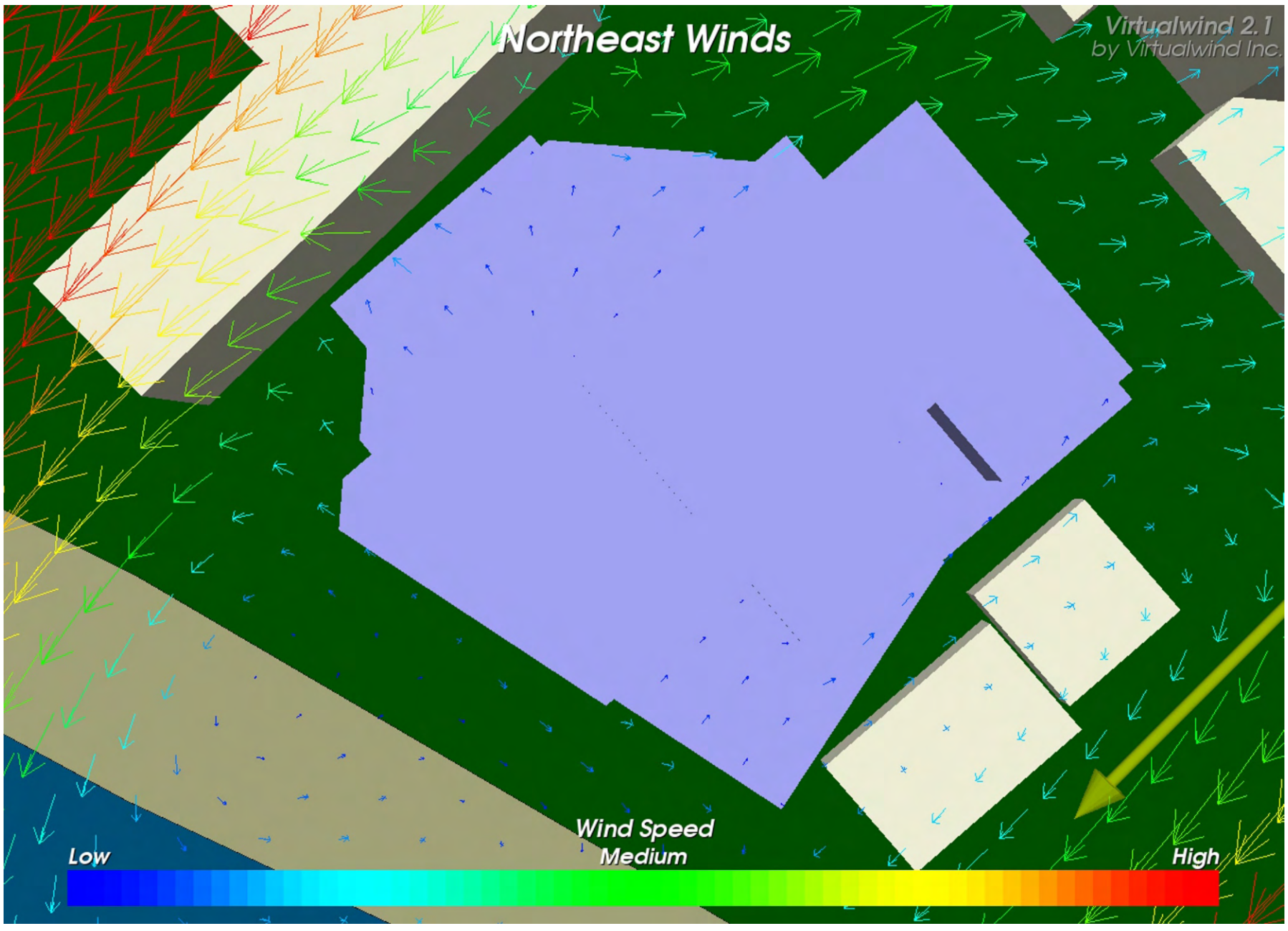
Wind Speed



Proposed Configuration

Wind Flow Simulation Results **17th Floor Terraces - Wind Velocity Vectors**		Figure:	5
		Produced by:	AA
Diamond Head Tower - Honolulu, Hawaii	Project #0910130	Date Revised:	January 9, 2009

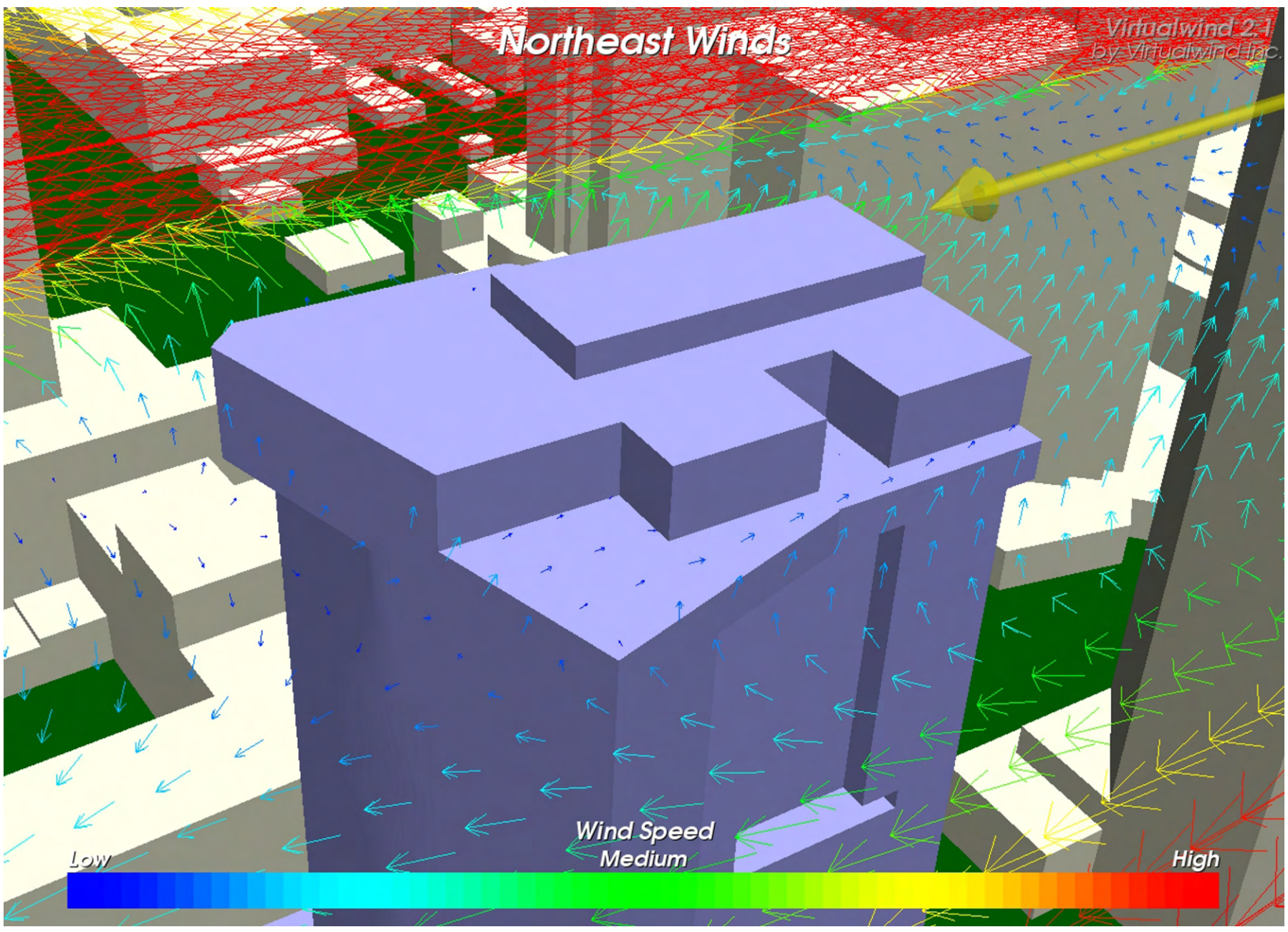
RWDI



Proposed Configuration

Low — High

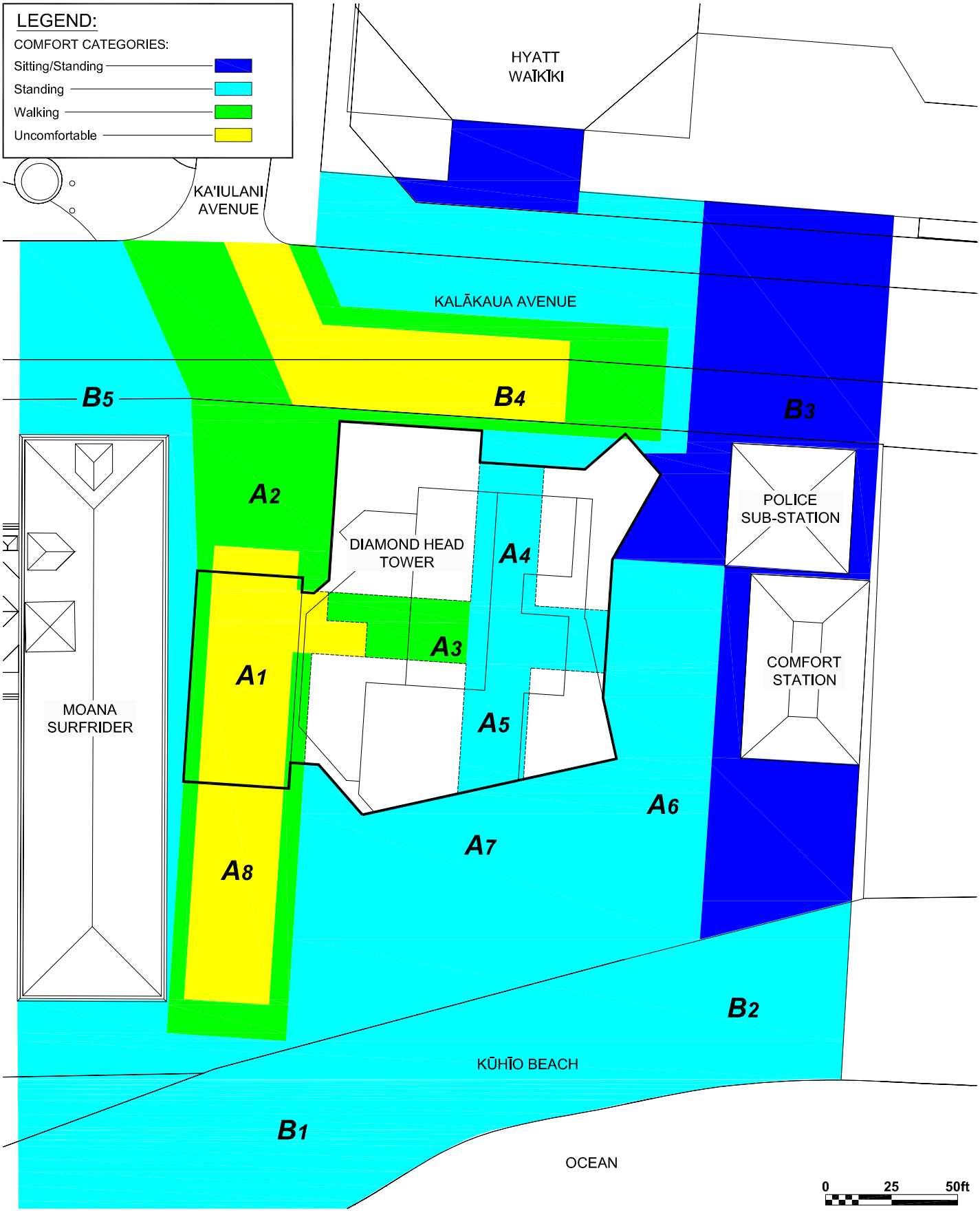
Wind Speed



Proposed Configuration

Wind Flow Simulation Results **23rd Floor Terraces - Wind Velocity Vectors**		Figure:	6
		Produced by:	AA
Diamond Head Tower - Honolulu, Hawaii	Project #0910130	Date Revised:	January 9, 2009

RWDI



Predicted Wind Conditions
Proposed Configuration

Project North True North

Diamond Head Tower - Honolulu, Hawaii

Project #0910130

Drawn by:	AA	Figure:	7
Approx. Scale:			1"=50'
Date Revised:			Jan. 9, 2009

RWDI

APPENDIX 10

John M. Knox & Associates socioeconomic analysis dated June 3, 2009
for the Princess Ka'iulani project

JOHN M. KNOX & ASSOCIATES, INC.

June 3, 2009

Mr. Greg S. Dickhens
Executive Vice President
Senior Advisor
Kyo-Ya Management Company, Ltd.
Sheraton Waikīkī Hotel, 2nd Floor
2255 Kalākaua Avenue
Honolulu, HI 96815

Dear Mr. Dickhens:

John M. Knox & Associates has completed its socioeconomic analysis for the Proposed Princess Ka'iulani Renovation and Redevelopment Project. This analysis is for the purpose of quantifying the level of economic and population activity generated at the Project Site based on the Project's planned parameters supplied to us by you and your associates in December 2008 and early 2009. This report closely parallels our analysis of Kyo-Ya's redevelopment of the nearby Moana Hotel Diamond Head Tower property, as the economic logic of the two studies is highly similar.

SUMMARY OF RESULTS

Construction Phase

The Princess Ka'iulani construction period will create nearly 2,400 person-years of employment on O'ahu. It will generate $193 million in personal earning and inject $92 million into the O'ahu economy. The one negative effect – lost net revenues to local government, due to temporarily reduced taxes during constructions – will be quickly made up by increased revenues when the renovated properties re-open (see following section).

Summary Table A. Construction Impacts

	Princess Ka'iulani (3-Year Construction Period)
Direct Construction Workers[1]	683
Direct Jobs from Purchases[1]	454
Total Employment[1,2]	2,377
Total O'ahu Worker Earnings (workers + purchases) [2,3]	$192.7
Total O'ahu Purchases Impact[2,3]	$92.2
Lost Net County Revenues During Construction[2,3,4]	$13.7
Lost Net State Revenues During Construction[2,3]	$17.1

[1] Person-years [2] Includes indirect and induced effects [3] millions of 2008 $s
[4] Impact period for county revenues includes one additional year due to lag in property tax collections

Operational Phase

Economic benefits will be driven by increased visitor spending from an increase in retail and food and beverage facilities and a more upscale market, as well as higher property tax revenues from both the more valuable visitor aspects and also from premium residential units (taxed at

hotel rather than residential rates). On-site jobs will increase by 295. Total O'ahu jobs (including off-site jobs from total visitor expenditures) will increase by about 569; annual earnings by $15 million; and economic activity by nearly $26 million.

Additionally, annual net revenues for both County and State governments will increase (by about $3.1 million a year for the County and $3.9 million for the State) when operations begin, rapidly making up for lost revenue during the construction phase. Thus, over the ten years following construction, the County governments will receive about $31 million more, and the State $39 million more, on a cumulative basis than without the project.

Summary Table B. Operational Impacts

	Princess Ka'iulani Operational Impacts
Additional Employment/Year[1]	
On-Site Direct Jobs	295
Total Employment[2]	569
Additional Worker Earnings/Year[3]	
Direct from Increased Visitor Spendng	$7.6
Total Additional Earnings[2]	$14.9
Additional Economic Output/Year[3]	
Increased Annual Visitor Spending	$14.5
Increased Total Ouput from Spending[2]	$25.9
Net Additional Annual Revenues[3]	
County: Year 2017 Minus Year 2009[2,4]	$3.1
State: Year 2017 Minus Year 2009[2,4]	$3.9

[1]Includes full- and part-time jobs. The full-time equivalent count would be about 81.6% of these numbers.

[2]Includes off-site direct, indirect, and induced jobs

[3]All dollar figures in millions of 2008 dolars

[4]Net revenues may increase slightly after 2017 due to more returned TAT as occupancy edges up. *(Note: Revenues from TAT reflect new rates contained in Act 61 passed by Hawai'i State Legislature.)*

INTRODUCTION

Kyo-Ya Hotels and Resorts, L P ("Kyo-Ya") is requesting an SMA permit from the City and County of Honolulu for substantial changes to the existing Princess Ka'iulani Hotel. The overall key changes are demolishing many of the existing hotel units, renovating others, and adding condo-hotel and residential units.

The new project will essentially function as two separate hotels (generating higher ratios of employees per unit), with the new "Pikake Tower" also including a number of high-end residential units. On a net basis, the site facilities will be more valuable and cater to visitors who will have higher incomes and higher spending patterns than is currently the case.

From the economic perspective, the key numerical (unit and square footage) changes to the Princess Ka'iulani Hotel are as shown below in Table 1:

Table 1. Comparison of Current Vs. Planned Project Characteristics

	Number Units		
	Current	Planned	Change
Ainahau Tower			
Studio	660	660	-
One bedroom suites	6	6	-
Remainder of property			
Hotel Units	474	-	(474)
Condo-Hotel			
One bedroom (total; in and out of visitor pool)	-	105	105
Studio (total; in and out of visitor pool)	-	105	105
-- In visitor pool (half 1-bedroom, half studio)	-	*179*	*179*
Residential units	-	61	61
Total Units	**1,140**	**937**	**(203)**
Retail square feet leasable	24,491	82,000	57,509
Meeting area square feet	11,518	12,000	482
Parking spaces	582	749	167

We developed impact estimates of the following socioeconomic indicators:

Employment Impacts – Direct, Indirect & Induced

- Construction
- Operational

Population Supported

- Construction
- Operational – Visitor and Resident

Expenditures in Local Economy – Direct, Indirect & Induced

- Construction
- Operational – with attention to visitor expenditures both on and off the property

Fiscal Cost-Revenue Analysis – State and County Levels

- Government costs associated with both phases (average-cost method)
- All sources of tax revenues, including construction, visitor taxes, and business receipts

KEY STUDY RESULTS

Construction

The total cost to construct the Proposed Project is estimated at $496 million (2009 dollars), and construction will occur over an assumed three-year period, beginning approximately January 2011. Total employment will be 683 person-years (averaging 228 annually).

Project construction will entail wage, salary, and benefit payments to construction workers on-site as well as administrative workers off-site or in offices at the site. Wages are estimated to total $48 million. We expect virtually all workers will be O‘ahu residents during the course of construction.

These wages will also generate “ripple effects” in the local economy, as incomes earned by the direct construction workers re-spend their incomes locally. These are called “indirect and induced” impacts and are a multiple of the original payments for labor generated by onsite construction needs. To estimate indirect and induced impacts, we used the Hawai‘i Input-Output Model developed and used at DBEDT, a well-known and accepted model used frequently for project such as this. The inclusion of multiplier effects results in a total impact on earnings arising from Project construction wage payments of $168 million.

Table 2 summarizes the direct, and indirect and induced impacts of Project construction employment and income.

Table 2. Direct, indirect and induced impacts on jobs and earnings, Princess Ka‘iulani Renovation and Redevelopment Project, construction phase

(dollar figures = millions of 2008 dollars)

	Average Annual, 2011-13	Total, Construction Period
Direct Construction Workers, off- and on-site	228	683
O‘ahu Type II Jobs Multiplier (Construction)	2.48	2.48
Total Jobs (Direct, Indirect/Induced)	519	1,556
Earnings from Direct Jobs	$ 16.1	$ 48.2
Honolulu County Type II Earnings Multiplier (Construction)	1.86	1.86
Total Earnings (Direct, Indirect/Induced)	**$ 55.9**	**$ 167.6**

In addition, Project purchases of goods and services for construction from O‘ahu vendors will total $73 million. These construction purchases will generate additional indirect and induced impacts in the local economy, as firms selling goods and services to the Project directly, in turn, purchase their product inputs directly (“indirect impacts”), and workers at these firms re-spend their incomes locally (“induced impacts”). The Hawai‘i Input-Output Model was also used to estimate these impacts. Project construction would result in additions of 821 worker-years to the economy in addition to the 519 supported by wage payments (Table 2), as well as substantial additions earnings, and to output from purchases. Table 3 summarizes the results of this analysis.

Table 3. Total direct, indirect, and induced impacts on output, jobs, and earnings, from construction purchases

(dollar figures = millions of 2008 dollars)

	O‘ahu Purchases	Jobs (O‘ahu)	Earnings (O‘ahu)
Direct Project construction purchases	$ 73.5	454	$ 13.9
Indirect and induced impacts from Project purchases	$ 18.7	368	$ 11.2
Total direct, indirect, and induced impacts of Project purchases	**$ 92.2**	**821**	**$ 25.2**

Operations

The analysis examined two primary characteristics: (1) Activities on the site itself, and (2) total islandwide activities generated by on-site activities.

It is notable that the Proposed Project entails fewer hotel or residential units on the property, reducing the population spending nights on-site. Counter to this, the employment on-site will increase, primarily due to increased retail space. The site's improvements will all be more upscale than those currently existing, increasing both likely per-capita spending of resident visitors,[1] and the sales-per-square-foot of retail shops. In the net, these downsizing (yet "upscaling") factors are predicted to mean that the net fiscal balances attributable to the Proposed Project will be slightly more favorable than is currently the case (i.e., government revenues will exceed government costs).

A further change to the on-site activity from the Proposed Project is the occupancy assumed for the project. Current occupancy rates are approximately 70 percent; with the Project, long-run average occupancy is assumed to grow, averaging about 84 percent between 2014 (the Project opening) and 2017, a result of the market repositioning inherent in the higher-value accommodations and amenities provided.

On-Site Resident Population

An important study result is the number of persons who will live and work at the site once operations have begun. These include visitors using the hotel and condo-hotel, full-time residents, and employees.[2]

Compared to its existing average daily census of transient occupants of 1,525 persons, the Project will have a slightly reduced average daily census of 1,457. A small increase in the number of permanent residents will occur, but the total net number of short- and long-term residents will decrease by an average of 68 persons. Table 4 below summarizes this result. The results also show a reduction in the number of transient visitor-days accommodated on-site.

Table 4. Summary: Temporary and permanent residents, on-site

	Number Units			Total Population			Visitor-days (not including residents)		
	Current	Planned	Change	Current	Planned	Change	Current	Planned	Change
Ainahau Tower									
Studio	660	660	-	883	953	70	322,228	347,860	25,632
One bedroom suites	6	6	-	8	9	1	2,929	3,162	233
Two bedroom suites	-	-	-	-	-	-	-	-	-
Remainder of property									
Hotel Units	474	-	(474)	634	-	(634)	231,418	-	(231,418)
Condo-Hotel									
One bedroom	-	105	105	-	144	144	-	52,429	52,429
--In visitor pool	-	*89*	*89*	-	*122*	*122*	-	*44,564*	*44,564*
Residential units	-	61	61	-	153	153	-	-	-
TOTALS	**1,140**	**937**	**(203)**	**1,525**	**1,457**	**(68)**	**559,505**	**479,430**	**(80,307)**

[1] We estimate that the visitors staying at the Proposed Project will spend 50% more per capita than existing visitors (average visitor per capita spending data from DBEDT).

[2] Others using the Project facilities will include shoppers and conference-meeting attendees, and miscellaneous non-resident visitors and delivery persons. These persons were not addressed in our analysis.

The number of on-site workers will increase by some 240 FTE positions, with hotel staff increasing slightly – due to the increase in service levels associated with separate hotel structures – and retail employment increasing substantially. Table 5 shows current and planned FTEs (full-time equivalent workers), as well as the number of actual workers on site.

Table 5. Summary, on-site workers

	Current FTE	Planned FTE	Change in FTE	Current Total Full- & Part-Time Employee Count	Planned Total Full- & Part-Time Employee Count	Change Total Full- & Part-Time Employee Count
All hotel staff	454	493	39	557	604	48
Retail shops	133	334	201	163	410	247
TOTAL	587	827	240	720	1,014	295

However, on-site jobs represent only a portion of total jobs from visitor expenditures, many of which are generated elsewhere in Waikīkī and throughout the island. The remainder of the impacts are addressed below.

Total Jobs, Incomes, and Economic Activity from Visitor Spending

The Proposed Project will have a positive impact on tourist-industry employment and income. This result will occur as a result of the countervailing influences of its lowered number of hotel units versus its attraction of higher-spending occupants.

The trend among Waikīkī transient accommodations has been to upscale their facilities, in part to attract higher-income visitors and in part to conduct regular maintenance. The Proposed Project is a part of this overall trend, which is changing the overall target market for many hotels. It is evident that without such maintenance and upgrading, the overall success of the Waikīkī "brand" would diminish.

Table 6 shows that the overall effect of the Proposed Project on visitor-industry jobs and income will be about 14% over current conditions. This estimate is conservative since it is based on holding the first-year (2011) expected occupancy rate of 76% constant for subsequent, although it is projected to grow over time from that level.

Table 6. Impacts on total annual direct, indirect, and induced jobs and incomes from visitor spending

(dollar figures = millions of 2008 dollars)

	Current	Projected	Change
Number visitor days	559,505	479,430	(80,074)
Average spending/capita/day	$ 185.91	$ 247.27	$ 61.35
Jobs			
Total job impacts, visitor spending	**3,977**	**4,546**	**569**
Earnings			
Total impacts on earnings, visitor spending	**$ 104.5**	**$ 119.4**	**$ 14.9**
Output			
Total impacts on output, visitor spending	**$ 184.0**	**$ 209.9**	**$ 25.9**

Impacts on Governmental Revenues and Costs

Table 7 shows that the Proposed Project is projected to result in net positive impacts on Honolulu City and County fiscal balances. For the County, the net annual benefits will increase from $4.2 million in 2009 to nearly $7.3 million by 2017, when the facilities should be operating at a long-run stable utilization level. The primary influence will be increases in property taxes paid from site improvements. During the construction period only, small fiscal deficits of between $0.6 million in 2012 to $1.5 million in 2014 are predicted. These fiscal deficits would occur as property taxes decline during construction, and reflect the one-year lag between property re-assessment and actual payment. The temporary deficits are more than compensated for an annual basis by the subsequent increases over present levels. By early 2019, the Project would have generated the same cumulative net County revenues as would be the case if current net revenues were left in place, and thereafter the County would show an increasingly revenue-positive impact from the Project.

Table 7 also shows that the State will also experience increased fiscal balance from the Project. Annual Net Revenues (tax receipts less government costs of services) will increase from $8.8 million in 2009 to $12.7 million by 2017. However, smaller surpluses (as low as $2.5 million) are projected for the construction years of 2011-2013. The drop in net revenues for the State will again be compensated for by subsequent increases. By 2019, the Project would have generated the same cumulative net State revenues as would be the case if current net revenues were left in place, and thereafter the State would show an increasingly revenue-positive impact from the Project.

Thus, given the differences between annual net revenues at present vs. those in the future, ten years after the project is complete, the County will have received roughly $31 million more, and the State $39 million more, on a cumulative basis than they would under current conditions. (This is also likely a conservative statement, as aging properties over time are likely to be generate lower annual tax revenues than the 2009 values shown in Table 7.)

Table 7. Summary of Project impacts on government revenues and costs (and estimated 2009-10 conditions)

(dollar figures = thousands of 2008 dollars)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total (2011-2017)
County Revenues From Project	**$7,922**	**$8,033**	**$6,628**	**$1,460**	**$1,416**	**$3,174**	**$11,676**	**$11,827**	**$11,925**	**$48,106**
Property Tax	$7,063	$7,063	$6,628	$1,460	$1,416	$2,068	$10,446	$10,446	$10,446	$42,910
Property Tax From Project Site	$6,450	$6,450	$6,450	$1,205	$1,205	$1,205	$9,583	$9,583	$9,583	$38,811
Property Tax From Indirect Workers	$613	$613	$178	$256	$211	$863	$863	$863	$863	$4,099
TAT (Returned From State)	$859	$970	$0	$0	$0	$1,106	$1,230	$1,381	$1,479	$5,196
Costs Of County Services From Project	**$3,765**	**$3,765**	**$1,411**	**$2,027**	**$1,672**	**$4,655**	**$4,655**	**$4,655**	**$4,655**	**$23,729**
Service Costs For Operational Workers	$1,110	$1,110	$0	$0	$0	$1,563	$1,563	$1,563	$1,563	$6,254
Service Costs For Operational Workers' Dependents	$1,220	$1,220	$0	$0	$0	$1,720	$1,720	$1,720	$1,720	$6,879
Service Costs For Construction Workers	$0	$0	$1,056	$1,517	$1,251	$0	$0	$0	$0	$3,824
Service Costs For Construction Workers' Dependents	$0	$0	$355	$510	$420	$0	$0	$0	$0	$1,285
Service Costs For Visitors	$1,435	$1,435	$0	$0	$0	$1,372	$1,372	$1,372	$1,372	$5,487
Net County Revenues	**$4,156**	**$4,267**	**$5,217**	**-$566**	**-$256**	**-$1,481**	**$7,021**	**$7,172**	**$7,270**	**$24,377**

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total (2011-2017)
State Revenues From Project	**$17,679**	**$17,989**	**$4,705**	**$6,962**	**$5,835**	**$23,483**	**$23,860**	**$24,305**	**$24,603**	**$113,752**
General Excise Tax	$12,464	$12,464	$1,491	$2,202	$1,848	$16,926	$23,860	$24,305	$24,603	$73,404
Personal & Corporate Taxes	$1,575	$1,575	$3,116	$4,620	$3,871	$1,975	$16,955	$16,979	$17,003	$19,509
TAT (Retained)	$2,400	$2,710	$0	$0	$0	$3,090	$1,975	$1,975	$1,975	$14,517
Other Excise Taxes & Fees	$1,240	$1,240	$97	$140	$115	$1,492	$3,437	$3,858	$4,132	$6,322
Costs Of State Services From Project	**$8,839**	**$8,839**	**$2,217**	**$3,186**	**$2,627**	**$11,905**	**$11,905**	**$11,905**	**$11,905**	**$55,651**
Service Costs For Operational Workers	$3,632	$3,632	$0	$0	$0	$5,118	$11,905	$11,905	$11,905	$20,471
Service Costs For Operational Workers' Dependents	$3,995	$3,995	$0	$0	$0	$5,630	$5,118	$5,118	$5,118	$22,518
Service Costs For Construction Workers	$0	$0	$1,056	$1,517	$1,251	$0	$5,630	$5,630	$5,630	$3,824
Service Costs For Construction Workers' Dependents	$0	$0	$1,161	$1,669	$1,376	$0	$0	$0	$0	$4,206
Service Costs For Visitors	$1,212	$1,212	$0	$0	$0	$1,158	$1,158	$1,158	$1,158	$4,632
Net State Revenues	**$8,841**	**$9,151**	**$2,487**	**$3,776**	**$3,207**	**$11,578**	**$11,954**	**$12,400**	**$12,697**	**$58,100**

Notes:

(1) Estimated 2009 information is presented to provide a baseline for comparison to subsequent years but figures are not included in 2011-2017 totals.

(2) The fiscal balances analysis did not address the 0.5% Honolulu General Excise Tax (which would be a benefit of the Proposed Project to City/County of Honolulu), because the tax is dedicated to transit projects. Although the future GET revenues for this fund will increase, the corresponding costs of transit attributable to users of the Project cannot readily be quantified.

APPENDIX 11

John M. Knox & Associates socioeconomic analysis dated June 3, 2009
for the proposed Diamond Head Tower project

JOHN M. KNOX & ASSOCIATES, INC.

June 3, 2009

Mr. Greg S. Dickhens
Executive Vice President
Senior Advisor
Kyo-Ya Management Company, Ltd.
Sheraton Waikīkī Hotel, 2nd Floor
2255 Kalākaua Avenue
Honolulu, HI 96815

Dear Mr. Dickhens:

John M. Knox & Associates has completed its socioeconomic analysis for the Proposed Diamond Head Tower (Moana Hotel) Redevelopment Project. This analysis is for the purpose of quantifying the level of economic and population activity generated at the Project Site based the Project's planned parameters supplied to us by you and your associates in December 2008 and early 2009. This report closely parallels our analysis of Kyo-Ya's redevelopment of the nearby Princess Kaʻiulani Hotel property, as the economic logic of the two studies is highly similar.

SUMMARY OF RESULTS

Construction Phase

The Diamond Head Tower construction period will create nearly 1,000 person-years of employment on Oʻahu. It will generate $91 million in personal earnings and inject nearly $47 million into the Oʻahu economy. The one negative effect – lost net revenues to local government, due to temporarily reduced taxes during constructions – will be quickly made up by increased revenues when the renovated properties re-open (see following section).

Summary Table A. Construction Impacts

	Diamond Head Tower (2-Year Construction Period)
Direct Construction Workers[1]	228
Direct Jobs from Purchases[1]	137
Total Employment[1,2]	999
Total Oʻahu Worker Earnings (workers + purchases) [2,3]	$91.3
Total Oʻahu Purchases Impact[2,3]	$46.5
Lost Net County Revenues During Construction[2,3,4]	$3.4
Lost Net State Revenues During Construction[2,3]	$4.2

[1] Person-years [2] Includes indirect and induced effects [3]millions of 2008 $s

[4] Impact period for county revenues includes one additional year due to lag in property tax collections

Operational Phase

Economic benefits will be driven by increased visitor spending from an increase in retail and food and beverage facilities and a more upscale market, as well as higher property tax revenues from both the more valuable visitor aspects and also from premium residential units (taxed at hotel rather than residential rates). On-site jobs will increase by 114. Total Oʻahu jobs will increase by about 935; annual earnings by $24 million; and economic activity by $36 million.

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Additionally, annual net revenues for both County and State governments will increase (by more than $3 million a year for the County and $900,000 for the State) when operations begin, rapidly making up for lost revenue during the construction phase. Thus, over the ten years following construction, the County governments will receive about $30 million more, and the State $9 million more, on a cumulative basis than without the project.

Summary Table B. Operational Impacts

	Diamond Head Tower Operational Impacts
Additional Employment/Year[1]	
On-Site Direct Jobs	114
Total Employment[2]	935
Additional Worker Earnings/Year[3]	
Direct from Increased Visitor Spendng	$12.5
Total Additional Earnings[2]	$24.1
Additional Economic Output/Year[3]	
Increased Annual Visitor Spending	$20.0
Increased Total Ouput from Spending[2]	$36.0
Net Additional Annual Revenues[3]	
County: Year 2017 Minus Year 2009[2,4]	$3.1
State: Year 2017 Minus Year 2009[2,4]	$0.9

[1]Includes full- and part-time jobs. The full-time equivalent count would be about 81.6% of these numbers.

[2]Includes off-site direct, indirect, and induced jobs

[3]All dollar figures in millions of 2008 dolars

[4]Net revenues may increase slightly after 2017 due to more returned TAT as occupancy edges up.
(Note: Revenues from TAT reflect new rates contained in Act 61 passed by Hawai'i State Legislature.)

INTRODUCTION

Kyo-Ya Hotels and Resorts, L P ("Kyo-Ya") is requesting an SMA permit from the City and County of Honolulu to rebuild the Diamond Head Tower adjacent to the Moana Hotel. The overall key changes are demolishing the existing building and constructing a new tower with both hotel and residential units. The visitor portions of the new Diamond Head Tower would function as a stand-alone hotel rather than – as at present – an annex to the Moana Hotel. It would thus have not only more units, but also more employment per unit. Retail space would be reduced, but more than compensated for by expansion at the nearby Princess Ka'iulani.

On a net basis, the site facilities will be more valuable and cater to visitors who will have higher incomes and higher spending patterns than is currently the case.

From the economic perspective, the numerical (unit and square footage) changes to the Diamond Head Tower are as shown below in Table 1:

Table 1. Comparison of Current Vs. Planned Project Characteristics

	Number Units		
Diamond Head Tower	**Current**	**Planned**	**Change**
Hotel Units	141	185	44
-- Studio	*140*	*161*	*21*
-- One-bedroom suites	*1*	*24*	*23*
Residential units	-	40	40
Total Units	**141**	**225**	**84**
Retail square feet leasable	4,522	2,949	(1,573)
Meeting area square feet	-	2,200	2,200

We developed impact estimates of the following socioeconomic indicators:

Employment Impacts – Direct, Indirect & Induced

- Construction
- Operational

Population Supported

- Construction
- Operational – Visitor and Resident

Expenditures in Local Economy – Direct, Indirect & Induced

- Construction
- Operational – with attention to visitor expenditures both on and off the property

Fiscal Cost-Revenue Analysis – State and County Levels

- Government costs associated with both phases (average-cost method)
- All sources of tax revenues, including construction, visitor taxes, and business receipts

KEY STUDY RESULTS

Construction

The total cost to construct the Proposed Project is estimated at $142 million (2009 dollars), and construction will occur over an assumed two-year period, beginning approximately January 2011. Total employment will be 228 person-years (averaging 114 annually).

Project construction will entail wage, salary, and benefit payments to construction workers on-site as well as administrative workers off-site or in offices at the site. Wages are estimated to total $35 million. We expect virtually all workers will be O‘ahu residents during the course of construction.

These wages will also generate “ripple effects” in the local economy, as incomes earned by the direct construction workers re-spend their incomes locally. These are called “indirect and

induced" impacts and are a multiple of the original payments for labor generated by onsite construction needs. To estimate indirect and induced impacts, we used the Hawai'i Input-Output Model developed and used at DBEDT, a well-known and accepted model used frequently for project such as this. The inclusion of multiplier effects results in a total impact on earnings arising from Project construction wage payments of $84 million.

Table 2 summarizes the direct, and indirect and induced impacts of Project construction employment and income.

Table 2. Direct, indirect and induced impacts on jobs and earnings, Diamond Head Tower Redevelopment Project, construction phase
(dollar figures = millions of 2008 dollars)

	Average Annual, 2011-12	Total, Construction Period
Direct Construction Workers, off- and on-site	114	228
O'ahu Type II Jobs Multiplier (Construction)	2.48	2.48
Total Jobs (Direct, Indirect/Induced)	250	749
Earnings From Direct Jobs	$ 17.4	$ 34.8
O'ahu County Type II Earnings Multiplier (Construction)	1.86	1.86
Total Earnings (Direct, Indirect/Induced)	**$ 27.9**	**$ 83.7**

In addition, Project purchases of goods and services for construction from O'ahu vendors will total $41 million. These construction purchases will also generate indirect and induced impacts in the local economy, as firms selling goods and services to the Project directly, in turn, purchase their product inputs directly ("indirect impacts"), and workers at these firms re-spend their incomes locally ("induced impacts"). The Hawai'i Input-Output Model was also used to estimate these impacts. Table 3 summarizes the results of this analysis.

Table 3. Total direct, indirect and induced impacts on output, jobs and earnings, from construction purchases
(dollar figures = millions of 2008 dollars)

	O'ahu Purchases	Jobs (O'ahu)	Earnings (O'ahu)
Direct Project construction purchases	$ 40.8	137	$ 4.2
Indirect and induced impacts from Project purchases	$ 5.7	112	$ 3.4
Total direct, indirect, and induced impacts from Project purchases	**$ 46.5**	**250**	**$ 7.7**

Operations

The analysis examined two primary characteristics: (1) Activities on the site itself, and (2) total islandwide activities generated by on-site activities.

It is notable that the Proposed Project entails more hotel and residential units on the property, increasing the population spending nights on-site. Employment on site will also increase, due in part to increased retail space and in part to the new structure functioning as a self-contained hotel with its own front desk, motor court, and administrative personnel. The site's

improvements will all be more upscale than those currently existing, increasing both likely per-capita spending of resident visitors,[1] and the sales-per-square-foot of retail shops. In sum, these factors are predicted to mean that the net fiscal balances attributable to the Proposed Project will be more favorable than is currently the case (i.e., government revenues will exceed government costs).

A further change to the on-site activity from the Proposed Project is the occupancy assumed for the project. Current occupancy rates are approximately 70 percent; with the Project, long-run average occupancy is assumed to grow, averaging about 84 percent between 2014 (the Project opening) and 2017, a result of the market repositioning inherent in the higher-value accommodations and amenities provided.

On-Site Resident Population

An important study result is the number of persons who will live and work at the site once operations have begun. These include visitors using the hotel, full-time residents, and employees.[2] Compared to its existing average daily census of 208 transient occupants, the Project will have an increasedd average daily census of 395 persons, including an additional 100 full-time residents. Table 4 below summarizes this result. The results also show a forty percent increase in the number of transient visitor-days accommodated on-site.

Table 4. Summary: Temporary and permanent residents, on site

	Number Units			Total Population			Visitor-days (not including residents)		
	Current	Planned	Change	Current	Planned	Change	Current	Planned	Change
Hotel Units	141	185	44	208	295	87	75,768	107,513	31,746
Studio	140	161	21	208	256	49	75,768	93,566	17,798
One bedroom suites	1	24	23	-	38	38	-	13,948	13,948
Residential units	-	40	40	-	100	100			
Total	141	225	84	208	395	187	75,768	107,513	31,746

The number of on-site workers will increase by 93 FTE positions, with hotel staff increasing noticeably, despite a small decline in its retail employment. This reflects the previously-noted increase in property service levels. Table 5 shows current and planned FTEs and the number of workers on site. (Note that “on site” for the Project means the Diamond Head Tower itself. The Project is also likely to generate a small net number of additional jobs throughout the larger Moana property, as well as a substantial number of off-site direct jobs from increased levels of visitor spending.)

[1] We estimate that the visitors staying at the Proposed Project will spend 50% more per capita than existing visitors (average visitor per capita spending data from DBEDT).
[2] Others using the Project facilities will include shoppers and conference-meeting attendees, and miscellaneous non-resident visitors and delivery persons. These persons were not addressed in our analysis.

Table 5. Summary, on-site workers

	Current FTE	Planned FTE	Change in FTE	Current Total Full- & Part-Time Employee Count	Planned Total Full- & Part-Time Employee Count	Change in Total Full- & Part-Time Employee Count
All hotel staff	22	131	109	27	161	134
Retail shops	25	9	(16)	31	11	(20)
TOTAL	47	140	93	58	172	114

Total Jobs, Incomes, and Economic Activity from Visitor Spending

The Proposed Project will have a noticeably positive impact on tourist-industry employment and income. This result will occur as a result of its higher number of hotel units, as well as its attraction of higher-spending occupants. Table 6 shows that visitor spending, and the number of jobs and earnings supported, by persons staying at the Diamond Head Tower will more than double.

The trend among Waikīkī transient accommodations has been to upscale their facilities, in part to attract higher-income visitors, and in part to conduct regular maintenance. The Proposed Project is a part of this overall trend, which is changing the overall target market for many hotels. It is evident that without such maintenance and upgrading, the overall success of the Waikīkī "brand" would diminish.

Table 6. Impacts on annual direct, indirect, and induced jobs and incomes from visitor spending

(dollar figures = millions of 2008 dollars)

	Current	Projected	Change
Number visitor days	75,768	107,513	31,746
Average spending/capita/day	$ 247.27	$ 278.87	$ 31.61
Jobs			
Total jobs supported, visitor spending	**729**	**1,664**	**935**
Earnings			
Total impacts on earnings, visitor spending	**$ 19.1**	**$ 43.3**	**$ 24.1**
Output			
Total impacts on output, visitor spending	**$ 33.4**	**$ 69.3**	**$ 36.0**

Impacts on Governmental Revenues and Costs

Table 7 shows the Proposed Project is projected to result in net positive impacts on Honolulu City and County, and State of Hawai'i fiscal balances. For the County, the net annual benefits (tax receipts less government costs of services) will increase from $1.3 million in 2009 to $4.5 million by 2017, when the facilities should be operating at a long-run stable utilization level. The primary influence will be increases in property taxes paid from site improvements. Due to construction, a small fiscal deficit is predicted for 2012, along with reduced surpluses in 2011 and 2013. These revenue losses would occur as property taxes decline during construction, and reflect the one-year lag between property re-assessment and actual payment. The temporary

revenue reductions are far exceeded by fiscal surpluses in later years, and the County's fiscal return is already revenue-positive by 2014.

Table 7 also shows that the State will gain increased fiscal balances from the Project. Annual net revenues will increase from $3.4 million in 2009 to $4.3 million by 2017. However, smaller surpluses (as low as $1.2 million) are projected for the construction years of 2011 and 2012, and to a lesser extent 2013. The total State fiscal balance from the Project will be revenue-neutral as of 2018, and will then have a noticeably growing cumulative surplus with each year.

Thus, given the differences between annual net revenues at present vs. those in the future, ten years after the project is complete, the County will have received roughly $30 million more, and the State $9 million more, on a cumulative basis than they would under current conditions. (This is also likely a conservative statement, as aging properties over time are likely to generate lower annual tax revenues than the 2009 values shown in Table 7.)

Table 7. Summary of Project impacts on government revenues and costs (and estimated 2009 conditions)

(dollar figures = thousands of 2008 dollars)

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total (2011-2017)
County Revenues From Project	**$1,735**	**$1,760**	**$1,582**	**$593**	**$1,004**	**$5,347**	**$5,381**	**$5,409**	**$5,437**	**$24,754**
Property Tax	$1,546	$1,546	$1,582	$593	$631	$4,933	$4,933	$4,933	$4,933	$22,539
Property Tax From Project Site	$1,497	$1,497	$1,497	$485	$485	$4,787	$4,787	$4,787	$4,787	$21,615
Property Tax From New Workers	$49	$49	$86	$108	$146	$146	$146	$146	$146	$924
TAT (Returned From State)	$189	$214	$0	$0	$372	$414	$448	$476	$504	$2,216
Costs Of County Services From Project	**$382**	**$382**	**$679**	**$854**	**$986**	**$986**	**$986**	**$986**	**$986**	**$6,466**
Service Costs For Operational Workers	$89	$89	$0	$0	$264	$264	$264	$264	$264	$1,322
Service Costs For Operational Workers' Dependents	$98	$98	$0	$0	$291	$291	$291	$291	$291	$1,454
Service Costs For Construction Workers	$0	$0	$508	$640	$0	$0	$0	$0	$0	$1,148
Service Costs For Construction Workers' Dependents	$0	$0	$171	$215	$0	$0	$0	$0	$0	$386
Service Costs For Visitors	$195	$195	$0	$0	$431	$431	$431	$431	$431	$2,157
Net County Revenues	**$1,353**	**$1,377**	**$903**	**-$261**	**$17**	**$4,361**	**$4,395**	**$4,422**	**$4,451**	**$18,288**

	2009	2010	2011	2012	2013	2014	2015	2016	2017	Total (2011-2017)
State Revenues From Project	**$4,210**	**$4,278**	**$2,220**	**$2,904**	**$6,477**	**$6,594**	**$6,690**	**$6,767**	**$6,847**	**$38,501**
General Excise Tax	$3,387	$3,387	$745	$961	$4,657	$4,657	$4,657	$4,658	$4,659	$24,994
Personal & Corporate Taxes	$163	$163	$1,428	$1,885	$510	$510	$510	$510	$510	$5,861
TAT (Retained)	$529	$597	$0	$0	$1,041	$1,158	$1,253	$1,330	$1,409	$6,190
Other Excise Taxes & Fees	$131	$131	$47	$59	$270	$270	$270	$270	$270	$1,456
Costs Of State Services From Project	**$777**	**$777**	**$1,068**	**$1,343**	**$2,556**	**$2,556**	**$2,556**	**$2,556**	**$2,556**	**$15,189**
Service Costs For Operational Workers	$291	$291	$0	$0	$865	$865	$865	$865	$865	$4,326
Service Costs For Operational Workers' Dependents	$321	$321	$0	$0	$952	$952	$952	$952	$952	$4,759
Service Costs For Construction Workers	$0	$0	$508	$640	$0	$0	$0	$0	$0	$1,148
Service Costs For Construction Workers' Dependents	$0	$0	$559	$703	$0	$0	$0	$0	$0	$1,263
Service Costs For Visitors	$165	$165	$0	$0	$739	$739	$739	$739	$739	$3,693
Net State Revenues	**$3,433**	**$3,501**	**$1,153**	**$1,561**	**$3,922**	**$4,039**	**$4,134**	**$4,212**	**$4,292**	**$23,312**

Notes:

(1) Estimated 2009 information is presented to provide a baseline for comparison to subsequent years but figures are not included in 2011-2017 totals.

(2) The fiscal balances analysis did not address the 0.5% Honolulu General Excise Tax (which would be a benefit of the Proposed Project to City/County of Honolulu), because the tax is dedicated to transit projects. Although the future GET revenues for this fund will increase, the corresponding costs of transit attributable to users of the Project cannot readily be quantified.

APPENDIX 12

John M. Knox & Associates socioeconomic analysis dated June 3, 2009 for the combined Princess Ka'iulani and Diamond Head Tower projects

JOHN M. KNOX & ASSOCIATES, INC.

June 3, 2009

Princess Ka‘iulani and Moana Diamond Head Tower Renovation Projects: Summary of Economic Impacts

Summary of Project Changes Relevant to Economic Impacts

Kyo-ya Hotels and Resorts, L P (“Kyo-ya”) is proposing to redevelop the Princess Ka‘iulani Hotel and the Diamond Head Tower at the Moana Surfrider. Both projects are part of Kyo-ya’s long-term plan to renovate and reposition each of Kyo-ya’s hotels in Waikīkī. Kyo-ya has completed the renovation and rebranding of the Royal Hawaiian Hotel and the Moana Surfrider Hotel. By the end of 2009, Kyo-ya will have completed a five-year renovation of the Sheraton Waikīkī. These three projects represent a $250 million reinvestment in Kyo-ya’s Waikīkī hotels. The proposed redevelopment of the Princess Ka‘iulani and the Diamond Head Tower will add an additional $700 million investment in Waikiki and continue Kyo-ya’s efforts to improve Waikīkī as a world-class destination, as well as a viable source of employment for O‘ahu’s residents.

- At the **Princess Ka‘iulani,** the existing Ainahau Tower will be left in place but upgraded, while the rest of the property will be substantially redeveloped. The redeveloped portions include a new condo-hotel and residential tower that will function as a separate property (thus increasing the ratio of on-site employment per unit) and a new two-level commercial podium that will substantially expand the property’s retail space.

- At the **Diamond Head Tower**, the existing structure will be demolished and replaced by a new building that will also function as a self-contained property. The present Diamond Head Tower operates as an annex to the Moana Hotel, but the new tower will have its own front desk, motor court, food and beverage facilities. and administrative personnel. As with the Princess Ka‘iulani, the ratio of on-site employees per unit will increase.

Construction Phase

The Princess Ka‘iulani and Diamond Head Tower construction periods will create nearly 3,400 person-years of employment on O‘ahu. They will generate $284 million in personal earning and inject nearly $140 million into the O‘ahu economy. The one negative effect – lost governmental net revenues, due to temporarily reduced taxes – will be quickly made up by increased revenues when the renovated properties re-open (see following section).

	Princess Ka‘iulani (3-Year Construction Perid)	Moana Diamond Head Tower (2-Year Construction Period)	COMBINED TOTAL
Direct Construction Workers[1]	683	228	911
Direct Jobs from Purchases[1]	454	137	591
Total Employment[1,2]	2,377	999	3,376
Total O‘ahu Worker Earnings (workers + purchases) [2,3]	$192.7	$91.3	$284.0
Total O‘ahu Purchases Impact[2,3]	$92.2	$46.5	$138.7
Lost Net County Revenues During Construction[2,3,4]	$13.7	$3.4	$17.1
Lost Net State Revenues During Construction[2,3]	$17.1	$4.2	$21.2

[1] Person-years [2] Includes indirect and induced effects [3] millions of 2008 $s

[4] Impact period for county revenues includes one additional year due to lag in property tax collections

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Operational Phase

Economic benefits will be driven by increased visitor spending from a more upscale market, as well as higher property tax revenues from both the more valuable visitor aspects and also from premium residential units (taxed at hotel rather than residential rates). Total O'ahu jobs will increase by about 1,500; annual earnings by $39 million; and economic activity by nearly $62 million. Both the State and the City and County will enjoy a higher level of annual net revenues from the properties than at present – $6.2 million more per year for the County and $4.7 million for the State. Because of this, for the two projects combined, net government revenue lost in construction will have been made up for the County by 2016 and for the State by 2019. After these dates, both levels of government will have higher levels of revenues after costs than at the present time. Over the ten years following construction, the County governments will receive about $62 million more, and the State $47 million more, on a cumulative basis than without the projects.

	Princess Ka'iulani	Moana Diamond Head Tower	COMBINED TOTAL
Additional Employment/Year[1]			
On-Site Direct Jobs	295	114	408
Total Employment[2]	569	935	1,503
Additional Worker Earnings/Year[3]			
Direct from Increased Visitor Spending	$7.6	$12.5	$20.1
Total Additional Earnings[2]	$14.9	$24.1	$39.0
Additional Economic Output/Year[3]			
Increased Annual Visitor Spending	$14.5	$20.0	$34.5
Increased Total Ouput from Spending[2]	$25.9	$36.0	$61.9
Net Additional Annual Revenues[3]			
County: Year 2017 Minus Year 2009[2,4]	$3.1	$3.1	$6.2
State: Year 2017 Minus Year 2009[2,4]	$3.9	$0.9	$4.7

[1]Includes full- and part-time jobs. The full-time equivalent count would be about 81.6% of these numbers.

[2]Off-site direct, indirect, and induced impacts. PK on-site jobs are higher as % of total due to large retail complex.

[3]All dollar figures in millions of 2008 dolars

[4]Net revenues may increase slightly after 2017 due to more returned TAT as occupancy edges up.
(Note: Revenues from TAT reflect new rates contained in Act 61 passed by Hawai'i State Legislature.)